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SPP SOCIEDADE PORTUGUESA DE PNEUMOLOGIA

O **primeiro biológico** a inibir a sinalização da IL-4 e IL-13

Também aprovado para **Dermatite Atópica moderada a grave**

A Asma é heterogénea

EOS e IgE+

Induzida por Alergénios

FeNO ELEVADO

Eosinofílica

DEPENDENTE DE CCT. ORAIS

PARA DOENTES (≥ 12 ANOS) COM ASMA GRAVE E **INFLAMAÇÃO DO TIPO 2**

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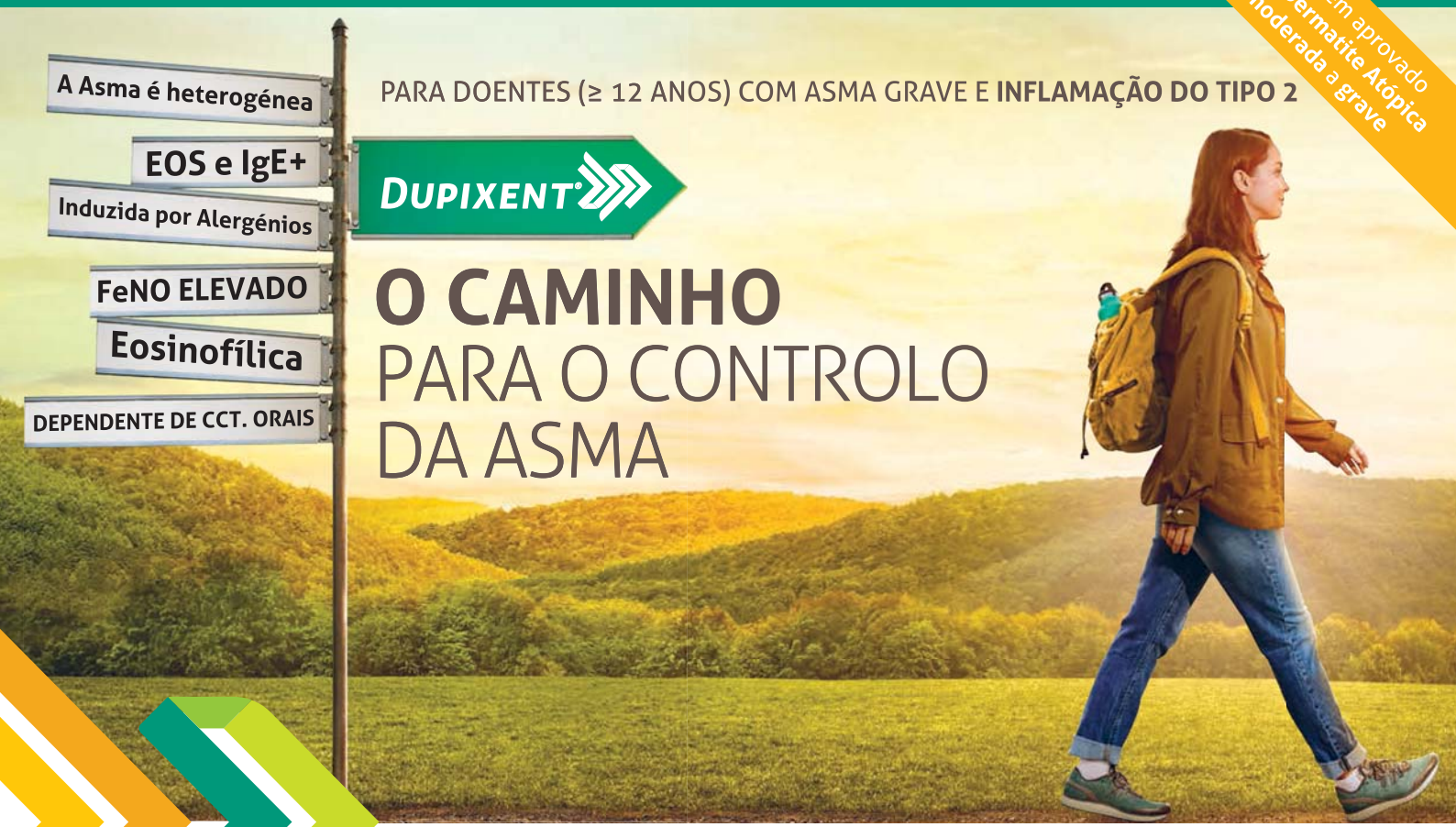
O CAMINHO PARA O CONTROLO DA ASMA



Dupixent é indicado em adultos e adolescentes com idade igual ou superior a 12 anos como tratamento complementar de manutenção para asma grave com inflamação tipo 2 caraterizada por eosinófilos elevados no sangue e/ou FeNO aumentada, que são inadequadamente controlados apesar das doses elevadas de corticosteroides inalados associada a outro medicamento para tratamento de manutenção.

Referências: Resumo das características do medicamento DUPIXENT
GINA 2019 main report June 2019

EOS - Eosinófilos; FeNO - Fração de óxido nítrico exalado; CCT Orais - Corticosteroides Orais

SANOFI GENZYME REGENERON

DUPIXENT® (dupilumab)

INFORMAÇÕES ESSENCIAIS COMPATÍVEIS COM RESUMO DAS CARACTERÍSTICAS DO MEDICAMENTO.

▼Este medicamento está sujeito a monitorização adicional. Isto irá permitir a rápida identificação de nova informação de segurança. Pede-se aos profissionais de saúde que notifiquem quaisquer suspeitas de reações adversas. Para saber como notificar reações adversas, ver secção 4.8. do RCM completo. **Nome do medicamento** Dupixent 300 mg solução injetável em seringa pré-cheia; Dupixent 200 mg solução injetável em seringa pré-cheia; Dupixent 200 mg solução injetável em caneta pré-cheia. **Composição Qualitativa e Quantitativa** Dupixent 300 mg solução injetável em seringa pré-cheia Cada seringa pré-cheia de utilização única contém 300 mg de dupilumab em 2 ml de solução (150 mg/ml). Dupilumab 200 mg solução injectável em seringa pré-cheia ou caneta pré-cheia. Cada seringa pré-cheia ou caneta pré-cheia de utilização única contém 200 mg de dupilumab em 1,14 ml de solução (175 mg/ml). Dupilumab é um anticorpo monoclonal totalmente humano contra o recetor alfa da interleucina (IL)-4 que inibe a sinalização IL-4/IL-13, produzido em células de ovário de hamster chinês (CHO) por tecnologia de ADN recombinante. Lista completa de excipientes, ver secção 6.1. do RCM completo. **Forma Farmacêutica** Solução injetável (injetável); Solução transparente a ligeiramente opalescente, incolor a amarelo pálido, isenta de partículas visíveis. **Indicações terapêuticas** Dermatite atópica Dupixent é indicado para o tratamento de dermatite atópica moderada a grave em adultos e adolescentes com idade igual ou superior a 12 anos que são candidatos a terapêutica sistémica. Asma; Dupixent é indicado em adultos e adolescentes com idade igual ou superior a 12 anos como tratamento complementar de manutenção para asma grave com inflamação tipo 2 caraterizada por eosinófilos elevados no sangue e/ou FeNO aumentada (ver secção 5.1 do RCM completo), que são inadequadamente controlados apesar das doses elevadas de corticosteroides inalados associados a outro medicamento para tratamento de manutenção. **Posologia e modo de administração** O tratamento deve ser iniciado por profissionais de saúde com experiência no diagnóstico e tratamento de condições para os quais o dupilumab está indicado (ver secção "Indicações Terapêuticas). Posologia Dupixent 300 mg solução injetável em seringa pré-cheia. Dermatite atópica Adultos A dose recomendada de dupilumab para doentes adultos é uma dose inicial de 600 mg (duas injeções de 300 mg), seguida por 300 mg administrados em semanas alternadas sob a forma de injeção subcutânea. Adolescentes A dose recomendada de dupilumab para doentes adolescentes dos 12 aos 17 anos de idade está especificada na Tabela 1. **Tabela 1: Dose de dupilumab para administração subcutânea em doentes adolescentes dos 12 aos 17 anos de idade com dermatite atópica. Peso Corporal do Doente: menos de 60 kg**: Dose Inicial: 400 mg (duas injecções de 200 mg). Doses Subsequentes (em semanas alternadas): 200 mg. **60 kg ou mais**: Dose Inicial: 600 mg (duas injecções de 300 mg). Doses Subsequentes (em semanas alternadas): 300 mg. Dupilumab pode ser utilizado com ou sem corticosteroides tópicos. Poderão ser utilizados inibidores da calcineurina tópicos, mas devem ser reservados apenas para as áreas problemáticas, tais como a face, o pescoço e as áreas intertriginosas e genitais. Deve ter-se em consideração a interrupção do tratamento em doentes que não tenham apresentado resposta após 16 semanas de tratamento para a dermatite atópica. Alguns doentes com resposta parcial inicial podem subsequentemente melhorar com a continuação do tratamento além das 16 semanas. Se for necessária a interrupção do tratamento com dupilumab, os doentes podem ser tratados novamente com sucesso. Asma A dose recomendada de dupilumab para adultos e adolescentes (idade igual ou superior a 12 anos) é: • Em doentes com asma grave e terapêutica oral com corticosteróides ou doentes com asma grave e dermatite atópica comórbida de moderada a grave, uma dose inicial de 600 mg (duas injecções de 300 mg), seguida de 300 mg administradas em semanas alternadas sob a forma de injecção subcutânea • Para todos os outros doentes, uma dose inicial de 400 mg (duas injecções de 200 mg), seguida de 200 mg administradas em semanas alternadas sob a forma de injecção subcutânea. Dupixent 200 mg solução injetável em seringa ou caneta pré-cheia. 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Asma A dose recomendada de dupilumab para adultos e adolescentes (idade igual ou superior a 12 anos) é: • Uma dose inicial de 400 mg (duas injecções de 200 mg), seguida por 200 mg administrados em semanas alternadas sob a forma de injecção subcutânea • Nos doentes com asma grave e terapêutica oral com corticosteróides ou doentes com asma grave e dermatite atópica comórbida de moderada a grave, uma dose inicial de 600 mg (duas injecções de 300 mg), seguida de 300 mg administradas em semanas alternadas sob a forma de injecção subcutânea. Dupixent 300 mg e 200 mg Os doentes tratados concomitantemente com corticosteróides orais, podem reduzir a sua dose de esteróides, uma vez que tenha ocorrido uma melhoria clínica com o dupilumab (ver secção 5.1 do RCM completo). A redução dos esteróides deve ser realizada gradualmente (ver secção 4.4 do RCM completo). Dupilumab destina-se a tratamento de longo prazo. Deve ser considerada a necessidade de terapia continuada pelo menos numa base anual, conforme determinado pela avaliação médica do nível de controlo da asma do doente. Dose esquecida Caso uma dose seja esquecida, administrar a dose logo que possível. Em seguida, retomar a dosagem à hora habitual. Populações especiais Doentes idosos (≥65 anos) Não é recomendado qualquer ajuste posológico para os doentes idosos (ver secção 5.2 do RCM completo). Compromisso renal Não é necessário qualquer ajuste posológico nos doentes com insuficiência renal ligeira ou moderada. Estão disponíveis dados muito limitados sobre doentes com insuficiência renal grave (ver secção 5.2 do RCM completo). Compromisso hepático Não estão disponíveis dados sobre doentes com insuficiência hepática (ver secção 5.2 do RCM completo). Peso corporal Não é recomendado qualquer ajuste posológico para o peso corporal em doentes com asma com idade igual ou superior a 12 anos ou em adultos com dermatite atópica (ver secção 5.2 do RCM completo). Em doentes dos 12 anos aos 17 anos de idade com dermatite atópica, a dose recomendada em semanas alternadas é de 200 mg (< 60 kg) ou 300 mg (≥ 60 kg). Doentes pediátricos A segurança e eficácia de dupilumab em crianças com dermatite atópica com menos de 12 anos de idade não foram estabelecidas (ver secção 5.2 do RCM completo). Não existem dados disponíveis. A segurança e eficácia de dupilumab em crianças com asma grave com menos de 12 anos de idade não foram estabelecidas (ver secção 5.2 do RCM completo). Não existem dados disponíveis. Modo de administração Via subcutânea Dupilumab é administrado por injeção subcutânea na coxa ou no abdómen, excetuando na área de 5 cm à volta do umbigo. Se for outra pessoa a administrar a injeção, também pode ser utilizada a região superior do braço. Dupixent 300 mg : Para a dose inicial de 600 mg, administrar duas injeções de 300 mg de Dupixent consecutivamente em locais de injeção diferentes. Dupixent 200 mg: Para a dose inicial de 400 mg, administrar duas injeções de 200 mg consecutivamente em locais de injeção diferentes. Recomenda-se que vá alternando o local de injeção. Dupilumab não deve ser injetado em pele sensível ao toque, lesionada ou que tenha hematomas ou cicatrizes. Os doentes podem autoinjetar dupilumab ou o prestador de cuidados do doente pode administrar dupilumab, caso o seu profissional de saúde determine que tal é apropriado. Deve ser proporcionada formação adequada aos doentes e/ou aos prestadores de cuidados sobre a preparação e a administração de dupilumab antes de utilizar de acordo com a secção Instruções de utilização do folheto informativo. **Contraindicações** Hipersensibilidade à substância ativa ou a qualquer um dos excipientes mencionados na secção 6.1 do RCM completo. **Efeitos indesejáveis** Dermatite atópica Adultos com dermatite atópica Resumo do perfil de segurança As reações adversas mais frequentes foram reações no local de injeção, conjuntivite, blefarite e herpes oral. Foram notificados casos muito raros de reações de doença do soro/reações do tipo doença do soro no programa de desenvolvimento da dermatite atópica (ver secção 4.4 do RCM completo). Em estudos de monoterapia, a proporção de doentes que descontinuaram o tratamento devido a acontecimentos adversos foi de 1,9% no grupo de placebo, de 1,9% no grupo de dupilumab 300 mg Q2W e de 1,5% no grupo de dupilumab 300 mg QW. No estudo com CST concomitante, a proporção de doentes que descontinuaram o tratamento devido a acontecimentos adversos foi de 7,6% no grupo de placebo + CST, de 1,8% no grupo de dupilumab 300 mg Q2W + CST e de 2,9% no grupo de dupilumab 300 mg QW + CST. Lista tabelada de reações adversas A segurança de dupilumab foi avaliada em quatro estudos aleatorizados, em dupla ocultação, controlados por placebo e num estudo de intervalo de dose em doentes com dermatite atópica moderada a grave. Nestes 5 estudos, 1.689 participantes foram tratados com injeções subcutâneas de dupilumab, com ou sem corticosteroides tópicos (CST) concomitantes. No total, foram tratados 305 doentes com dupilumab durante, pelo menos, 1 ano. Listadas na Tabela 2 estão as reações adversas observadas em estudos clínicos na dermatite atópica, apresentadas por classe de sistema de órgãos e frequência, utilizando as seguintes categorias: muito frequentes (≥ 1/10); frequentes (≥ 1/100, < 1/10); pouco frequentes (≥ 1/1.000, < 1/100); raras (≥ 1/10.000, < 1/1.000); muito raras (< 1/10.000). Dentro de cada grupo de frequência, os efeitos indesejáveis são apresentados por ordem decrescente de gravidade. **Tabela 2 Lista de reações adversas na dermatite atópica. Classe de sistemas de órgãos MedDRA: Infeções e infestações:** Frequência: Frequentes. Reação adversa: Conjuntivite, Herpes oral. **Doenças do sangue e do sistema linfático:** Frequência: Frequentes. Reação adversa: Eosinofilia. **Doenças do sistema imunitário:** Frequência: Muito raras. Reação adversa: Doença do soro/reações do tipo doença do soro. **Doenças do sistema nervoso:** Frequência: Frequentes. Reação adversa: Cefaleias. **Afeções oculares:** Frequência: Frequentes. Reação adversa: Conjuntivite alérgica, Prurido ocular, Blefarite. **Perturbações gerais e alterações no local de administração:** Frequência: Muito frequentes. Reação adversa: Reações no local de injeção. Adolescentes com dermatite atópica Foi avaliada a segurança do dupilumab num estudo de 250 doentes dos 12 aos 17 anos de idade com dermatite atópica moderada a grave (AD–1526). O perfil de segurança do dupilumab nestes doentes, que foram acompanhados até à semana 16, foi semelhante ao perfil de segurança dos estudos em adultos com dermatite atópica. Foi avaliada a segurança a longo prazo num estudo de extensão aberto em doentes com idades dos 12 aos 17 anos com dermatite atópica moderada a grave (AD–1434). O perfil de segurança do dupilumab em doentes acompanhados até à semana 52 foi semelhante ao perfil de segurança observado na semana 16 no estudo AD–1526. O perfil de segurança a longo prazo do dupilumab, observado em adolescentes, foi consistente com o observado em adultos com dermatite atópica. Asma Resumo do perfil de segurança A reação adversa mais frequente foi eritema no local de injecção. Foram notificados casos muito raros de reação anafiláctica no programa de desenvolvimento da asma (ver secção 4.4 do RCM completo). Nos estudos DRI12544 e QUEST, a proporção de doentes que descontinuaram o tratamento devido a reações adversas foi de 4,3% no grupo placebo, 3,2% do grupo dupilumab 200 mg Q2W e 6,1% do grupo dupilumab 300 mg Q2W. Lista tabelada de reações adversas Um total de 2.888 doentes adultos e adolescentes com asma moderada a grave foram avaliados em 3 estudos aleatorizados, controlados por placebo, multicêntrico, de 24 a 52 semanas de duração (DRI12544, QUEST e VENTURE). Destes, 2.678 tinham história de 1 ou mais exacerbações graves no ano anterior ao recrutamento, apesar da utilização regular de corticosteróides inalados de dose média a alta, mais um controlador adicional (DRI12544 e QUEST). Foram recrutados um total de 210 doentes com asma dependentes de corticosteróides orais a receber doses elevadas de corticosteróides inalatórios e mais dois controles adicionais (VENTURE). Listadas na Tabela 3 estão as reações adversas observadas em estudos clínicos na asma, apresentadas por classe de sistema de órgãos e frequência, utilizando as seguintes categorias: muito frequentes (≥ 1/10); frequentes (≥ 1/100, < 1/10); pouco frequentes (≥ 1/1.000, < 1/100); raras (≥ 1/10.000, < 1/1.000); muito raras (< 1/10.000). Dentro de cada grupo de frequência, os efeitos indesejáveis são apresentados por ordem decrescente de gravidade. **Tabela 3: Lista de reacções adversas na asma. Classe de sistemas de órgãos MedDRA: Doenças do sistema imunitário:** Frequência: Muito raras. Reação adversa: Reação anafilática. **Perturbações gerais e alterações no local de administração:** Frequência: Muito frequentes, Frequentes, Frequentes, Frequentes. Reação adversa: Eritema no local de injecção, Edema no local da injecção, Dor no local da injecção, Prurido no local da injeção. Descrição de reações adversas selecionadas nas indicações de dermatite atópica e asma Hipersensibilidade Foram comunicados casos muito raros de doença do soro/reações do tipo doença do soro e reação anafilática após a administração de dupilumab (ver secção 4.4 do RCM completo). Conjuntivite e eventos relacionados Conjuntivite ocorreu mais frequentemente em doentes com dermatite atópica que receberam dupilumab. A maioria dos doentes com conjuntivite recuperou ou estava a recuperar durante o período de tratamento. Nos doentes com asma, a frequência de conjuntivite foi baixa e semelhante entre o dupilumab e o placebo (ver secção 4.4 do RCM completo). Eczema herpético Foi comunicado eczema herpético em < 1% dos grupos de dupilumab e em < 1% do grupo de placebo nos estudos de monoterapia com dermatite atópica de 16 semanas. No estudo de dupilumab + CST de 52 semanas, foi comunicado eczema herpético em 0,2% do grupo de dupilumab + CST e em 1,9% do grupo de placebo + CST. Eosinofilia Os doentes tratados com dupilumab tiveram um aumento médio inicial maior do que o valor basal na contagem de eosinófilos em comparação com os doentes tratados com placebo. A contagem de eosinófilos diminuiu para perto dos níveis basais durante o tratamento do estudo. Foi notificado tratamento emergente para eosinofilia (≥ 5.000 células/mcl) em <2% dos doentes tratados com dupilumab e < 0,5% nos doentes tratados com placebo. Infeções Nos estudos clínicos de dermatite atópica em monoterapia de 16 semanas, foram comunicadas infeções graves em 1,0% dos doentes tratados com placebo e em 0,5% dos doentes tratados com dupilumab. No estudo CHRONOS de dermatite atópica de 52 semanas, foram reportadas infeções graves em 0,6% dos doentes tratados com placebo e em 0,2% dos doentes tratados com dupilumab. Imunogenicidade Como todas as proteínas terapêuticas, existe um potencial para imunogenicidade com dupilumab. As respostas de Anticorpos Antifármacos (AAF) não foram, de forma geral, associadas a um impacto na exposição, na segurança ou na eficácia de dupilumab. Aproximadamente 6% dos doentes com dermatite atópica ou asma que receberam dupilumab 300 mg Q2W durante 52 semanas desenvolveram AAF ao dupilumab; aproximadamente 2% exibiram respostas persistentes de AAF e aproximadamente 2% apresentaram anticorpos neutralizantes. Aproximadamente 9% dos doentes com asma que receberam dupilumab 200 mg Q2W durante 52 semanas desenvolveram anticorpos ao dupilumab; aproximadamente 4% exibiram respostas persistentes de AAF e aproximadamente 4% apresentaram anticorpos neutralizantes. Aproximadamente 5% dos doentes nos grupos placebo nos estudos de 52 semanas também foram positivos para anticorpos ao dupilumab; aproximadamente 2% apresentaram resposta persistente de AAF e aproximadamente 1% apresentaram anticorpos neutralizantes. Menos de 0,4% dos doentes apresentaram respostas de AAF com titulação elevada associadas a exposição e eficácia reduzidas. Além disso, houve um doente com doença do soro e um com reação do tipo doença do soro (<0,1%) associadas a titulações elevadas de AAF (ver secção 4.4 do RCM completo). População pediátrica Nos ensaios clínicos de dermatite atópica, o perfil de segurança observado nos adolescentes dos 12 aos 17 anos de idade foi semelhante ao observado nos adultos. Um total de 107 adolescentes com idades entre 12 e 17 anos com asma foram incluídos no estudo QUEST de 52 semanas. O perfil de segurança observado foi semelhante ao observado nos adultos. Notificação de suspeitas de reações adversas A notificação de suspeitas de reações adversas após a autorização do medicamento é importante, uma vez que permite uma monitorização contínua da relação benefício-risco do medicamento. Pede-se aos profissionais de saúde que notifiquem quaisquer suspeitas de reações adversas diretamente ao INFARMED, I.P.: INFARMED, I.P., Direção de Gestão do Risco de Medicamentos, Parque da Saúde de Lisboa, Av. Brasil 53, 1749-004 Lisboa, Tel: +351 21 798 73 73, Linha do Medicamento: 8002222444 (gratuita) Sítio da internet: http://www.infarmed.pt/web/infarmed/submissaoram E-mail: farmacovigilancia@infarmed.pt

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ORAL COMMUNICATIONS

35th Congress of Pulmonology

Praia da Falésia – Centro de Congressos Epic Sana
Algarve, 7th-9th November 2019

CO 001. NONSPECIFIC VENTILATORY PATTERN: EVALUATION BY FIXED PERCENTAGES VERSUS LIMITS OF NORMALITY

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Introduction: Non-specific ventilatory pattern (NVP) is defined as a low forced vital capacity (FVC), a low maximum expiratory volume at first second (FEV1), normal FEV1/FVC ratio and a normal total lung capacity (TLC). The American Thoracic Society/European Respiratory Society (ATS/ERS) guidelines recommends the interpretation of pulmonary function tests (PFT) based on normal limits of normality (5th percentile), not taking into consideration the use of fixed percentages of the predicted value.
Objectives: Evaluate PVI tests defined by fixed percentage and reinterpret them using the lower limits of normality (LLN), according to the European Coal and Steel Community (ECSC) reference equations.
Methods: Retrospective study of the analysis of pulmonary function tests (body plethysmography) performed since 2017 according to ATS/ERS quality criteria. All PFT characterized by a NVP defined by fixed percentages were included. The tests were reanalyzed using the limits of normality. All data were analyzed using software IBM® SPPS® Statistics version 22.
Results: 111 plethysmographys with NVP by fixed percentage (54.9% males and 92.8% Caucasian) were included, with an average of 62.16 years. The same tests were reanalyzed by the LLN method: 58.6% of the NVP became normal (NP), 35.1% continued as NVP and 6.3% became restrictive ventilatory pattern (RVP). A statistically significant difference was found in distribution between gender ($p = 0.018$), for men and women groups, we obtained 49.2% and 70% of NP, respectively. The patterns defined by the LLN showed statistically significant differences in age and the group of NP showed older ages ($p = 0.002$ in men and $p < 0.001$ in women). A statistically significant difference was noticed when comparing groups below and over 75 years ($p = 0.014$). In the group older than 75 years, we observed 16 PN (88.9%), in comparison to the group with 75 years or less (52.7% PN).
Conclusions: Interpretation of PFT using fixed percentages may lead to an overvaluation of functional changes, particularly in female gender and older ages. This work attests the importance of using LLN versus fixed percentage as recommended in international guidelines.

Keywords: *Pulmonary function test. Nonspecific ventilatory pattern. Fixed percentage. Limits of normality.*

CO 002. EXERCISE TEST RESULTS IN PATIENTS WITH ALVEOLAR-CAPILLARY DIFFUSION IMPAIRMENT: A COMPARATIVE ANALYSIS

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Introduction: Exercise capacity impairment in chronic respiratory patients is multifactorial and stems from the pathophysiological specificities of each disease. In COPD, among other factors, the role of dynamic hyperinflation is recognized. In diffuse lung diseases, reduction of lung compliance and lung microvasculopathy are relevant. Additionally, alveolar-capillary diffusion impairment is present in both COPD patients – namely in the context of pulmonary emphysema – and patients with diffuse (mainly fibrotic) lung diseases. The 1-minute sit-to-stand (1-STS) and 6-minute walk test (6MWT) evaluate the exercise capacity of chronic respiratory patients.
Objectives: Compare patients with COPD and diffuse lung diseases – with alveolar-capillary diffusion impairment – in their results in 1-STS and 6MWT tests. Understand the performance of these two tests in the measurement of exercise capacity impairment of these patients.
Methods: Prospective study taking place at the Pulmonology Department of a University Hospital Center including patients with prescription of 6MWT, without exclusion criteria for 1-STS. Patients first perform the 6MWT or 1-STS and, after rest, the other test. In this analysis, only patients with DLCO < 80% predicted are included

and two groups of patients are compared: COPD and/or pulmonary emphysema (COPD-E) [N = 54] and diffuse lung diseases(DLD) [N = 24]. The SPSS® program for statistical analysis has been used.
Results: In COPD-E and DLD patients, respectively, the prevalence of men is 66.7 and 62.5%(p = 0.799), the mean age is 64.6 and 61 years(p = 0.448), the mean BMI is 25.8 and 27.7 kg/m^2 (p = 0.074), the proportion of patients with mMRC dyspnea ≥ 2 is 56.6% and 29.2% (p = 0.03), the proportion of patients under home oxygen therapy is 11.1% and 4.2% (p = 0.427) and the mean DLCO is 52.6% and 54.8% (p = 0.559). In COPD-E patients, pre-BD FEV1 (median) = 44.6%; in DLD patients, pre-BD TLC(mean) = 89.7%. In DLD patients, the main diagnoses are: hypersensitivity pneumonitis(n = 5), idiopathic pulmonary fibrosis(n = 4), non-specific interstitial pneumonia (n = 4) and sarcoidosis(n = 4). In 1-STS, no significant differences between both groups were found in the blood pressure, heart rate and SpO2 responses, or end-test Borg (dyspnea/fatigue) scores. COPD-E patients performed significantly less repetitions than DLD patients (24.4 ± 6.1 and 30.2 ± 10.2, respectively; p = 0.015). In the 6MWT, no significant differences between both groups were found in the blood pressure, heart rate and SpO2 responses; However, end-test Borg(dyspnea) score is significantly higher in COPD-E patients than in DLD patients (5 ± 5 and 2.5 ± 5, respectively; p = 0.023) but no significant differences in end-test Borg (fatigue) scores were found. 6MW Distance is lower in COPD-E patients (395.5 ± 143m) than in DLD patients (413.1 ± 128.3m), but this difference is not statistically significant (p = 0.914).
Conclusions: Although both groups presented similar degrees of alveolar-capillary diffusion impairment, COPD-E patients had worse overall performance and became more symptomatic than DLD patients in these exercise tests. Furthermore, in these patients with alveolar-capillary diffusion impairment, the number of repetitions performed on 1-STS seems to better express the greater limitation of exercise capacity in COPD-E patients than the 6MWDistance. Thus, the 1-STS test may be more indicative of the contribution of specific COPD-E factors in exercise capacity impairment, namely dynamic hyperinflation.

Keywords: *6-minute walk test. 1-minute sit-to-stand. COPD. Diffuse lung disease. Alveolar-capillary diffusion impairment.*

CO 003. EXERCISE-INDUCED DESATURATION AND LUNG FUNCTION IN COPD, REAL LIFE DATA

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Introduction: Exercise-induced desaturation (EID) is a hallmark in COPD patients (pts) and a known predictor of mortality. The six-minute walk test (6MWT) has proven useful in accessing the functional status of pts with COPD. However, the relationship between 6MWT and respiratory function has a weak to moderate strength.
Objectives: To evaluate the correlation between 6MWT distance (6MWD) and oxygen desaturation (δSO2) during 6MWT and Pulmonary Function Test (PFT) parameters, and analyse potential determinants of a low walking distance and of EID in a real-life cohort of COPD pts.
Methods: We retrospectively identified COPD pts submitted to 6MWT and PFT in a tertiary hospital between July of 2017 and December of 2018. Information of lung function parameters and exercise tolerance evaluated by the 6MWT was analysed.
Results: 114 pts were included [80 men (70%), mean age 65 ± 12 years]. The mean 6MWT distance was 346 ± 82m and the mean values for FVC%, FEV1%, RV% and DLCO% were 98%, 64%, 165% and 60%, respectively. A 6MWT < 350m was found in 58 (51%) pts and δSO2 > 4% was observed in 55 (48%) pts. Using the Pearson's correlation test, significantly correlation was observed between 6MWD and FVC (r = 0.227, p = 0.015) and DLCO (r = 0.222, p = 0.023). We also found correlation between δSO2 and FEV1 (r = -0.377, p = 0.001), RV (r = 0.273, p = 0.005) and DLCO (r = -0.409, p = 0.001). In a multivariate analyses to assess the influence of PFT on distance and dessaturation of 6MWD, a 6MWD < 350m was positively associated with final Borg index (r^2 = 0.140, p = 0.01).
Conclusions: Despite observed correlations between PFT parameters and 6MWT (distance, δSO2), none of the studied PFT parameters were able to predict the final 6MWT outcome, pointing out that other determinants may be involved.

Keywords: *COPD. 6MWT. Lung function.*

CO 004. AMYOTROPHIC LATERAL SCLEROSIS: IMPORTANT SURVIVAL FACTORS

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Introduction: Amyotrophic lateral sclerosis (ALS) is a rare progressive neurodegenerative disease of the motor neuron, that ultimately leads to respiratory failure and death. The median survival of these patients is 2 to 5 years since the beginning of the disease. Factors as age, female gender and bulbar symptoms onset seem to be related to poor prognosis.
Objectives: Functional and clinical characterization of the patients with ALS and analyse their survival.
Methods: We conducted a retrospective study with evaluation of all patients with ALS that were referred to our centre's pulmonology consultation during a ten-year period. Clinical and respiratory functional test data were recorded. We used the software IBM SPSS Statistics 25 for data analyses. Kaplan-Meier curves were used to analyse overall survival and Mantel-Cox test to compare survival between groups. To compare the mean between FVC we used the parametric independent t-test. The results are presented in mean (± standard deviation) or median [25 percentile-75 percentile].
Results: Forty-three patients were included in the study, 21 of them female gender (48.9%). The mean age of diagnosis in women (67.5 (± 2.1) years) was more advanced than in men (62.6 (± 2)). Looking at the onset of the disease 22 patients had bulbar symptoms (51.2%) and 21 spinal symptoms (48.8%). 72.7% of the bulbar patients were women. We identified a normal respiratory pattern in 29 patients (67.4%), restrictive in 10 (23.3%) and obstructive in 4 (9.3%). The mean FVC was 80% (± 3.3) while the FEV1 median 85% [69-96] and TLC 91% [81-104]. The median maximal inspiratory pressure (MIP) was 42 cmH20 [24–55]. The bulbar patients had a mean FVC of 73% (± 23) and spinal patients 86.7% (± 20) (p = 0.039). The median survival since diagnosis was 22 months in women [10–25] and 27 months in men [9–78] (p ≥ 0.05). The survival in bulbar symptoms patients was 19 months [10-23] and in spinal patients 42 months [9-86] (p = 0.04). Patients with FVC equal or less than 80% had a mean survival of 23 months (± 5) while the ones with FVC superior to 80% revealed a mean survival of 53.1 (± 11) (p = 0.019). In the 43 patients 39 had criteria for non-invasive ventilation (NIV) although in 12 of them a correct adaptation was not possible (5 women and 7 men). The survival since the consultation for beginning NIV was 6 months [2-10] in the patients that did not adapt against 17 months in the patients that managed adaptation to NIV [9-58] (p = 0.007).
Conclusions: The distribution of disease was similar among the two genders, contrary to other studies that demonstrated a slight male dominance. Women had a later onset of disease and a median survival similar to men, although a higher prevalence of bulbar symptoms. Most of the patients had a normal respiratory pattern with a diminished MIP. FVC, adaptation to NIV and bulbar symptoms onset revealed to be the major prognostic factors in this study.

Keywords: *ALS. NIV. Survival.*

CO 005. NEW REFERENCE EQUATIONS: WHAT CHANGES IN THE STUDY OF ALVEOLAR-CAPILLARY DIFFUSION CAPACITY?

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Introduction: There are numerous reference equations available for conducting the Alveolar Capillary Diffusion Capacity study, however there are no standardized reference values for Europe. The Global Lung Function Initiative (GLI) recently published reference equations for Carbon Monoxide Diffusion Capacity for Caucasians. In clinical practice, the exchange of reference equations requires understanding of the impact of this exchange.
Objectives: To compare the interpretation of diffusing capacity of carbon monoxide using ERS-93 versus GLI-17 reference equations.
Methods: Cross-sectional study. Were included all caucasian individuals, aged 18 to 85 years, who underwent Pulmonary Function Tests (PFT), in the Pulmonary Function Laboratory of the Setúbal Hospital Center. PFT were performed, between January and May 2019, according to recommendations of the American Thoracic Society/European Respiratory Society (ATS/ERS) by the single breath method with carbon monoxide (CO). The functional parameters evaluated were Carbon Monoxide Diffusion Capacity (DLCOsb) and DLCO corrected for Alveolar Volume (DLCO/va). The interpretation was performed taking into account the lower limit of normality (LLN). Statistical analysis was performed using the statistical software of the IBM®, SPSS Statistics® version 22. A significance level of 5% was considered.
Results: We included 293 individuals, 60.4% male. The average age of the sample was 64.0 ± 12.46 years. Significant differences were observed for the mean DLCOsb and DLCO/va values when comparing the reference equations ERS-93 vs GLI-2017, in both genders (DLCOsb: pf < 0.001 and pm < 0.001; DLCO/va: pf < 0.001 e pm < 0.001). The mean LLN for DLCOsb in females was 5.2 ± 1.04 mmol/min/KPa (ERS-93) compared to 4.86 ± 0.70 mmol/min/Kpa (GLI-17) and the average LLN for DLCOsb in males was 6.2 ± 1.17 mmol/min/Kpa (ERS-93) compared to 6.0 ± 0.86 mmol/min/Kpa (GLI-17). For DLCO/va the mean LLN for females was 1.0 ± 0.13 mmol/min/KPa (ERS-93) compared to 1.1 ± 0.78 mmol/min/Kpa (GLI-17). In males the mean LLN for DLCO/va was 0.8 ± 0.12 mmol/min/Kpa (ERS-93) compared to 1.1 ± 0.43 mmol/min/Kpa (GLI-17). There was a higher proportion of DLCOsb alterations and higher severity when using the ERS-93 equations, however when corrected for the Alveolar Volume (VA), a higher proportion of DLCO/va alterations and greater severity was observed when using the GLI-17 equations, because VA predicted values are lower in GLI-17 equations.
Conclusions: The adoption of different reference equations leads to different interpretations of the results of the Carbon Monoxide Diffusion Capacity study, so it is necessary to standardize the reference equations that adequately represent the study population.

***Keywords**: Reference equations. DLCO. GLI-17.*

CO 006. RETROSPECTIVE EVALUATION OF MORBI-MORTALITY AND 6-MONTH SURVIVAL OF ≥ 75 YEAR OLD PATIENTS TREATED WITH NONINVASIVE MECHANICAL VENTILATION IN AN INTERMEDIATE CARE UNIT

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Introduction: Noninvasive mechanical ventilation has been established as a successful therapeutic option in respiratory failure, as it reduces the complications associated with invasive mechanical ventilation. In elderly patients with multiple comorbidities and potentially reversible acute respiratory insufficiency (ARI) that are not candidates to resuscitation manoeuvres, noninvasive mechanical ventilation reduces in-hospital mortality, without compromising postdischarge quality of life.
Objectives: Evaluate the morbimortality and the 6-month survival rate of ≥ 75 year old patients with acute respiratory insufficiency treated with noninvasive mechanical ventilation in an medical intermediate care unit. Identify factors associated with higher in-hospital and 6-month mortality rate as well as factors associated with higher 3-month hospital readmission rate.
Methods: Retrospective observational study conducted between October 2015 and December 2018 that included patients with ≥ 75 year old and acute respiratory insufficiency treated with noninvasive mechanical ventilation (NIV). Exclusion criteria were: ambulatory use of NIV, NIV as a rescue technique from invasive mechanical ventilation, AFR caused by a neurologic disease, and absence of adequate clinical data.
Results: Eligible for the study were 102 patients with the following in-hospital admission characteristics: mean age 84.2 year-old; 43% male; average Charlson and Barthel index of 7 and 30, respectively; average Score SAPS II of 39.1. 68.1% had a do-not intubate order. 94 patients (92%) presented with hypercapnic respiratory failure. Arterial blood gas values previous to the beginning of NIV: pH and pCO2 of 7.3 ± 0.08 and 64.2 ± 16.7, respectively. Main reasons for NIV introduction: decompensated heart failure (n = 81), pneumonia (n = 50), acute chronic obstructive pulmonary disease (n = 34) and sleep apnea–hypopnea syndrome/hypoventilation obesity syndrome (n = 19). Median days under VNI in the unit of 6 (total of 10). The rate of therapeutic failure was 7%. Average Barthel index of 35 at discharge. We identified the following factors associated with higher in-hospital mortality: age, SAPS II and time until the beginning of NIV. The only factor associated with higher 6-month mortality was the Barthel index at the time of hospital discharge. We found no factors associated with higher 3-month hospital readmission rate. In-hospital mortality rate was 21% and 6-month postdischarge mortality rate was 23%.
Conclusions: Noninvasive mechanical ventilation can be used successfully in the elderly, even in less well studied acute respiratory insufficiency causes like pneumonia. In our cohort, in-hospital mortality was similar to what is described in the literature for specific respiratory units. The delay in the beginning of the technique was identified as a factor associated with higher in-hospital mortality. The deterioration of patients' global health condition during hospital stay has an impact in long-term mortality, highlighting the importance of a global and eclectic approach to these patients.

***Keywords**: Acute respiratory insufficiency. Noninvasive mechanical ventilation. Elderly. Mortality.*

CO 007. ADDITION OF PEEP/EPAP DURING NOCTURNAL VENTILATORY SUPPORT IN PATIENTS WITH SEVERE RESTRICTIVE DISORDERS: PHYSIOLOGICAL EFFECTS AND TOLERANCE IN A RANDOMIZED PILOT STUDY

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Introduction: In patients with nocturnal hypoventilation due to Severe Restrictive Disorders (SRD) (namely neuromuscular disorders-NMD), events defined by poligraphic study software as obstructive or central apneas/hypopneas, can be misinterpreted and lead to suboptimal ventilatory settings. These events may, in reality, be only related to respiratory muscle weakness and not to any kind of apnea, therefore, that may not indicate the necessity to add PEEP/EPAP that can compromise the level of pressure support.

Objectives: To analyse the physiological effects and the need of PEEP/EPAP during sleep in patients with severe restrictive disorders under Non-Invasive Mechanical Ventilation (NIV) for more than 20h/per day.
Methods: A randomized prospective cross-over study was performed in 16 patients with a median age of 51.5 (39.7-64.7) years, that included 13 NMD and 3 severe kyphoscoliotic patients, with a severe restrictive ventilatory syndrome, median FVC (% predicted) of 38.5 (26.5-50.2). In two consecutive nights, they were randomly assigned to sleep one night with a PEEP/EPAP of 0 cmH2O and the other night with a PEEP/EPAP of 8 cmH2O, maintaining all the other ventilatory support parameters. All of them performed a home cardio-respiratory sleep study (Embletta, Resmed®, 7 channels, including X-Actrace-RIP and pneumotacograph). Subjective sleep quality, comfort and nocturnal dyspnea (Visual Analogical Scale-0-10), respiratory events and oxygen saturation parameters were analyzed and compared between the two nights.
Results: The attached table (PDF) presents the results. Only one patient did not tolerate PEEP/EPAP of 8 cmH2O and slept with a PEEP/EPAP of 6 cmH2O.
Conclusions: The application of PEEP/EPAP did not show superiority in terms of sleep parameters and symptomatic improvement. Although further research is warranted, the results of this pilot study suggest the use of noninvasive ventilatory support without the addition of PEEP/EPAP in patients with SRD, especially NMD.

Keywords: *Severe restrictive disorders. PEEP/EPAP. Non invasive ventilation.*

CO 008. MAXIMUM INSUFFLATION CAPACITY AND ASSISTED PEAK COUGH FLOW IN NEUROMUSCULAR PATIENTS: IMPACT OF LUNG RECRUITMENT MANEUVERS

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Introduction: Lung volume recruitment (LVR) maneuvers have a significant impact on increasing the Maximum Insufflation Capacity (MIC) and Assisted Peak Cough Flow (PCFass) and slow the rate of decline in Vital Capacity (VC) in neuromuscular patients. However, in these progressive diseases, it is important to characterize the evolution of the MIC/VC difference and its correlation with the maintenance of effective PCFass and consequent respiratory stability in this population.
Objectives: To evaluate the impact of daily LVR maneuvers in MIC and PCFAss values and to analyze the evolution of relation MIC/VC and PCF/PCFass over a 6-year period in neuromuscular patients.
Methods: Prospective study including patients followed at the Multidisciplinary Pulmonology Consultation -Neuromuscular Diseases of a central hospital- with a maximum VC of 2L and spontaneous PCF < 200 L/min, who were prescribed daily LVR maneuvers between 2013 and 2019. At each visit, the efficacy of the LVR maneuver was evaluated and the VC, MIC, spontaneous PFT and PFTass values were recorded in all patients. Compliance, duration of home ventilation and survival were also analyzed. Patients with Amyotrophic Lateral Sclerosis (due to the bulbar involvement of the disease), concomitant intrinsic pulmonary disease and inability to cooperate in PVR maneuvers were excluded from this analysis.
Results: We included 22 patients (6 women) with a mean age of 41.5 ± 19.2 years and the following diagnoses: Duchenne Muscular Dystrophy (n = 5), Congenital Myopathy (n = 6), Type 2 Spinal Muscular Atrophy (n = 4), Poliomyelitis sequelae (n = 2), Spinal Cord Injury (n = 2), other neuromuscular diagnoses (n = 3). During the 6 years of follow-up, there was a statistically significant decline in VC (from 1.052 ± 0.642 L to 0.718 ± 0.631 L; p = 0.019) and spontaneous PCF (from 216 ± 101 L/min to 156 ± 123 L/min; p = 0.023). Regarding the MIC and PCTass values despite the decline, there was not statistically significant: MIC from 2.156 L ± 0.978 L to 1358L ± 0.949 L; p = 0.083 and PFTass from 277 ± 99 L/min to 215 L/min ± 43 L/min; p = 0.192. The difference between MIC and VC over 6 years remained stable, with a decline rate of 0.04 liters per year. The difference between assisted and spontaneous PCF also remained constant (annual decline of 1.3 l/min). The mean adherence and mean duration of Home Ventilation were 22.2 ± 2.1 hours/day and 106.2 ± 55.8 months, respectively. During the 6 years of analysis, 2 patients died, all due to non-respiratory causes.
Conclusions: PVR maneuvers have a significant impact on the stability of MIC and PCFass values despite a progressive loss of spontaneous CV and PCF values. Thus, neuromuscular patients with preserved bulbar muscle function who have decreased spontaneous VC and PCF values benefit from daily use of PVR maneuvers to maintain their ventilatory stability and cough effectiveness that is critical for good bronchial hygiene.

Keywords: *Maximum insufflation capacity. Assisted peak cough flow. Neuromuscular.*

CO 009. BREAST TUBERCULOSIS AND MYCOBACTERIUM ABCESSUS MASTITIS AFTER REDUCTION MAMOPLASTY: 2 CASE REPORTS

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Case reports: Case 1: Breast tuberculosis is a rare disease, with an incidence of less than 0.1% of all breast lesions in Western countries and 3-4% in tuberculosis endemic regions, such as India and Africa. We report the case of a 85 years-old woman, non-smoker with obesity, hypertension and dyslipidemia, resident in Portugal. In May 2017 she detected a painless tumefaction on the right breast without complaints of fever, dyspnea, cough or constitutional symptoms. It was performed a breast ultrassonography and a chest CT that showed a 10 × 3.5 cm polylobed lesion centered in the inner quadrants of the right breast, extending from the cutaneous surface to the anterior thoracic wall. The diagnostic hypothesis were breast abscess or an overinfected breast. It was performed a core biopsy concordant with giant multinucleated cells with necrotic areas, no signs of malignity and a positive PCR for M. tuberculosis. It was started a tuberculostatic scheme with isoniazid (H) ryfampicin (R), pirazinamide (Z) and ethambutol (E) on october 2017. On January 2018 it was performed a chest CT to evaluate the response and it was seen a reduction on the size of the breast lesion to 6.5 × 2 cm, so it was progressed to the maintenance with 3 drugs (HRE), because the susceptibility test wasn't available at that time. Case 2: Mycobacterium abscessus is a rapidly growing mycobacterium usually causing skin and soft tissue infections in immunocompetent patients following contaminated traumatic or surgical wounds or contaminated injected medications. Infection with these organisms is exceptionally rare following breast surgery in the absence of a prosthetic implant. We report a case of a 43 year- old Brazilian woman, non smoker, with no significant medical history, HIV- negative. She underwent bilateral reduction mammaplasty in March 2016. Two months after surgery, she presented with left breast swelling and tenderness. The clinical examination revealed redness, induration, swelling and purulent drainage of the left breast scar. At that time, Zhiel-Neelsen staining in the pus showed acid-fast bacilli and M. abscessus was identified and confirmed in two subsequent cultures. The treatment with clarithromycin and amikacin was started in June 2016, with insufficient response, so it was added ethambutol in August and linezolide in September. She completed 4 months of treatment with the 4 drugs before she moved to Portugal in December 2017. The treatment was interrupted and there was a clinical worsening and recurrence of the purulent drainage. Breast ultrasonography showed an abscess around the mam-

maplasty scar (17 × 7 mm). It was restarted treatment in January 2017 with clarithromycin, amikacin, linezolide and clofazimine, discontinued after 3 days because of nausea. Amikacin was discontinued after 6 months in relation with toxicity and it was maintained treatment with clarithromycin, linezolide and clofazimine during 7 months, until august 2017. It was maintained treatment with clarithromycin and clofazimine, and it was achieved clinical and imagiological improvement.
Discussion: The authors describe these 2 cases not only because of its rarity, but also because of the challenging clinical and therapeutic management.

Keywords: *Breast tuberculosis. Mycobacterium abscessus mastitis. Mamoplasty.*

CO 010. BCGITIS: A RARE COMPLICATION OF INTRAVESICAL BCG. A CASE SERIES

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Introduction: Intravesical BCG is currently approved for the treatment of superficial carcinoma of the bladder after transurethral resection (TUR). Although it is well tolerated, there are some reports describing localized or systemic dissemination of the Mycobacterium bovis, called BCGitis.
Case reports: Case 1: Male, 64 years-old. He had a history of in situ bladder adenocarcinoma treated with TUR + mitomycin + intravesical BCG until 06/2012. In 2015 new ulcerated lesions were detected in the bladder. Histology revealed chronic inflammatory infiltrate with foci of necrosis and Mycobacterium bovis was isolated. Pulmonary involvement was excluded and HIV was negative. It was proposed isoniazid, rifampicin and ethambutol (HRE) for a period of 6 months. The patient presented clinical and imaging improvement. Case 2: Male, 69 years-old. He had history of in situ bladder adenocarcinoma, submitted to TUR + intravesical BCG. Four days after the last instillation, the patient presented a cystitis and he began a treatment with fluoroquinolone without clinical response. Microbiological and mycobacterial tests were negative. Due to suspicion of localized BCGitis, he was admitted to the hospital and he started HRE. The patient presented a good clinical response after starting treatment, so he maintained it for 6 months. Case 3: Male, 72 years-old. He had a history of urothelial carcinoma. He was treated with TUR+intravesical BCG until 12/2013. On 02/2014 he was admitted at the hospital for a pneumonia and started amoxicillin/clavulunate. In this context, the patient underwent a thoracic-CT, which showed a random micronodular pattern associated with hilar/mediastinal lymph nodes. The bronchoalveolar lavage (BAL) was positive for the Mycobacterium tuberculosis complex DNA test and the patient started HRE and pyrazinamide (Z) with clinical improvement. Meanwhile, the culture test was positive for Mycobacterium bovis and a diagnosis of disseminated BCGitis was made. Pyrazinamide was suspended. In the maintenance phase, only isoniazid and rifampicin were maintained. After 6 months of treatment, the patient presented a good clinical/imaging response. Case 4: Male, 73 years-old. He had a history of bladder carcinoma which was treated with TUR + intravesical BCG. One year after beginning BCG, he was hospitalized on suspicion of disseminated BCGitis. Thoracic-abdominal-CT showed a random bilateral micronodular pattern and liver/splenic nodules. The BAL study was negative and a liver biopsy showed granulomatous inflammatory process. It was assumed the diagnosis of disseminated BCGitis and it was started HRE. The treatment was suspended twice for haematological toxicity. Due to the absence of clinical/imaging improvement and adverse effects of treatment, a new BAL was performed: positive Mycobacterium tuberculosis complex DNA test and negative culture examination. It was decided to start HRZE + amikacin. Since then no new adverse effects appeared and after 2 months it was initiated the maintenance phase with HRE. In the end, he fulfilled a 9 months of treatment with clinical/imaging improvement.
Discussion: The diagnosis of BCGitis remains a challenge due to its extreme rarity in immunocompetent patients and its poorly understood pathogenesis. The authors aim to alert to the symptoms/signs that should lead to their suspicion as well as to emphasize the need for close surveillance in patients undergoing intravesical BCG.

Keywords: *BCGitis. Mycobacterium bovis. Intravesical BCG.*

CO 011. PULMONARY TUBERCULOSIS: CAVITATED VS NON CAVITATED. DIFFERENTIATING FINDINGS

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Introduction: Tuberculosis is common infectious disease with the potential to affect virtually any organ or system, with the respiratory system being the most commonly affected.
Objectives: To identify clinical and laboratory distinctive features in patients diagnosed with cavitated (TPC) and non-cavitated pulmonary tuberculosis (TPNC).
Methods: Retrospective analysis of imaging, clinical (including symptoms and comorbidities), laboratory and anatomopathological findings, of all patients diagnosed with pulmonary tuberculosis who were observed at the Coimbra Pneumological Diagnostic Center (CDPC) during the period between January 1, 2014 and December 31, 2016.
Results: A total of 110 patients were included, of which 75 men (68.2%), with a mean age of 49.45 ± 18.8 years. The most frequently reported symptoms were cough (63.2%), weight loss (44.6%), asthenia 36.4%) and fever (31%). Based on the imaging findings, two groups were defined: 35 patients (31.8% of the sample) had cavitation-tuberculosis compatible (TPC) X-ray and the remaining 75 patients (68.2%) without cavitation-related tuberculosis (TPNC). In both groups the most frequent gender was male (64.1% of TPNC and 77.1% of TPC). The mean age was also higher in the group of patients with TPNC (51.6 years vs 44.8 years in TPC). Individuals with TPNC had more comorbidities per individual (1.24 vs 1.14 in TPC), a higher proportion of addicted or former drug users (13% vs 8.8% in TPC), and patients with cancer (13.1% vs 6.25%), HIV+ (8.6% vs 5.7%) and HVC/HBV + (12.9% vs 8.8%). Although with less noticeable difference, TPNC had an even higher proportion of individuals with diabetes mellitus (5.9% vs 2.9%) and lung disease (15.9% vs 12.9%). Individuals with TPC had a higher proportion of smoking (12.5% vs 8.7%) than TPNC. The diagnostic modalities also showed differences between groups, being the diagnosis in patients with TPNC mostly obtained by Cultural exam (50.6%), followed by lung biopsy (24%), Direct Exam + TAAN (18.4%). In the case of TPC patients, the diagnosis was obtained by Cultural exam in 85.8% of cases, by Direct EXAM + TAAN in 8.6%. No diagnosis by biopsy. Regarding symptoms, individuals in the TPC group had a higher average number of symptoms compared with the TPNC group (2.23 vs 1.71 symptoms per patient). Patients with TPC had a higher proportion of individuals with dyspnea (25% vs 15.3%), cough (75.9% vs 56.9), fever (39.3% vs 26.8%), sweating (21.4% vs 14.3%) and weight loss (51.9% vs 41.1%). On the other hand, individuals with TPNC had a higher proportion of hemoptysis (16.7% vs 10.7%). Little expressive differences were found in the proportions of individuals with thoracalgia (15.8% of TPNC vs 14.3% in TPC) and asthenia (35.6% in TPNC vs 37.9% in TPC). Differences in treatment duration were also noted, with a mean duration of 7.63 months in subjects with TPNC vs 8.5 months in subjects with TPC.
Conclusions: Despite the dimensional asymmetry between groups, there were important differences in the mode of diagnosis, main

symptoms, comorbidities and duration of treatment between groups of patients with TPNC and TPC.

Keywords: *Pulmonary tuberculosis. Cavitation. Clinical findings.*

CO 012. TUBERCULOSIS INVOLVEMENT OF TWO RESPIRATORY ORGANS: FROM UNCERTAINTY OF DIAGNOSIS TO RETREATMENT CHALLENGE

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Introduction: Due to its pathogenic specificities, the causative agent of tuberculosis (TB) affects primarily the lungs, occurring sometimes extrapulmonary involvement, concomitantly. The occurrence of a granulomatous inflammatory process of larynx, nevertheless rare, should be considered in the presence of ulcerative lesions and/or tumefaction at this level, being a differential diagnosis of neoplasia.
Case report: We present a clinical case of a 32-year-old male patient, Caucasian, unemployed, active smoker; he had personal antecedents of latent infection tuberculosis (after exposure to a case of active TB) with an incomplete treatment due to dropout, and progression to bilateral, pulmonary tuberculosis, in three years, with successfully completed 9 month-therapeutic regimen. The patient remained asymptomatic for four years; then he initiated progressive dysphagia and odynophagia, with multiple recurrences to health department, always medicated to symptom control, but with no reports of clinical improvement; subsequently he developed productive cough with clear secretions, asthenia, fever and marked weight loss. At otolaryngology evaluation, epiglottis edema and scattered ulcerative lesions were observed; biopsy of one of the lesions documented an inflammatory process with many epitelioid granuloma, with Langerhans giant cells and central necrosis, as well as positive stain for acid-fast bacillus of Mycobacterium tuberculosis (Mt). A therapeutic regimen with isoniazid (H), rifampicin (R), pirazinamide (Z), etambutol (E), levofloxacin (Lfx) and amikacin (Amk) was initiated. Sputum microscopy and culture were both positive for Mycobacterium tuberculosis complex. Rapid HIV was negative. Molecular test was negative for resistance to isoniazid and rifampicin. Susceptibility testing for first line antibacillary agents, performed on sputum sample, was like one of the previous tuberculosis episode, revealing resistance only to streptomycin. Clinical evolution was progressively favourable, with resolution of odynophagia and sputum negativity, however, large, cavitated, pulmonary lesions were still evident...
Discussion: This case illustrates that, even though supraglottic lesions are frequently unspecific, bacillary etiology should not be ruled out, especially when associated with consumptive symptoms. Even if infectious process involves, beyond lungs, an extrapulmonary structure, this case comprises participation of two contiguous organs in respiratory tree. The retreatment context, with substantial probability of resistance, constituted an element of complexity in the patient approach. The study of possible concurrent factors to this early relapse would be equally interesting.

Keywords: *Retreatment. Tuberculosis. Larynx.*

CO 013. PULMONARY NOCARDIOSIS IN AN HIV-NEGATIVE PATIENT COMPLICATING PLEURAL AND CHEST WALL TUBERCULOSIS

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Introduction: Musculoskeletal and joint tuberculosis (TB) is uncommon, accounting for less than 10% of EPTB cases. Chest wall abscesses are rare forms of TB. Nocardiosis is an infrequent infection, usually in immunocompromised hosts. There is an established association between isolation of Nocardia spp and Mycobacterium tuberculosis (MTB), especially in individuals with human immunodeficiency virus (HIV). We present a case of pulmonary nocardiosis in an HIV-negative individual complicating chest wall and pleural TB.
Case report: A 68-year-old male patient, non-smoking, HIV-negative with extensive pleural calcification secondary to pulmonary and pleural TB treated in 1977. In December 2017, he had anorexia, productive cough, chest pain, and swelling in the left hemithorax at 1 month. A computed tomography (CT) was performed and showed “calcified pleural plaques on the left;,bronchiectasis and pulmonary micronodules; soft tissue mass on the left lateral aspect of the chest wall, with peripheral contrast uptake and contact with the pleural cavity and 6th costal arch ”. The abscess was drained, whose direct microscopy was negative for mycobacterias, but PCR and subsequent culture positive for MTB; there was no MTB in the sputum and or bronchoalveolar lavage. Rifampicin (R), isoniazid (H), pyrazinamide (Z) and ethambutol (E) were started. During the continuation phase, the abscess increased to the pleural space, soft tissues, costal arches and spontaneous drainage to the outside. During this phase, multiples punctures were performed to collect material for microbiological and molecular analysis and reassessment of the antimicrobial susceptibility profile. After a multidisciplinary discussion, in August 2018, the patient is hospitalized to start a new antibacillary regimen [HRZE + levofloxacin (LFX) + amikacin (AMK)] and subsequent surgical debridement of the chest wall. Histology of the tissue showed caseous granulomas, but direct, molecular and cultural tests were negative for MTB. The patient was discharged 18 days later with a recommendation to maintain HRZE + LFX therapy. However, in the sputum samples there was culture and PCR positives from Nocardia spp. After a new multidisciplinary discussion, the patient was hospitalized and empirical treatment of pulmonary nocardiosis was started with sulfamethoxazole-trimethoprim (SMX-TMP) and AMK for 4 weeks and subsequently SMX-TMP and cefuroxime for 6 months. Maintenance of prophylactic SMX-TMP until the end of TB treatment. After the antibacillary treatment is completed, the patient has no constitutional, local and respiratory symptoms, presenting with healing of the chest wall and radiological improvement.
Discussion: This case is of clinical interest since these pathologies are rare and difficult to treat, requiring constant multidisciplinary discussions. Antibacillary treatment is the first-line treatment of pleural and chest wall TB, but the surgical approach is essential if there is no response. Pulmonary nocardiosis can clinically and radiologically mimic pulmonary TB, and an accurate clinical sense is essential for the diagnosis of the former. The treatment of these conditions is different and may be negatively related and predisposing to clinical deterioration if both are not treated correctly and directed.

Keywords: *Pulmonary nocardiosis. Pleural and chest wall tuberculosis.*

CO 014. TUBERCULOS<IS OUTBREAK IN A BRAZILIAN IMMIGRANT COMMUNITY

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Introduction: A significant number of tuberculosis (TB) cases have been reported in immigrants from high incidence countries. Portugal is currently considered a country with a low incidence of TB. A Tuberculosis outbreak is defined when the number of TB cases is greater than expected in a given time, geographic area or popula-

tion with evidence of recent transmission i.e. 2 or more contacts are diagnosed with TB disease and molecular typing identifies identical profiles. A Probable Outbreak is defined as 2 or more cases of active disease with an epidemiological link but no molecular typing.
Methods: The authors describe a probable outbreak of TB among immigrants from Brazil, at the Torres Vedras Pneumologic Diagnostic Center, whose common epidemiological factor was the usual coexistence in a local Evangelical Church.
Results: In June 2015, a 29 years old female patient, Brazilian immigrant, was referred for bacilliferous cavitary pulmonary tuberculosis, whose symptoms duration until diagnosis was 151 days (index case). She began treatment and close contacts were screening at once, following a concentric cycle approach. The first circle of contacts included the 3-year-old son and the 31-year-old husband. Both were found to have bacilliferous TB. It was found to be Brazilians living in Portugal for 8 years; the wife worked at home and took care of her 3-year-old son (did not attend daycare) and the husband worked in a greenhouse. Given the two cases of TB disease in the first circle, it was decided to broaden the screening and prioritize contacts. The family attended the local Evangelical Church - a closed, small and poorly ventilated space, so all the churchgoers (32 Brazilians and 2 Portuguese, including children) were screened and identified as follows: a) Three cases with TB disease - one female (35 years old) and 18 months old daughter; a 14-year-old male with ganglionar TB. b) 7 cases with Latent Tuberculosis Infection (LTBI). The investigation continued into contacts (15) of each case with TB disease, counting three cases with LTBI and no cases of TB disease. Although there was no genetic identification of the strains, there is a clear epidemiological link between the patients (all attending the church) - 6 cases of disease and 7 cases of LTBI. In all patients, M. tuberculosis was identified (sensitive to all first-line drugs), none had HIV or other immunosuppression, and all completed treatment. All contacts with LTBI were treated with isoniazid and have no evidence of disease to date. There were no more associated TB cases in the following two years period.
Conclusions: For the effective diagnosis of a Tuberculosis Outbreak are crucial: A high index of suspicion, especially in individuals belonging to at-risk groups, namely immigrants. Knowledge of local epidemiology (TB incidence). Evaluation of contexts that facilitate the spread of the disease, following the methodology of prioritization of contacts.

Keywords: *Tuberculosis. Outbreak.*

CO 015. PULMONARY TUBERCULOSIS: A CASE OF RETURN TO THE PAST!

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Introduction: Primary tuberculosis is usually self-limiting, whereas post-primary tuberculosis is progressive, characterized by pulmonary cavitation, hematogenous and bronchogenic dissemination. This process, subsequent fibrosis and calcification can cause significant structural changes with severe parenchymal destruction and lead to important lung function impairment. Until the development of anti tuberculosis drugs in the 1950s, we had no effective means of stopping this process. Currently, delayed diagnosis and initiation of therapy and their ineffectiveness or non-compliance are increased risk factors for further lung injury. These cavitations provide an ideal environment for colonization by microorganisms, namely Aspergillus fungi. In these situations host immunity is the major determinant of disease severity ranging from aspergillomas (fungus balls within pre-existing cavities) to invasive pulmonary aspergillosis.
Case report: 35-year-old man diagnosed with tuberculosis in 2015 after over 1 year of symptoms (fever, weight loss, productive cough), initial presentation with extensive pulmonary destruction, multiple cavitations leading to near obliteration of the upper lobes. After the diagnosis the patient completed a 6 month regiment of antituberculosis drugs and left medical follow-up at the end of it. Four years after this initial diagnosis the patient returned to the Emergency Department presenting with moderate volume hemoptysis (~ 100 mL) and also 4-months-old complains of productive cough with mucopurolent sputum, without fever or other symptoms. Chest CT showed bilateral cavitations in the apical segments of the upper lobes, associated with varicose and cystic bronchiectasis, presence of hypodense content inside the cavitations (intracavity content not present on previous CT performed 5 months earlier). HIV testing was negative and other immunosuppressive disorders were excluded. Considering the diagnostic hypothesis of infected bronchiectasis, he started empirical antibiotic therapy with amoxicillin/clavulanic acid and antifibrinolytic therapy, while maintaining daily hemoptysis (10-100 mL/day). Videobronchofibroscopy revealed bilateral diffuse hemorrhage, making resolution impossible with this technique. Since hemoptysis persisted, Galactomannan testing was positive both in serum and BAL, Aspergillus IgG 178 mg/dL and Total IgE 134 mg/dL, and considering the imaging findings, the hypothesis of aspergilloma was admitted. The patient underwent right upper lobectomy and the histopathological examination of the surgical specimen confirmed the presence of multiple necrotic nodules with hyphae without tissue invasion compatible with aspergilloma. No further blood loss after surgery, discharged after seventeen of the intervention and 4 weeks of antifungal therapy. Proposed for elective upper left lobectomy and is currently awaiting this second procedure.
Discussion: Within the spectrum of chronic pulmonary aspergillosis, aspergilloma is the usual form of presentation in immunocompetent patients, constituting the least aggressive manifestation of the disease and no therapy is indicated in asymptomatic cases. Surgical resection is the definitive treatment option and should be considered in cases of severe hemoptysis. When performed by experienced teams relapses are rare. Antifungal therapy, used when there is surgical contraindication, is usually ineffective. The authors highlight the relevance of this case by the rarity and severity of the pulmonary destruction presented, demonstrating the natural evolution of tuberculosis with impressive and nowadays unusual CT images.

Keywords: *Tuberculosis. Pulmonary cavitation. Hemoptysis. Aspergiloma.*

CO 016. ABDOMINAL TUBERCULOSIS. CASE REPORT

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Introduction: Abdominal tuberculosis is a rare form of tuberculosis and it comprises around 5 percent of all cases of tuberculosis worldwide. This disease includes involvement of the gastrointestinal tract, peritoneum, lymph nodes, and/or abdominal solid organs.
Case report: 42-year-old negro female patient, housekeeper, born in Angola (resident in Portugal since 2000), currently living with her husband and two sons (8 and 15 years-old). Clinical history of pulmonary tuberculosis by the age of 20 (she was under specific therapy for one month only, in Angola), sickle cell trait, asthma. Non-smoker, with ethyl habits of 10 g/day and contact with an aunt with tuberculosis by the age of 12. The patient resorted to the emergency service due to progressive painless increase of the abdominal volume for the past three months, combined with diarrhoea, vomiting and fever for the past week. Objective clinical examination showed moderate ascites. The patient was then hospitalized for complementary study. Paracentesis showed lactate dehydrogenase

(LDH) of 642U/L, proteins of 6.1 g/dL, glucose of 73 mg/dL, adenosine deaminase (ADA) of 255 U/L, mononucleocytes of 72.3%; Abdominopelvic computed tomography (CT) angiography showed high volume ascites, mesenteric thickness, spleen with volume within the normal values but presenting small infracentimetric hypodense lesions diffusely distributed by the spleen parenchyma (microabscesses/secondary lesions), small bilateral pleural effusion, some infracentimetric retroperitoneal lymph nodes; positron emission tomography-CT (PET-TC) showed uptake in bilateral internal mammary chain lymphadenopathies, abdominopelvic lymphadenopathies and abdominopelvic peritoneal lesions, as well as heterogeneous diffuse glycolytic spleen hypermetabolism; Thoracic-CT showed bilateral pleural effusion, a 5 mm nodule in the middle lobe, large volume ascites with mesentery root densification suggestive of peritoneal carcinomatosis; Two negative sputum cultures; HIV negative. She performed CT-guided aspiration needle biopsy of the peritoneal lesions with Mycobacterium tuberculosis isolation, molecular resistance test (MRT) with negative rifampicin (R) and isoniazid (H) resistance mutations, histology with necrosis-free granulomas, antibiotic susceptibility test was negative for resistance to any of the first-line drugs. The patient started anti-bacillary therapy with H, R, Pyrazinamide (Z), Ethambutol (E) and amikacin. Suspended amikacin after MRT results. Afterwards the therapy was changed to the continuation phase, with HR. At this therapeutic stage, chest X-ray showed no apparent pleural effusion and abdominal ultrasound showed small ascites and some lymphadenopathies in the hepatic hilum.
Discussion: The authors present a clinical case of abdominal tuberculosis, a challenging condition due to its perilous diagnostic path, since clinical manifestations and results of laboratory and imaging studies are often nonspecific. Abdominal echography may present mesenteric thickness, ascites and mesenteric lymphadenopathy, as well as solid organ involvement. Ascitic fluid examination reveals straw coloured fluid with high protein, serum ascitis albumin gradient less than 1.2 g/dL, predominantly lymphocytic cells, and adenosine deaminase levels above 40 U/L. Management is with conventional antitubercular therapy for at least 6 months.

Keywords: *Tuberculosis. Abdominal.*

CO 017. BCGITE, A RARE BUT POSSIBLE COMPLICATION OF INTRAVESICAL BCG TREATMENT

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Introduction: Bacille Calmette–Guerin (BCG) is a common approach as immunotherapy treatment for urothelial carcinoma in last decades. In most cases it is well tolerated, however, disseminated BCGitis is a possible and serious complication of this therapy. We present 4 clinical cases of BCGitis observed at the Centro de Diagnóstico Pneumológico Dr. Ribeiro Sanches (CDP-RS) in the last 2 years.
Case reports: Case 1: a 59-year-old man with high-grade infiltrative urothelial carcinoma, treated in April 2017 with intravesical BCG and referred in September 2017 to CDP-RS for prostate biopsy histology with necrotizing granulomas suggestive of TB. Case 2: a 92-year-old man with high-grade papillary urothelial carcinoma, treated in August 2017 with intravesical BCG and referred to CDP-RS for right orchitis with testicular histology showing granulomatous skin infiltration with isolation of Micobacterium bovis in the exudate. Case 3: a 73-year-old man with high-grade bladder urothelial carcinoma treated in April/2018 with intravesical BCG and who began in May 2018 complaints of urinary culture with positive urine culture for M. bovis. Case 4: a 73-year-old man with prostatic invasion of urothelial bladder carcinoma who started intravesical BCG in March 2019. In April 2019, he presented with urosepsis, with mycobacterial DNA screening for positive polymerase chain reaction (PCR), although with negative direct and cultural examination. With the exception of patient in case 4, who is still under treatment, all others completed 6 months with Isoniazid, Rifampicin and Ethambutol, with clinical recovery.
Discussion: Although BCG immunotherapy is relatively safe, and most patients have only local side effects, there are several reported cases of BCGitis, with more severe complications occurring in about 3% of cases. The pathogenesis of this entity is still unclear, but it is thought that it may result from the combination of hematogenous dissemination with hypersensitivity reaction, which explains the low accuracy of the microbiological investigation. In most cases is an exclusion diagnosis and supported by a clinical history with a suggestive causal and temporal relationship. PCR detection of M. bovis has already been described, although not yet available in most hospital institutions. For this reason, the diagnosis is often inferred from the positivity of M. tuberculosis complex PCR detection. In this report, where we presented 4 cases with BCGitis, we intend to alert to the potential local and systemic complications of BCG therapy, as well as the importance of early recognition and appropriate treatment of this entity.

Keywords: *Tuberculosis. BCGite.*

CO 018. RESIDUAL EXCESSIVE SLEEPINESS IN PATIENTS WITH OBSTRUCTIVE SLEEP APNEA ON POSITIVE AIRWAY PRESSURE TREATMENT

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Introduction: Excessive daytime sleepiness is a common symptom in patients with obstructive sleep apnea (OSA). Positive airway pressure (PAP) therapy objectively reduces this symptom in most patients, but a variable percentage maintain residual excessive sleepiness (RES) despite good adherence to this treatment.
Objectives: To explore the potential causes of RES in OSA patients appropriately treated with PAP.
Methods: Retrospective cohort study that included patients followed at the sleep clinic of a central hospital over a 5-year period. Inclusion criteria (all of them): OSA diagnosis; ≥ 1 year of PAP treatment and mean use ≥ 4 hours/night on ≥ 70% of nights; Epworth sleepiness scale (ESS) ≥ 11; apnea-hypopnea index (AHI) < 5/hour in ventilator software analysis; oximetry with no nocturnal hypoventilation; therapeutic polysomnography (PSG) followed by multiple sleep latency test with evidence of pathological sleepiness without criteria for narcolepsy. Patients who met all of these criteria but who had residual AHI > 5/hour on therapeutic PSG were excluded, thus assuming ineffective treatment of the disease as the cause of RES. Demographic data were analyzed and potential causes of RES explored.
Results: We included 24 patients, 62.5% male. The average age at diagnosis of OSA was 52.3 ± 10.6 years. 29.2% of patients had mild OSA, 33.3% moderate OSA and 37.5% severe OSA. The mean pretreatment value in the ESS was 17.9 ± 3.2 and the mean postreatment value was 15.5 ± 2.4. The mean duration of PAP treatment was 38.8 ± 27.2 months, with a mean percentage of days of use of 93.5 ± 8.5% and average use of 6.7 ± 0.9 hours/night. 87.5% of patients were under APAP, 29.2% under CPAP and 8.3% under bilevel PAP. Regarding non-OSA-related causes of sleepiness 45.8% of patients had diagnosis of depression, of which 90.9% were on antidepressant treatment (predominantly serotonin reuptake inhibitors); 25.0% were on daily benzodiazepine therapy; 8.3% worked shifts; 8.3% were under antiepileptic treatment; 4.2% had advanced chronic kidney disease; 4.2% had fragmented sleep due to children in their

care; 4.2% were under regular antihistamine treatment and 4.2% had dementia. In the analysis of therapeutic PSG data, it was found that the mean residual AHI was 2.1 ± 1.4/hour, 16.7% of patients had a percentage of deep sleep ≤ 10% of total sleep time (TST), and 83.3% of the patients had a REM sleep percentage ≤ 20% of the TST. 2 patients were diagnosed with restless leg syndrome after therapeutic PSG and started targeted therapy.
Conclusions: The presence of comorbidities and/or drugs that potentially induce sleepiness was relevant in this group of patients, predominantly depression and treatment with antidepressants and benzodiazepines. These data are relevant because of the frequent impossibility of withdrawing these drugs from the patients' treatment regimen, constituting a subgroup of patients with expected lower benefit from PAP therapy in improving sleepiness.

Keywords: *Obstructive sleep apnea. Residual excessive sleepiness. Positive airway pressure.*

CO 019. OBSTRUCTIVE SLEEP APNEA AND LUNG CANCER: CAN WE MAKE A CONNECTION?

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Introduction: Obstructive Sleep Apnea (OSA) has been increasingly associated with cancer. Indeed, hypoxia appears to trigger tumorigenesis, tumor progression and spread, and this association may be especially relevant for smoke-related tumors, such as lung cancer (LC).
Objectives: To investigate OSA prevalence and features in a cohort of LC patients and to determine its impact in overall survival.
Methods: We retrospectively analyzed patients with LC diagnosis who underwent polysomnography (PSG) for clinical suspicion of OSA, from January 2014 to July 2019.
Results: Of the 1707 patients followed by LC, 96 (5.6%) had OSA' clinical suspicion and underwent PSG. Twelve patients were excluded due to absence of PSG data. A total of 84 patients were enrolled, with median age of 69 years (min 47, max 91), 78.6% were males, 76.1% were former or active smokers, 85.7% had BMI > 25 and 52.4% had also COPD diagnosis. Fifty (59.5%) were staged as local, 12 (14.3%) as locally advanced, and 22 (26.2%) as metastatic LC. Regarding histology, 51 (60.7%) were lung adenocarcinomas, 17 (20.2%) squamous cell lung carcinomas and 7 (8.3%) small-cell lung carcinomas. The prevalence of OSA was 4.5%. Seven (8.3%) had AHI < 5, 22 (26.2%) had mild (AHI = 5-14), 25 (29.8%) moderate (AHI = 15-30) and 29 (34.5%) severe OSA (AHI > 30). Time SpO2 < 90% (T90) > 20% was also observed in 47.6% (n = 40) of patients. Median minimal SpO2 was 79% (min 50, max 91) and mean SpO2 was 91.1% (min 75, max 97). Regarding OSA treatment, 40.5% (n = 34) had no ventilation therapy, 34.5% (n = 29) had auto-adjusting (APAP), 4.8% (n = 4) continuous (CPAP) and 19.1% (n = 16) bi-level positive airway pressure (BiPAP). There were no differences for age, gender, BMI, histology, LC staging, comorbid COPD, smoking status, or pack years among OSA severity or adherence subgroups. Overall survival (OS) was not statistically different among OSA severity groups (p = 0.722). Patients with T90 > 20% had worse median overall survival (OS) than those with T90 < 20% (33.0 months, 95%CI 11.5-54.5 vs 168.0 months, 95%CI 48.0-288.0; p = 0.023). Also, adherent patients (> 4h/day and > 70% use) had better median OS that non-adherent (62.0 months, 95%CI 35.1-88.7 vs 13.0 months, 95%CI 4.3-21.7; p = 0.001). Patients with > 4 h (p = 0.001) and > 6 h (p = 0.009) of median daily use had better OS, but no differences were stated between patients with > 8h of daily use (p = 0.327).
Conclusions: Our data suggest that nocturnal hypoxemia interferes with overall survival of OSA/LC patients, and that adherence to OSA treatment may lead to a better prognosis of LC. Moreover, treatment benefits seem to reach a plateau between 6 and 8h of median daily use.

Keywords: *Obstructive sleep apnea. Lung cancer.*

CO 020. FOLLOW-UP OF OBSTRUCTIVE SLEEP APNEA TREATMENT: DIFFICULTIES FACED BY PRIMARY CARE UNITS

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Introduction: Obstructive sleep apnea (OSA) management is challenging for health systems. Due to the increasing demand for hospital sleep units, there has been growing interest in ambulatory models of care. Since 2015, the Portuguese model determinates the referral to primary care units of OSA patients with CPAP compliance and efficacy and without treatment complaints.
Objectives: The aim of this study was to evaluate the difficulties faced by primary care physicians in the follow-up of patients with OSA after discharge from sleep centers.
Methods: An anonymous, non-refundable and online survey was created and emailed to all primary care physicians belonging to the Lisbon North primary care units.
Results: We obtained 187 responses, whose physicians presented an average age of 37.7 (+11.3) years. Most respondents reported that they never (27.8%) or rarely (54.5%) had access to the reports of CPAP adherence delivered by home respiratory care providers. When questioned about the reports, 61.5% presented difficulties in their interpretation, and only 28.3% performed some therapeutic attitudes (mask replacement and/or humidifier placement). Regarding the recognition of the side effects of CPAP therapy as well as their correction, only 41.7% and 16.6% presented an affirmative answer, respectively. In relation to the renewal of the CPAP prescription in the Electronic Prescription (EP) of respiratory home care platform; most of them (85.6%) didn't report any difficulty. When they needed to refer patients to a hospital sleep unit, 77% reported it was an easy process, being the main reasons for a new hospital referral: difficulties in adherence/adaptation to CPAP (65%), presence of side effects (24.1%), daytime sleepiness (18.7%) and difficulties in EP (12.3%).
Conclusions: This study showed that a better articulation of primary care with the home respiratory care providers is still necessary, as well as more training of general practitioners in the management of OSA in our country.

Keywords: *OSA management. Sleep units. Primary care units. Follow-up.*

CO 021. VALIDATION OF THE NO-OSAS MODEL AS A SCREENING METHOD FOR OBSTRUCTIVE SLEEP APNEA SYNDROME IN PATIENTS UNDERGOING PRE-OPERATIVE EVALUATION FOR BARIATRIC SURGERY

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Introduction: Obesity is an important risk factor for Obstructive Sleep Apnea Syndrome (OSAS). However, significant subdiagnostic of this pathology is verified in obese patients. As a means to overcome such a difficulty, a 6 item model called NO-OSAS was proposed, through which a score equal or above 3 may identify patients with moderate to severe cases of OSAS.
Objectives: Validate the NO-OSAS model as a screening method for moderate do severe OSAS in our population of patients undergoing pre-operative evaluation for bariatric surgery for bariatric surgery.

Methods: 131 patients followed in Pulmonology consultations at Beatriz Ângelo Hospital between January 2017 and April 2019, undergoing pre-operative evaluation for bariatric surgery for bariatric surgery and already subjected to sleep studies, were evaluated. The NO-OSAS model consists in a multiple logistic regression, using a cut-off value of three (≥ 3) to identify patients with moderate to severe cases of OSAS (Apnea-Hypopnea Index [AHI] ≥ 15) in the selected patient population. The predictive factors considered most significant were: male gender, cervical perimeter ≥ 42 cm, Body Mass Index (BMI) ≥ 42, age ≥ 37 years, presence of roncopathy and witnesses apneas. As means to assess the predictive power of the proposed model the area below the AUC-ROC curve was evaluated.
Results: Of the 131 patients, 103 were female (78.6%). Average age of the sample is 43.29 ± 10.60 years and the average Body Mass Index (BMI) is 43.73 ± 5.45 kg/m^2. Most patients (n = 99, 75.6%) did not report occurrence of apneas and 76.3% (n = 100) mentioned roncopathy. 87% (n = 114) had a diagnostic for OSAS, approximately half with moderate to severe cases. With the exception of gender, all other variables of the NO-OSAS model were found to be statistically significant predictive factors (p < 0.001), with sensitivity and specificity values of the model assessed at 0.981 and 0.872, respectively. The AUC associated to the model was found at 0.934, corresponding to exceptional discriminating power. Despite gender not having statistically significant power as a predictive factor, statistically significant differences between males and females were found, namely in superior values of males in what concerns: cervical perimeter (46.95 cm ± 4.06 cm vs 40.2 cm ± 4.01 cm; p < 0.00001), AHI (49.96 ± 29.09 vs 21.61 ± 28.64; p = 0.019) and t90 (20 ± 20.08 vs 8.25 ± 20.23; p = 0.0002).
Conclusions: Given the high prevalence of OSAS in this patient population, it is clear the importance of a screening method for this pathology. In the patient sample evaluated, it was verified that the NO-OSAS model (without the gender variable) presented good performance in the diagnostic of moderate to severe cases of OSAS. Gender did not present statistical significance as predictive factor in the diagnostic of moderate to severe cases of OSAS in this study. However statistically significant differences were found between males and females in what concerns AHI, cervical perimeter and t90. Taking into account the low number of males in this sample, the use of this variable as a predictive factor should be clarified going forward.

Keywords: *Obstructive sleep apnea syndrome. Bariatric surgery. Screening. AHI. BMI. Witnessed apneas. Roncopathy. Age.*

CO 022. THE MEAN DURATION OF RESPIRATORY EVENTS IN SAHS: CLINICAL AND POLYSOMNOGRAPHIC IMPLICATIONS

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Introduction: Severity classification for therapeutic decisions of sleep apnea-hypopnea syndrome (SAHS) is determined by the number of apnea/hypopnea events per hour (AHI). Intermittent hypoxia is determinant for the pathophysiological effects of SAHS and therefore the duration of events can be as determinant as their number for the consequences of the disease.
Objectives: To determine the relationship between the mean duration of respiratory events (MDRE) and clinical and polysomnographic parameters.
Methods: A retrospective analysis of subjects referred to the sleep laboratory for 2 years was performed. Only diagnostic polysomnography (PSG) (AHI > 5/h) were included. Anthropometric data, comorbidities (arterial hypertension, diabetes, dyslipidemia, previous heart stroke and ischemic stroke, atrial fibrillation, congestive heart failure, otolaryngology and psychiatric disease), daytime sleepiness (assessed by the Epworth scale) and polysomnographic data (sleep efficiency, sleep stages, minimum and mean SO2, CT90, ODH, global IAH, supine and non-supine IAH, mean HR) were recorded. Subjects were divided into 2 groups - short (G < 20) and long (G > 20) duration according to the MDRE, considering the cutoff value of 20 seconds. Comparison of variables was performed using Chi-square and Spearman tests using SPSS®, version 24.
Results: We identified 156 individuals with a mean age of 62 ± 13 years, slight male predominance (n = 81, 51.9%) and mean BMI of 31.4 ± 6.5 kg/m^2. 51.3% (n = 80) individuals were classified in G > 20 and 48.7% (n = 76) individuals in G < 20, with a mean duration of events of 17.1(± 1.8) seconds in G < 20 and 25.5 (± 6.3) seconds in G > 20. There were no statistically significant differences in the polysomnographic variables evaluated. In the analysis of cardiovascular risk factors, there was a higher incidence of atrial fibrillation (16 vs 9), acute coronary syndrome (9 vs 6) and heart failure (15 vs 8) in group G > 20, although no statistically significant difference was observed (p > 0.005).
Conclusions: The tendency demonstrated by our results, although conditioned by the small sample size, allows us to emphasize the need to evaluate the average duration of respiratory events in the interpretation of the PSG results. We have not had conclusive results for polysomnographic variables, although it is predictable that the average duration of events will have consequences on sleep efficiency, night desaturation and heart rate, for example. Regarding comorbidities, it is possible to infer that there is a higher incidence of cardiovascular comorbidities in this group of individuals, highlighting the value of this parameter both for determining the severity of SAHS and for the impact and prognosis of the disease.

Keywords: *Polysomnography. Mean duration of events. Pathophysiological.*

CO 023. PREDICTIVE FACTORS OF OBSTRUCTIVE SLEEP APNEA SYNDROME IN PATIENTS UNDERGOING PRE-OPERATIVE EVALUATION FOR BARIATRIC SURGERY

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Introduction: In face of a growing number of patients suspected of suffering from Obstructive Sleep Apnea Syndrome (OSAS), a screening method is becoming an imperative. Despite obesity being a relevant and widely recognised risk factor for OSAS, a subdiagnostic of this pathology is verified in a significant proportion of obese patients undergoing pre-operative evaluation for bariatric surgery.
Objectives: Identify predictive factors for OSAS in a population of patients undergoing pre-operative evaluation for bariatric surgery such that these can be used as screening method for this pathology.
Methods: A patient sample was gathered from those followed in the sleep apnea consultations between January 2017 and april 2019, undergoing pre-operative evaluation for bariatric surgery and already subjected to sleep studies (level I or III). Demographic, anthropometric, clinical (roncopathy, witnessed apneas and excessive daytime sleepiness), comorbidities (HT, diabetes, dyslipidaemia and hyperuricemia), and polysomnographic/polygraphic (AHI, T90, ODI) characteristics were evaluated. It was considered a positive study for obstructive sleep apnea the presence of an Apnea-Hypopnea Index (AHI) equal to or above 5, being classified as mild, moderate or severe in accordance with the AHI (5 to 14, 15 to 29 and ≥ 30, respectively). Based on a simple logistic regression model (with one predictor), the presented cut-offs for each of the continuous predictors were those that maximised discriminating power of the

model (specificity, sensitivity, area below the AUC-ROC curve, Somers correlation, positive predictive value).
Results: 131 patients were evaluated, 103 of which were female (78.6%). Average age of the sample was 43.29 ± 10.60 years and the average Body Mass Index (BMI) was 43.73 ± 5.45 kg/m^2, and average cervical perimeter of 41.67 ± 4.01 cm. The prevalence of OSAS in patients undergoing pre-operative evaluation for bariatric surgery was found at 87% (n = 114), 30.5% (n = 40) of which suffered from mild OSAS, 29.8% (n = 39) from moderate OSAS and 26.7% (n = 35) from severe OSAS. However, presence of symptoms in the form of witnessed apneas was only found in 25.4% (n = 29) of cases and Epworth scores above 10 in 22.8% (n = 26) of patients with OSAS. The identified predictive factors, statistically significant for an OSAS diagnostic, are: BMI (p < 0.001), age (p = 0.0027), cervical perimeter (p = 0.001) and HT (p = 0.018). However, in the case of patients with moderate to severe OSAS, only age and cervical perimeter were found to be statistically relevant predictors (p < 0.001). In what concerns cut-offs for the predictors mentioned, values found were as follows: 40.573 kg/m^2 for BMI, 37 years for age and 40 cm for cervical perimeter.
Conclusions: The prevalence of OSAS in this sample was high, even if clinical characteristics indicating presence of the pathology were not. The use of predictive factors, as those identified in this study, may help in prioritizing patients at high risk of moderate to severe OSAS, giving more timely indication for complementary diagnostic examination to be carried out.

***Keywords**: Obstructive sleep apnea syndrome. Bariatric surgery. Screening. AHI. BMI. Cervical perimeter. Age. Epworth sleepiness scale. HT.*

CO 024. AUTOMATIC VS MANUAL STAGING OF CARDIORESPIRATORY SLEEP STUDY IN PATIENTS WITH OBSTRUCTIVE SLEEP APNEA SYNDROME

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Introduction: Obstructive sleep apnea syndrome (OSAS) has a growing prevalence. When the suspicion of OSAS is high, one option is to perform a cardiorespiratory sleep study at home thus decreasing the time to diagnosis. One of the systems used for its execution is from NOX® Medical. This device has automatic event detection software.
Objectives: Comparison of automatically verified AHI (apnea and hypopnea index), apnea index and hypopnea index and ODI (oxygen desaturation index) values with the same manually corrected values.
Methods: Retrospective study comparing the mentioned scores in 29 patients who underwent a sleep study with the NOX® T3 device (software version 5.1.1.19824) at the CHUC Sleep Medicine Center. Event analysis was performed according to the criteria of the American Academy of Sleep Medicine, version 2.5 of 2018, with subsequent statistical analysis using the IBM SPSS® software (version 20).
Results: The sample included 65.5% male patients, mean age 63.5 ± 13.5 years and mean STOPBANG 4.7 ± 1.4. Twenty patients (69%) had hypertension, eighteen patients (62.1%) were obese, nine patients (31%) had cardiac disease and five patients (17.2%) had respiratory disease. The median of manually corrected AHI was 27. We compared the values of manually corrected vs automatic AHI. The difference in medians between the two variables was not statistically significant (p = 0.952), which was equally true for apnea (p = 0.933) and hypopnea (p = 0.647). However, when comparing the ODI we found that the difference in the medians of the obtained values was statistically significant (p = 0.000). Regarding the AHI value, the two scoring methods showed no statistically significant difference in patients with the co-morbidities referred (obesity, cardiac disease and respiratory disease), and were independent of the AHI value itself. Thus, the difference between the medians of AHI values (manual vs automatic) was not statistically significant regardless of whether this value was less than 15 events/h (p = 1.000), between 15 and 30 events/h (p = 0.176) or greater than 30 events/h (p = 0.123).
Conclusions: In the presence of a cardiorespiratory sleep study with good technical conditions, the possibility of using automatic event detection software can significantly reduce manual staging time while also saving associated resources. This is important especially in patients with very high AHI values whose therapeutic decision is independent of small differences in this value. Thus, we have to validate the sensitivity of event detection, which is the purpose of the presented study. We must, however, take into account its main limitation - the size of the sample. We therefore recognize the need for further data collection so that in the future we can more substantively confirm the results presented.

***Keywords**: OSAS. Cardiorespiratory sleep study.*

CO 025. BIOLOGICAL CLOCKS IN THE DIAGNOSIS OF OBSTRUCTIVE SLEEP APNEA

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Introduction: Obstructive Sleep Apnea (OSA) is one of the most common sleep disorders worldwide. Still, 80-90% of the OSA cases are estimated to be undiagnosed, which leads to major health, social and economic consequences. OSA clinical practice has relied on typical symptoms, such as excessive weight, snoring and daytime sleepiness, to refer patients for sleep studies. However, less symptomatic OSA clinical phenotypes have been increasingly recognized and sleep studies are expensive, labor intensive and time consuming. In this context, new OSA biomarkers emerge to overcome current OSA diagnostic limitations. Biological clocks are internal timekeepers that regulate virtually all biological processes. Their functioning is modulated by external and internal time cues that act as input signals to adjust internal time and assure body homeostasis. Several studies have showed that oxygen also modulate biological clocks and that altered levels compromises clocks functioning in a dose-dependent manner. Understanding how OSA impacts on biological clocks may open new avenues for OSA diagnosis and treatment.
Objectives: To evaluate biological clocks functioning in OSA patients, before and after OSA treatment.
Methods: A cohort of 13 Portuguese male patients [age: 54 ± 2 years; BMI: 30.7 ± 1.3] diagnosed with mild, moderate and severe OSA [36.5 ± 8.4 apneas/hypopneas per hour - AHI] was followed from the moment of diagnosis with conventional polysomnography - PSG (t0), up to 4 months (t4M) and 2 years (t24M) of treatment with standard continuous positive airway pressure (CPAP). In each phase (t0, t4M and t24M), the axillary body temperature was measured and blood was collected at 4 time points along the day (8h, 11h, 16h30 and 22h30). Peripheral blood mononuclear cells were isolated and the expression levels and profile of 11 genes that regulate clocks functioning were assessed by qRT-PCR. Results were compared to age-matched controls [age: 47 ± 7 years; BMI: 25.6 ± 0.5; AHI: 4.7 ± 0.8], validated by PSG. This study was approved by the ethical committee of the Faculty of Medicine of the University of Coimbra and of Coimbra Hospital and University Centre.

Results: Patients at t0 and t4M show similar diurnal profiles of axillary body temperature and clock-genes expression. The expression levels of several clock genes is significantly lower in comparison with age-matched controls ($p < 0.05$ and 0.01) and show no evident oscillations along the day. By contrast, at t24M there are evident changes in both axillary temperature and clock genes expression. The expression levels of clock-genes increased and diurnal oscillations became evident, similar to age-matched controls. Different profiles were observed in moderate OSA patients. The expression levels of several clock genes, at specific times of the day, correlates with the number of obstruction episodes ($p < 0.05$, $r = -0.40$), desaturation index ($p < 0.01$, $r = -0.84$), arousals frequency ($p < 0.01$, $r = -0.74$) and sleepiness ($p < 0.05$, $r = -0.54$).
Conclusions: The obtained results suggest that OSA dampens biological clock oscillations and that these are not reverted upon CPAP short-term treatment. By opposite, long-term CPAP treatment might be able to ameliorate/reestablish clocks functioning. These findings pinpoint possible biomarkers with potential to early diagnose OSA, stratify OSA patients and infer on treatment response and efficacy.

Keywords: *Obstructive sleep apnea. Diagnosis. Biomarkers. Biological clocks.*

CO 026. THE ROLE OF SURGERY IN SMALL CELL LUNG CARCINOMA - LIMITED DISEASE

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Introduction: Small cell lung carcinoma (SCLC) constitutes about 10 to 15% of lung tumors. It presents an aggressive behavior and a potential for early metastasization at a distance. As a result, systemic chemotherapy (QT) and/or radiotherapy (RT) are the cornerstones of treatment in most SCLC patients. In cases of limited disease (T1-2N0M0) and in selected patients, pulmonary resection surgery may be an option. Descriptive analysis of three patients with SCLC who underwent pulmonary resection surgery in 2019, 2017 and 2015, respectively.
Case reports: Case 1: male 66 years old, former smoker 60 pack ear, asymptomatic. A 10 mm pulmonary nodule is detected in the right upper lobe (inaccessible for biopsy) and mediastinal adenomegalies without PET-CT uptake. After negative mediastinal staging, the patient is submitted to atypical pulmonary resection, with an extemporaneous examination identifying carcinoma and lobectomy with mediastinal ganglion emptying (EGM) is completed. The definitive anatomopathological diagnosis is compatible with SCLC - pT1b N2 (stage IIIA) without residual disease (R0). Performed QT + RT concurrently. No evidence of relapse to date, with a disease-free survival of six months. Case 2: female, 45 years old, non-smoker. Personal history of Gaucher disease. After weight loss study, a SCLC in stage IIA is diagnosed. QT begins with cisplatin and etoposide suspended by severe pancytopenia (aggravated by hypersplenism of Goucher disease). After restaging, it is submitted to lobectomy with EGM. Preoperative diagnosis - SCLC pT2b N0 (stage IIA) without residual disease (R0) was confirmed. He underwent prophylactic brain radiotherapy. No evidence of relapse to date, with a disease-free survival of 33 months. Case 3: male, 79, former smoker 40 pack-year asymptomatic. A 23 mm pulmonary nodule is detected whose transthoracic biopsy showed SCLC, stage IA. It is proposed for QT which declined. After six months of surveillance, the tumor maintained dimensional stability and after restaging, underwent atypical pulmonary resection. The definitive anatomopathological diagnosis showed SCLC combined with areas of adenocarcinoma, pT1Nx, without residual disease (R0). Refused adjuvant therapy. No evidence of relapse to date, with a disease-free survival of 51 months.
Discussion: The multidisciplinary approach in SCLC is fundamental and in these three cases proved crucial given its particularities and complexity. Despite the minor role of thoracic surgery in the treatment of SCLC, in cases of limited disease, the most recent studies have already shown good results, either as an initial approach (followed by QT) or after induction QT.

Keywords: *Surgery. Limited disease. Small cell lung carcinoma.*

Withdrawn abstract

CO 028. LUNG ABSCESS: MEDICAL OR SURGICAL TREATMENT?

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Introduction: Lung abscess is defined as an area of necrosis of lung parenchyma leading to a cavity with air fluid level. They can be

primary or secondary to underlying lung disease, acute or chronic based on the duration of the disease. Most cases are associated with recognized risk factors including alcohol abuse, periodontal disease, neurologic dysfunction and others. Historically, lung abscesses were associated with anaerobic bacteria, however recent reports suggest a poly microbial spectrum of etiological agents. In lung abscess the predominant anaerobic bacteria isolated are: gram-negative Bacteroides fragilis, Fusobacterium capsulatum e necrophorum, and gram-positive anaerobic Peptostreptococcus and Microearophillic streptococci. From aerobic bacteria are Staphylococcus aureus, Streptococcus pyogenes and pneumonia, Klebsiella pneumonia, Pseudomonas aeruginosa, Haemophilus influenza, Acinetobacter spp, Escherichia coli and Legionella. Although 80-90% of lung abscess are successfully treated with antibiotics, surgical intervention is required in specific cases.
Case report: A 71 year old male with past medical history of hypertension and diabetes mellitus, recently hospitalized during a month with urinary sepsis do to Escherichia Coli complicated with bacteraemia and pioventriculitis, presented with 1 week of productive cough, fever and shortness of breath. Chest X ray showed right basal consolidation and started empiric IV antibiotics. However, his symptoms did not resolve, and follow up CT thorax showed large cavitary (80 × 100 mm) mass with air fluid level that involved the lower lobe of the right lung. Patient got lobectomy and decortication of the right lower lobe, with hemodynamic and radiological resolution. A 30 years old male in psychiatric internment unit, for decompensated schizophrenia, developed fever, leucocytosis and growth of serum C-reactive protein, at 15 day. Chest X ray showed left basal consolidation and started empiric IV antibiotics. For sustained fever, a thorax CT was performed and showed a consolidation with a large cavitary mass (68 × 48 mm) and a loculated pleural effusion. Despite the antibiotic treatment escalation, he kept up with clinical deterioration. Follow up CT Thorax showed a hydropneumothorax, drained by a percutaneous transthoracic tube. However, with no function after 48h, the patient underwent decortication and segmentectomy of left lower lobe, with hemodynamic and radiological resolution.
Discussion: We know that in pre-antibiotic era, the mortality of lung abscess was higher, and is now reduced to 8.7%. With all of the possible etiologic pathogens of lung abscess, and the emergence of multidrug-resistant bacteria, it is now a real challenge to define the choice and duration of antibiotic therapy. To provide a better treatment to patient, surgical therapy should be considered, and not delayed, as a valuable option treatment when conservative approach have little chances. We must remember the indications for surgical resection of lung abscess: (in the acute phase) haemoptysis, prolonged sepsis and fever, bronchopleural fistula, rupture of abscess to the pleural cavity with pyopneumothorax/empyema; and (in the chronic phase) unsuccessfully treated lung abscess more than 6 weeks, cancer suspicion, cavitary larger than 6 cm, leucocytosis in spite of antibiotics. With this case series report we could review the clinical presentation, radiological and treatment of lung abscess,

Keywords: *Lung abscess. Necrotizing pneumonia. Antibiotic therapy. Cardiothoracic surgery.*

CO 029. TWO YEARS OF EXPERIENCE IN VIDEO-ASSISTED THORACIC SURGERY AT UNIVERSITY HOSPITAL CENTER OF SÃO JOÃO

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Introduction: Video-assisted thoracic surgery (VATS) completely change the current practice of thoracic surgery. VATS is safe and effective, and because it is less invasive than thoracotomy allows for shorter hospitalization and faster recovery time.
Methods: Retrospective analysis of patients diagnosed with lung cancer who were submitted to VATS, from June 2018 to June 19 at São João University Hospital Center.
Results: Eighty-six patients were included, with a median age of 67 years (min-max 37-83 years); the majority of patients were male (62.8%). The most frequent histology was adenocarcinoma (82.6%). A large majority of patients had a history of smoking (43% were former smokers, 30.2% were active smokers, the remaining were non-smokers). Eighty percent of the patients had FEV1 higher than 80%. Twenty-eight (32.6%) patients had a previous history of cancer. The most frequently found were breast (5.8%), gastric (5.8%) and colorectal (4.7%) cancers and two (2.3%) patients had a history of lung cancer. Chronic obstructive pulmonary disease was the most frequently diagnosed respiratory disease (10.6%). Almost half of the patients had cardiovascular risk factors (CRF), but only 20% had heart disease. Right upper lobectomy was the most frequently performed surgery (29.1%), followed by left upper lobectomy. Nearly 90% of surgeries were performed with 3 ports, and the remaining ones with 2. The median time between diagnosis and day of surgery was 94 days, varying from 0 (extemporaneous examination) to 230 days (two nodules in different lobes, with transthoracic lung biopsy at different times with the need for a harpoon for intraoperative localization). The median drainage time was 4 days (range 2-36 days). The days of hospitalization varied from 2 to 64 days (median of 4 days). There were 8 conversions: 3 cases due to failure of single-lung ventilation, 2 because of calcified adenopathies that made vascular dissection unsafe, and 3 cases due to bleeding, Postoperative complications occurred in 22 patients, 10 being minor isolated complications (persistent air leak was the most frequent); pneumonia was the most common major complication (8.1%). The median time of hospitalization of patients with CRF and postoperative complications was higher, and the difference was statistically significant. There is a significant correlation between days of hospitalization and days of drainage, numbers of ports, and time from diagnosis to surgery.
Conclusions: The authors intend to disclose their experience with a VATS program since its beginning, at their surgical center. The time from diagnosis to surgery leads to a reflection on how these times can be shortened and how complications can be avoided. The median draining days equal days of hospitalization, and the results are very satisfactory. The conversion rate is similar to other studies published. These results show what was achieved with the VATS program and also how and what can be improved.

Keywords: *Video assisted thoracic surgery. Lung cancer.*

CO 030. REEXPANSION PULMONARY EDEMA IN SPONTANEOUS PNEUMOTHORAX. A RETROSPECTIVE STUDY

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Introduction: Reexpansion pulmonary edema (RPE) is a complication that can occur after reinflation of the lung following drainage of a spontaneous pneumothorax (SP). The exact underlying risk factors are unclear.
Objectives: The purposes of this study were to determine the incidence of RPE after drainage of primary SP and possible correlation with risk factors.
Methods: We retrospectively reviewed the clinical records of all patients with primary SP diagnosis, hospitalized in Algarve University Hospital Center-Faro Pulmonology Department, admitted between January 2014 and December 2017. SP cases with and without RPE (radiological diagnosis) after drainage were compared regarding several risk factors.
Results: During the four-year period, seventy-four cases of primary SP were treated with drainage, 61 men and 13 woman; mean age

28.7 years. RPE developed in 13 (17.6%) of those 74 cases. Mortality rate was zero. RPE was predominant in men (100%) and smokers (94.4%). One quarter (25%) of these patients had previous drug addictions. The right side was more commonly affected (76.9%). It was possible to find an association using chi-square test between RPE and large bore chest tubes (equal or larger than 18F) in 92.3% of the situations and between RPE and faster lung reexpansion (first 24 hours) in 61.5% of the cases.
Conclusions: The size of the chest tube used for draining primary SP and the velocity of lung reexpansion seem to be risk factors for RPE, although confirmation requires future studies using a larger sample size.

Keywords: *Reexpansion pulmonary edema.*

CO 031. RECURRENCE OF PRIMARY SPONTANEOUS PNEUMOTHORAX

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Introduction: The defined recurrence rate of a primary spontaneous pneumothorax is very variable in the literature. Risk factors for recurrence are not well established and therefore it is not possible to stratify the individual risk of a patient.
Objectives: To characterize primary spontaneous pneumothorax and define recurrence rate and its risk factors.
Methods: A retrospective study of patients admitted to the Pulmonology Department of the Coimbra Hospital and University Center - HG center - between 2008 and 2016 with diagnosis of primary spontaneous pneumothorax was conducted. Epidemiological, clinical and radiological data were collected. Possible risk factors for pneumothorax recurrence were studied through statistical analysis.
Results: Forty patients were included, 32 (80.0%) males. The average age was 27.4 ± 7.4 years. A total of 33 patients (82.5%) were smokers at the time of diagnosis (with a median of 7.5 pack years), with a mean height of 1.72 ± 0.10 meters and a maximum height of 1.92 meters. A mean BMI of 22.9 ± 3.9 and a minimum BMI of 18. Most patients had a large pneumothorax (67.6%), defined as a distance greater than 2 cm between the hemithorax and the pulmonary line at the hilar level. Conservative treatment was chosen in 4 patients (10.0%), needle drainage in 2 patients (5.0%), chest tube in 34 patients (85.0%). Two patients underwent surgery after the first episode of pneumothorax (5.0%), as they maintained chest tube air leakage. The recurrence rate in our sample was 26.3%, and 50.0% had recurrence in the first year. In 40.0% of the sample recurrence was contralateral. In the present sample, gender, age, smoking habits, height or BMI were not associated with a higher risk of pneumothorax recurrence. Smoking cessation after the first pneumothorax (11 patients, 29.7% of the sample) was associated with a lower risk of recurrence (p-value < 0.05). The imaging presence of blebs on follow-up chest CT (65.6%) was not associated with higher recurrence. There was no statistically significant difference between initial pneumothorax size or treatment and risk of pneumothorax recurrence.
Conclusions: In our study, there was no higher risk of recurrence in females, contrary to data published in the systematic review by Walker et al. There was a total recurrence rate of 27.5% and only half of these occurred in the first year, which is not in accordance with the literature describing a higher recurrence rate in the first year. Smoking cessation after first pneumothorax was associated with lower risk of recurrence. This risk was independent of the initial size of the pneumothorax or the treatment used, so in certain cases choosing the optimal treatment to prevent recurrence may be difficult.

Keywords: *Primary spontaneous pneumothorax. Recurrence.*

CO 032. CANNABIS SMOKERS PNEUMOTHORAX. RETROSPECTIVE STUDY FROM A DISTRICT HOSPITAL

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Hospital Prof. Doutor Fernando Fonseca.

Introduction: Spontaneous pneumothorax is a common condition and the etiological factors are diverse, including environmental factors such as tobacco and cannabis use. Cannabis is the most widely used illegal drug in the world, with a prevalence of use of between 2.5-5%. Several studies point to an increased risk of pneumothorax among cannabis smokers.
Objectives: Characterization of patients cannabis consumers hospitalized for pneumothorax.
Methods: Retrospective 5 years study (2014-2019) of patients cannabis consumers hospitalized for pneumothorax on Pulmonary Department of tertiary hospital (Hospital Prof Doutor Fernando Fonseca).
Results: We included 22 patients, mostly male (n = 21; 95.5%), corresponding to x% of the total patients admitted to the Service for pneumothorax during the study period. The mean age of the patients was 31.7 ± 8.0 years (21 - 51 years). As for smoking habits, 90.9% (n = 20) were smokers, while 9.1% (n = 2) were former smokers. All patients were inhaled drug users. The average length of stay was 8.8 days. According to spontaneous pneumothorax cases, 17 (77.2%) were considered primary and 5 (22.7%) were considered secondary. Among the 6 cases of secondary spontaneous pneumothorax, 6 (27.2%) were 2nd episode. The main symptom presented by the patients was chest pain, observed in all patients (100%) cases; then dyspnea in 6 (27.2%) and dry cough in 4 (18.2%). Pneumothorax was right in half of the cases and unilateral in all cases. CT was performed in 13 patients. Regarding imaging findings, 6 of the patients had blebs and 11 patients had subpleural paraseptal emphysema. As for the remaining 2 patients, they had no emphysematous changes. 21 patients were treated invasively with pleural drainage. One case was treated conservatively. Drainage time was less than 7 days in 17 (77.2%) cases and longer than 7 days in 5 (22.7%) cases. The average time of pleural drainage was 6.3 days. Regarding cases that underwent medical thoracoscopy (n = 6), two thirds (n = 4) of patients had a history of pneumothorax in the past. In all cases, pleurodesis was performed. There were no complications and full lung expansion was achieved in all patients.
Conclusions: This series is in agreement with similar ones, with a higher prevalence of this pathology in men, all with present or past smoking habits. Most patients had structural changes in thoracic CT, namely bullous emphysema. Thus, it is stressed the importance of investigating cannabis use in young patients with pneumothorax, in addition to tobacco use. Despite the lack of data in the literature, cannabis is probably an important etiological factor in the onset of pneumothorax.

Keywords: *Pneumothorax. Cannabis. Emphysema.*

CO 033. INDWELLING PLEURAL CATHETERS IN THE MANAGEMENT OF RECURRENT PLEURAL EFFUSION. FIVE YEARS' EXPERIENCE

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Introduction: A malignant pleural effusion is a frequent complication in several neoplasias, and is associated with a poor prognosis. In cases of recurrent effusion and/or trapped lung the placement of na indwelling pleural catheter is an effective method in the palliation of symptoms.
Methods: Retrospective analysis of demographic data, clinical characteristics, complications and evolution of patients who underwent

placement of an indwelling pleural catheter due between 2014 and 2019 in a university hospital.
Results: 34 patients were included. 20 (58.5%) were male, and mean age was 66.4 ± 12.2 years. In almost all patients (n = 33) the base diagnosis was malignant, the most frequent being lung cancer, accounting for 17 patients, followed by breast cancer (n = 6). One patient had a benign pleural effusion (familiar hypertrophic cardiomiopathy) and the rest were caused by other malignancies. The indications for the placement of the catheter were pleurodesis failure in 10 patients (29.4%), trapped lung in 15 (44%) and recurring pleural effusion on the remaining 9 (26.5%). The catheter placement was made on an inpatient context in 23 cases (67.6%) and outpatient in 11 (32.4%). There were no immediate complications and the late complications rate was 32%. The most frequent was pleural infection (n = 7, 20%), which in most cases evolved favorably under antibiotic therapy. Notably, after implementation of protocols in the management and evaluation of the catheter this rate diminished greatly (45% to 14%); although the numbers did not reach statistical significance. In 9 patients the catheter was removed, due to spontaneous pleurodesis (n = 5), infection (n = 2) or accidental removal (n = 2). 32 patients died during follow-up, with a median survival after catheter placement of 44 days (interval 2-423 days).
Conclusions: Indwelling pleural catheters are effective in the management of symptoms in patients with a recurrent pleural effusion in whom pleurodesis isn't successful or isn't indicated, especially due to trapped lung. The main complication is pleural infection, but the development of medical and nursing protocols in the management of the catheter results in fewer complications and improved clinical results.

Keywords: *Pleural effusion. Indwelling pleural catheter.*

CO 034. E-FACED AND BRONCHIECTASIS SEVERITY INDEX FOR ASSESSMENT OF THE SEVERITY OF NON-CYSTIC FIBROSIS BRONCHIECTASIS: WHICH ONE IS THE BEST?

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Introduction: Non-cystic fibrosis bronchiectasis (NCFB) is a multidimensional and etiologically diverse disease and, therefore, no single parameter can be used to determine its overall severity and prognosis. The E-FACED score and the Bronchiectasis Severity Index (BSI) are two different validated scores currently used for such assessment.
Objectives: To describe the etiology of NCFB and to compare the results of the assessment of NCFB severity and prognosis obtained via E-FACED and BSI scores.
Methods: A retrospective study including NCFB patients from a sample of patients attending the "Functional Breathing Re-adaptation" appointment at the Pneumology B Unit (CHUC). All patients underwent evaluation of the variables incorporated in the E-FACED score (number of severe exacerbations in the last year, FEV1% predicted, age, chronic colonization by Pseudomonas aeruginosa, radiological extent of the disease and dyspnea) and in the BSI (age, body mass index, FEV1% predicted, hospitalization and exacerbations in previous year, dyspnea, chronic colonization by Pseudomonas aeruginosa and other microorganisms and radiological extent of the disease). Patients with active malignancies, cystic fibrosis, active mycobacterial infection, HIV, pulmonary fibrosis, sarcoidosis, secondary bronchiectasis or those undergoing antibiotic therapy previous to the study were excluded.
Results: The sample included 39 patients (24 females and 15 males, aged 37 to 87 years). Regarding the etiology, most NCFB analyzed were idiopathic (61.3%), whereas 16.1% were sequelae of tuberculosis, 12.9% post-infectious and 9.7% related with primary immunodeficiency. According to the derived E-FACED score for severity and prognosis of NCFB we found 22 patients (56.4%) with mild bronchiectasis, 13 patients (33.3%) with moderate bronchiectasis and 4 patients (10.3%) with severe bronchiectasis. Regarding the derived BSI score, the frequency of patients with low, intermediate and high BSI score was 11 (28.2%), 12 (30.8%) and 16 (41.0%), respectively. Moreover, we observed a statistically significant association between E-FACED and BSI scores (Fisher's exact test, $p < 0.001$, tau-b de Kendall = 0.691), which is due to the fact that 50.0% of the NCFB patients classified as mild on the E-FACED score were classified as low BSI and 100% of the NCFB patients classified as severe on the E-FACED were classified as high BSI. The Kappa test ($p = 0.023$) also show 56.2% of agreement between the two scales.
Conclusions: Our results show that there is a significant association between the two scales and they are globally similar. Regarding previous studies comparing FACED and BSI, we can also deduce that the introduction of the variable "exacerbations" in the E-FACED score contributed to increase the similarity between the two scales. The E-FACED score is a simpler and faster tool to apply than BSI, which can be an extremely important, practical and appropriate tool for routine assessment of NCFB patients.

Keywords: *E-Faced. BSI. Non-cystic fibrosis bronchiectasis.*

CO 035. UTILITY OF ALFA-1 ANTITRYPSIN DEFICIENCY SCREENING IN PATIENTS WITH BRONCHIECTASIS

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Introduction: Alpha-1 Antitrypsin Deficiency (AATD) is a potential cause of bronchiectasis and some patients might benefit from augmentation therapy, particularly in case of severe disease with airway obstruction. However, the clinical utility of its screening in bronchiectasis patients remains unclear. We aimed to investigate if routine measurement of serum A1AT in the aetiologic assessment of bronchiectasis was clinically useful.
Methods: Between January 2012 and December 2016, 675 patients were observed in the Bronchiectasis Clinic at Ninewells Hospital for initial investigation of bronchiectasis etiology. All patients had documented bronchiectasis by High Resolution Computer Tomography (HRCT) scans. Serum A1AT level was measured in all of them and in case of low level, defined as < 1.0 g/L, genotyping was performed.
Results: We identified 17 patients (2.52%) with low A1AT levels, with an average level of 0.79 g/L (± 0.18). Genotypes were PiMZ in 13 patients (average 0.86 g/L ± 0.09), PiSZ in 3 patients (average 0.7g/L ± 0.06) and PiZZ in 1 patient (0.20 g/L). Each patient's serum A1AT level and genotype is described in table 1.
Conclusions: We identified 1 patient with severe AATD disease (PiZZ), 3 patients with moderate AATD disease (PiSZ) and 13 with mild disease (PiMZ). Augmentation therapy is recommended only to non-smoking patients with pulmonary emphysema and reduced or progressive decline on lung function. Non-smoking PiMZ patients don't have increased risk of lung disease and PiSZ usually don't have indication for augmentation therapy, since serum A1AT levels are usually above the protective threshold (0.5 g/L). So, in 675 bronchiectasis patients, only one (0.15%) had severe AATD that could possibly benefit from specific treatment with augmentation therapy. Clinical benefits of augmentation therapy of AATD in bronchiectasis patients are unknown and extrapolated from COPD patients. To our knowledge, there have been no studies evaluating its clinical benefits for bronchiectasis patients with AATD. Our findings show that the prevalence of AATD in bronchiectasis patients is not superior to the overall population, and so screening of these patients does not improve bronchiectasis management neither provide effective early diagnosis of AATD. We acknowledge that there are

geographic differences in the prevalence of AATD and that this conclusion might not apply to general practice in every country. Until there is further evidence, it is authors opinion that, in the light of our findings, AATD screening in bronchiectasis should not be performed, unless there is concomitant COPD or pulmonary emphysema. Prevalence of AATD in bronchiectasis patients is not superior to overall population and its routine screening is not useful for aetiologic investigation. GOLD guidelines recommend screening for AATD in patients with emphysema and/or COPD and we believe that bronchiectasis patients who concomitantly have these diseases will probably benefit from AATD screening, but future studies on this matter are needed.

Keywords: *Bronchiectasis. Alfa-1 antitrypsin deficiency.*

CO 036. EVALUATION OF THE EFFECT OF HIGH-FLOW NASAL OXYGEN IN THE 6-MINUTE WALK DISTANCE IN COPD PATIENTS UNDER PORTABLE OXYGEN THERAPY. PILOT STUDY

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Introduction: Exercise intolerance is a major issue in COPD. Portable oxygen therapy (POT) is a possible solution. Nonetheless, the compliance to POT is low and it's not effective in all patients. High-flow nasal oxygen (HFNO) appears to have several benefits in ventilation, such as decreased work of breathing and increased tidal volume and respiratory efficiency. Some studies showed improved exercise performance of COPD patients under HFNO.
Objectives: Evaluate the effect of HFNO in the 6-minute walk distance (6WD) in COPD patients under POT.
Methods: Prospective study. We included patients with stable COPD under POT. We performed three 6-minute waking tests (6WT): the first to ascertain the adequate flow rate of oxygen to correct exercise desaturation, the second, after 20 minutes of rest, to evaluate the 6WD under the previously defined flow and the third after 30 minutes of HFNO.
Results: 7 patients were included, 4 males, mean age of 65.7 ± 9.6 years and mean post-bronchodilator FEV1 of 46.1 ± 20%. Three patients had an increase in the 6WD after HFNO. The initial and final Borg dyspnoea scores were lower in the 6WT after HFNO (1.9 ± 1.5 vs 1.3 ± 1.1 and 5.4 ± 2.7 vs 4.8 ± 2.4), as well as the maximum heart rate (114.3 ± 14.4 vs 110.9 ± 19.4), although not statistically significant. The patients that walked farther after HFNO were significantly older (73.7 ± 9.5 vs 59.8 ± 3.9 years, p = 0.041) and had a higher post-bronchodilator FEV1 (57.9 ± 21.3 vs 37.2 ± 16.0; p = 0.197), although not statistically significant.
Conclusions: There seems to be some benefit of using HFNO before exercise in COPD patients. However, since our sample is small, more studies are needed to evaluate the effect of HFNO in the exercise tolerance, either at rest or during exercise when it becomes available.

Keywords: *COPD. High-flow nasal oxygen. 6-minute walking test.*

CO 037. BEYOND BLOOD VALUES IN ALPHA1-ANTYTRIPSIN SCREENING

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Introduction: Alpha1-antytripsin (A1AT) deficit is the most common potentially fatal hereditary disease in adults. Often underdiagnosed, it is mostly detected in advanced stages of lung disease. Early screening is critical in chronic respiratory or liver disease. The reference values corresponding to the different phenotypes are validated, however, phenotypes with distinct clinical implications may have similar assay values.
Objectives: To identify the cut-off points for each phenotype, analyzed in a population of A1AT-phenotyped patients in a hospital center over the past 15 years.
Methods: Retrospective observational study including A1AT phenotyped patients from 2004 to 2019. The protein value was obtained by radial immunodiffusion. IBM SPSS statistics 23 software was used for statistical analysis. Continuous variables were expressed as median and interquartile range; categorical variables were expressed in frequency and percentage. For the comparative analysis between the different phenotypes the Kruskal-Wallis test was used. For comparison in pairwise groups the Mann-Whitney U test was used. ROC curves were used to determine the cutoff points. The significance level was defined as $p < 0.05$; Bonferroni correction was applied.
Results: A total of 194 patients were included; 30 were excluded for incomplete data and 11 for representing rare genotypes. The included phenotypes are the most common in the general population (MM, MS, MZ, SS, SZ, ZZ). Significant differences were found between the medians of the different phenotypes. In pairwise comparisons it was found that SZ and ZZ have significantly lower blood values than the others, moreover ZZ has significantly lower values than SZ. Among the MM, MS, MZ and SS groups there were no statistically significant differences. Phenotypes without any M alleles had values below those defined as normal (90-120 mg/dL). In MS and MZ patients the possibility of normal blood values is described. In the present sample this was only found in 9 cases, mostly family screenings or values at the lower limit of normality. It was possible to identify as cutoff for the MM phenotype a value > 93.2 mg/dL (sensitivity 50%; specificity 95.6%) and for ZZ a value ≤ 38.1 mg/dL (sensitivity 89.5% specificity 99.3%). Dosing > 74 mg/dL is associated with the presence of at least one M allele (sensitivity 76.3%; specificity 76.7%). On the other hand, a value ≤ 69.2 mg/dL has a sensitivity of 56.5% and specificity of 90.2%, for the presence of at least on Z allele.
Conclusions: In severe phenotypes A1AT dosage is significantly lower than in intermediate or normal phenotypes. Without the presence of at least one M allele, the value obtained was always bellow the lower limit, so phenotyping would be indicated. Normal values do not exclude altered phenotype, namely MS or MZ heterozygotes. Normal blood values with normal CRP does not imply phenotyping, except in family screenings. The aim of this study is to highlight the relevance of phenotyping in all patients with chronic lung and/or liver disease with values below the normal range or close to its inferior limit, in order to stratify personal and family risk and because it may involve prophylactic measures.

Keywords: *Alpha1-antytripsin. COPD. Screening. Phenotypes.*

CO 038. EOSINOPHILIA IN ACUTE EXACERBATIONS OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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Introduction: peripheral eosinophilia has emerged as a marker of response to inhaled and systemic corticosteroid therapy in acute exacerbations of chronic obstructive pulmonary disease (AECOPD). Although it is being studied as a possible phenotyping marker of COPD patients, the relationship between eosinophilia on AECOPD and short- and long-term outcomes is not well defined.
Methods: retrospective analysis of clinical data of patients hospitalized to hospital with AECOPD for 14 months. Demographic, clinical,

analytical data (eosinophils, C-reactive protein) in-hospital mortality, corticosteroid therapy, and one-year exacerbations (SPSS statistics v24) were analyzed. The 2% value was used as a cut-off for eosinophilia.
Results: a total of 91 patients were included, with a mean age of 77.5 ± 8.05 years, 97.9% males. The mean duration of hospitalization was 11.23 ± 10.74, with 5 deaths (5.5%). 87.9% of the patients were treated with intravenous corticosteroids and 93.4% with antibiotics. Most of the patients were on GOLD class D (63.7%), followed by classes A and B (with 14.3% of patients) and class C (7.7%). 25.3% of the patients were non-smokers and 74.7% were smokers or former smokers. About 65.1% of the patients presented exacerbations in the year following hospitalization, and 49.4% presented severe exacerbations that justified a new hospitalization. Patients without eosinophilia (E < 2%) presented higher median CRP value (p < 0.05). Although not statistically significant, it was observed that patients without eosinophilia (E < 2%) had a longer hospitalization. In addition, there was no statistically significant relationship between eosinophil values and mortality, FEV1, intravenous corticosteroid therapy during hospitalization, smoking status and 1-year exacerbations. Of the 5 deaths, 4 had eosinophils < 2%.
Conclusions: this study suggests a shorter length of stay in AECOPD patients with eosinophilia, as there seems to be a better response to systemic corticotherapy. On the other hand, the absence of eosinophilia was associated with higher CRP values. Thus, eosinophils may help phenotyping patients and distinguish which patients will benefit most from antibiotic treatment (absence of eosinophilia) or corticotherapy (presence of eosinophilia). Contrary to what has been described, there was no relationship between the presence of eosinophilia and the one-year increase in exacerbations in our sample.

Keywords: *COPD. AECOPD. Eosinophilia.*

CO 039. HOME NON-INVASIVE VENTILATION AFTER ACUTE COPD EXACERBATIONS

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Introduction: Non-invasive ventilation (NIV) is indicated as first-line treatment of acute exacerbation of COPD (AECOPD). The effectiveness of home-NIV after AECOPD is not established.
Objectives: To identify predictive factors of NIV response and evaluate the effectiveness of home-NIV at reducing exacerbations.
Methods: Retrospective analysis from clinical data of patients without previous home NIV, admitted to the hospital with AECOPD and submitted to NIV, during 3 years. Demographic data, predictive factors and results of VNI were analyzed (SPSS® statistics v20).
Results: Included 28 patients admitted with AECOPD, 79% male, aged 43 to 92 years, with mean of 74.4 (± 12.3) years. Our sample consisted in 79% patients GOLD D, 14% GOLD C and 7% GOLD B. NIV was successful in 79% of patients with AECOPD. pH value greater than 7.25 and comorbidities were not predictive of response (p > 0.05). Low value of DECAF score and absence of eosinopenia were predictive of successful with NIV (p < 0.05). Of the 21 patients alive at discharge, 67% started home NIV. Patients submitted to home VNI presented mean of 0.93 exacerbations and patients discharged without VNI presented mean of 0.71 exacerbations (p > 0.05).
Conclusions: NIV was effective in the resolution of the acute episode. The majority of patients were discharged with NIV, but the use of home NIV did not decrease the mean of exacerbations in the following year.

Keywords: *COPD. Non-invasive ventilation.*

CO 040. THE VALUE OF PH AT ADMISSION AS PREDICTOR OF MORTALITY IN COPD PATIENTS

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Introduction: Chronic obstructive pulmonary disease (COPD) is characterized by airway obstruction. Acute exacerbations (AE) often lead to global respiratory insufficiency that requires non invasive mechanic ventilation (NIMV).
Objectives: To evaluate the impact of the pH value at admission on outcomes of patients with AE of COPD, who required NIMV.
Methods: We conducted an analytic retrospective study. We evaluated a period of two years, selecting data from patients hospitalized in an internal medicine ward with AE of COPD. We studied demographic data, story of tobacco smoke, use of long term oxygen therapy, semiology, arterial gasometry (AG) at admission, Simplified Acute Physiology Score II (SAPS II), NIMV use, need of invasive mechanical ventilation (IMV) and occurrence of intra-hospital death by any cause. We categorized patients in two groups: group 1 – pH at admission between 7.35 and 7.25; group 2 – pH between 7.25 and 7.15. Statistical analysis was performed using SPSS 19. We considered value of p < 0.05 as threshold for statistical significance.
Results: We analyzed 56 cases, with equal distribution between genders and a mean age of 77.4 years. Six patients had at least one previous hospitalization (10.7%) and 22 patients (39.6%) had present or past history of tobacco smoking. In AG at admission, the mean pH was 7.29 and mean paCO2 was 71.7 mmHg, ratio pO2-FiO2 was 71.7, HCO3- 33.5 mmol/L. Medium SAPS II was 39.8. The average duration of hospitalization was 7.3 days. In two cases there was need for IMV (3.6%) and nine patients end up dying (16.1% mortality). Every case was treated with NIMV on spontaneous mode with inspiratory and expiratory differentiated pressures with facial mask as interface. Group 1 and 2 were composed by 45 (80.4%) and 11 (19.6%) patients, respectively. Mean pH at admission was 7.30 for group 1 and 7.20 for group 2. Outcomes in both groups were different: mortality of 8.9% versus 45.4%, p = 0.003. When comparing other parameters, there were no differences with statistical significance. Having pH < 7.25 at admission was associated with in-hospital death (odds ratio of 6.037, p = 0.042).
Conclusions: Values of arterial pH below 7.25 at admission, despite the use of NIMV, are associated with worst intra-hospital outcomes.

Keywords: *COPD. Non-invasive mechanical ventilation. Respiratory acidemia. Global respiratory insufficiency.*

CO 041. THE DIAGNOSIS OF COPD IN A PRIMARY AND A SECONDARY CARE CENTER. WHERE DO WE STAND?

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Introduction: According to the Global Initiative for Chronic Obstructive Lung Disease (GOLD), spirometry is a mandatory exam to diagnose COPD (Chronic Obstructive Pulmonary Disease), as it is to evaluate the severity and the level of obstruction.
Objectives: To determine the proportion of patients with a correct diagnosis of COPD, according to the GOLD criteria in two different samples: patients of a primary health care center and patients admitted to a secondary health care center.
Methods: A retrospective study was conducted regarding the evaluation of all patients with an active diagnosis of COPD from January to December 2018 in Unidade de Saúde Familiar (USF) Ouriceira and patients admitted to the internal medicine ward in Hospital de Santa Marta (HSM). The informatic data was consulted in order to select the patients with a previous codification of COPD in both centers. In these patients, the existence of a spirometry prior to

the diagnosis was searched and determined if the GOLD criteria were present - forced expiratory volume in 1 second/forced vital capacity ratio (FEV1/FVC) < 0.70 post-bronchodilator.
Results: The total of patients codified as COPD in the USF were 121. Of these, 103 (85.1%) with register of having performing spirometry and 18 (14.9%) with no registry of this exam. Of the 103 with spirometry, 62 (60.2%) had spirometric confirmed COPD, in contrast with 41 patients (39.8%) which did not. Between these patients, 25 (24.3%) had no spirometric criteria for COPD and in 16 (15.5%) the results were not available. In HSM, a total of 448 patients were admitted to the ward of internal medicine. Among these patients, 58 (11.8%) had a registry of COPD as an active diagnosis. Spirometry was registered in 38 (64.5%) while 20 (34.5%) had no registry of having performed this exam. Only 25 (43.1%) of the patients with a spirometry filed the criteria for COPD, as 5 (8.6%) did not had criteria and in 8 (13.8%) the results were not available. The totality of the sample in both centers showed either symptoms, radiologic findings, tobacco smoke or environmental exposure.
Conclusions: Less than two thirds of the USF patients and less than half of the HSM patients had a true diagnosis of COPD according to GOLD criteria. All analysed patients had exposure to risk factors, radiologic alterations or symptoms suggesting COPD, although 24.3% of the primary care center patients and 8.6% of the hospital patients showed no disease in the spirometry. COPD is the third leading cause of death worldwide, killing more than three million people every year. The diagnosis of this disease is many times undervalued in clinical practice and spirometry not performed. We pretend to emphasize the importance of a correct diagnosis and management.

Keywords: *COPD. Spirometry. Diagnosis.*

CO 042. EXERCISE LIMITATION IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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Introduction: Patients with chronic obstructive pulmonary disease (COPD) often have exercise intolerance, which affects their quality of life. The main causes of limitation are: ventilatory and gas exchange limitation, muscle deconditioning and the presence of comorbidities.
Objectives: To identify exercise limitation factors in COPD patients through Cardiopulmonary Exercise Testing (CPET).
Methods: Retrospective study of COPD patients (GOLD criteria) who underwent CPET in the last 2 years at the Pulmonology Department of CHUC - General Hospital.
Results: We included 47 patients, 78.7% male, mean age 66 ± 8.6 years. They performed a respiratory functional study prior to CPET with mean FEV1 of 58.6% and mean DLCO of 66%. Twenty-eight patients (59.6%) had hyperinflation/air trapping. Fourteen patients (29.8%) had arterial blood gas hypoxemia. In CPET patients reached an average maximum load of 76.6 watts with an average duration of 7:54 minutes. The mean VO2peak was 15.5 mL/kg/min (63.2% of predicted). Most patients (68.1%) discontinued the test for maximum lower limb discomfort (BORG scale). Two patients (4.3%) did not complete the test because of joint pain/limitation. Four patients (8.5%) showed no effort limitation. The remaining 41 patients had limitations due to: deconditioning (10.6%), cardiovascular events (10.6%), cardiovascular events associated with gas exchange abnormalities (6.4%), ventilatory and gas exchange abnormalities (25.5%), only gas exchange abnormalities (29.8%) and ventilatory alterations alone (4.3%). Patients without effort limitation had mean FEV1 75.0% and mean DLCO 78.0%. In patients in whom the limitation occurred due to deconditioning, mean FEV1 was 64.5% and mean DLCO was 71.5%. The 5 patients whose limitation resulted solely from cardiovascular events had a mean FEV1 of 56.6% and a mean DLCO of 70%. Twenty-nine patients (61.7%) had abnormal gas exchange: 11 (23.4%) with normal end-exercise blood gases (mean FEV1 66% and mean DLCO 60%) and 18 (38.3%) with end-exercise blood gas abnormalities - 8 patients (17%) with isolated desaturation (mean FEV1 56.9% and mean DLCO 55.9%), 7 patients (14.9%) with desaturation and hypercapnia (mean FEV1 46.0% and mean DLCO 75.4%) and 3 patients (6.4%) with isolated hypercapnia (mean FEV1 43.0% and mean DLCO 61.2%). The only 2 patients with ventilatory limitation (4.3%) had dynamic hyperinflation as the only factor limiting their exertion (mean FEV1 76.0% and mean DLCO 78.5%).
Conclusions: We found that most patients had effort limitation. The main limiting factors were ventilatory and gas exchange alterations, which appeared even in patients without abnormalities at rest. Desaturation and/or hypercapnia with exercise seem to be associated with more severe changes in lung function. CPET proved to be a useful tool in detecting factors such as dynamic hyperinflation and comorbidities, particularly cardiac, that contribute to exercise limitation. Thus, effort assessment of COPD patients can help us better understand individual exercise limitation mechanisms and adjust therapy/rehabilitation plan.

Keywords: *CPET. COPD. Lung function.*

CO 043. NORMOXEMIC COPD PATIENTS WITH DESATURATION IN THE 6MWT. WHAT'S THE ROLE OF AMBULATORY OXYGEN?

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Introduction: The six-minute walking test (6MWT) is a useful tool in COPD. Ambulatory oxygen in patients with Chronic Obstructive Pumonary Disease (COPD), normoxemic at rest, may be used if there is a peripheral O2 saturation < 88% or reduction of 4% to levels inferior to 90% in the 6MWT. There should also be an improvement in dyspnea and exercise capacity.
Methods: Retrospective study, clinical data from COPD patients followed in the Pulmonology department, from 2012-2014, that performed 6MWT with ambulatory oxygen criteria, normoxemic at rest. We obtained data regarding exacerbations, respiratory failure development, Non-Invasive Mechanical Ventilation (NIV) or OLD use and mortality. Patients under NIV, OLD or other major conditions leading to desaturation. The study was approved by the local ethics committee.
Results: A total of 100 patients were included, median age of 67 years, with obstructive ventilatory syndrome (median FEV1% = 42.8%), mean resting PaO2 71.5 ± 9.3 mmHg. In the 6MWT, mean distance was 387.6 m, with initial Borg score of 1 (IQR 6), final Borg score of 4 (IQR 10) and mean desaturation of 9.54 ± 3.8%. The mean time to first exacerbation was 23.2 ± 18.1 months. It correlated with survival, distance in the 6MWT, FEV1 and tend to correlate to initial Borg score (p = 0.053) There was no correlation between time to exacerbation and desaturation the 6MWT. In 5 years follow-up, 24.0% of patients started NIV, with a mean tome to NIV use of 26.6 months. Ambulatory O2 was prescribed initially to 21% of patients. Lung function tests and arterial blood gas (ABG) analysis were similar between patients with or without ambulatory O2 prescription. Patients with ambulatory O2 prescription walked a smaller distance (346.1 ± 133.1 vs 398.6.1 ± 87.4 meters), had higher desaturation (12.7 vs 8.6%) and higher initial Borg score in the 6MWT. Patients with ambulatory oxygen prescription had lower survival (47.9 ± 22.4 vs 60.4 ± 19.4 months). There were no differences in time to first exacerbation between groups. Patients who died in 5 years follow-up, had higher initial Borg score (1.2 vs 0.5) in the 6MWT, and less

time to first exacerbation (17.4 vs 26.2 months, p < 0.05). Other characteristics of the 6MWT were similar.
Conclusions: Of all patients with COPD, normoxemic at rest, with significant desaturation in the 6MWT, only 21% had ambulatory oxygen prescription. These patients had a shorter distance in the 6MWT, higher desaturation and higher initial Borg score, despite similar lung function and ABG characteristics. Ambulatory O2 prescription didn't lead to a survival benefit. Main limitations to this study include lack of control to comorbidities that could be not reported and adhesion data.

Keywords: *COPD. Oxygen. 6-minute walking test.*

CO 044. PROLONGED DOMICILIARY VENTILATORY SUPPORT IN ADVANCED PULMONARY DISEASE: CLINICAL IMPACT AND SURVIVAL ANALYSIS

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Introduction: The impact of domiciliary noninvasive ventilation (dNIV) in patients with stable COPD has only recently been shown in reducing exacerbations and significantly increase survival. Its indication is still controversial in other pulmonary pathologies. The use of prolonged dNIV (> 12h/day) in this population has never been described.
Objectives: To describe and analyze the evolution of noninvasive ventilatory support dependence (from nocturnal to use > 12 hours/day), adherence to treatment, exacerbations and hospital admissions in the pre and post of dNIV institution in patients with advanced pulmonary disease (APD).
Methods: A retrospective study that included patients with APD followed in an outpatient Pneumology Department, with clinical indication for nocturnal dNIV, with settings titrated in a ventilation laboratory and due to the evolution of their disease, they needed to extend the ventilatory support to daytime use. Ventilatory settings, NIV adherence data, ventilatory monitoring data (leaks, % activated breaths, tidal volume, respiratory rate), 24-hour oximetry data and CO2 values under NIV were analyzed.
Results: Twenty patients (6 females) were analyzed, with a mean age of 67.4 ± 11.7 years, of which 15 (75%) were diagnosed with COPD, 4 (20%) with bronchiectasis and 1 (5%) with hypersensitivity pneumonitis, with FVC-1.92 ± 0.62 L and %FVC-66 ± 21%, mean FEV1 of 0.84 ± 0.34 L, mean %FEV1 of 33 ± 12%, mean FEV1/FVC of 44.3 ± 17.5, mean pH of 7.41 ± 0.02, PaO2 of 60.9 ± 12.6 mmHg and PaCO2 of 53.1 ± 11.5 mmHg. The ventilatory settings for nocturnal NIV were gradually titrated in the laboratory. The bi-level S/T pressure mode was used in all patients (1 under AVAPS algorithm) with mean IPAP of 20 ± 4 cmH2O, EPAP of 6 ± 1 cmH2O, respiratory rate (RR) of 15.2 ± 1.0 cpm and O2 supplementation of 2.1 ± 0.8 l/min. Due to disease progression and clinical worsening, all patients required prolonged ventilatory support during the day after a mean of 38 ± 32 months under nocturnal dNIV. After this increase in ventilatory dependence, an alternative interface was introduced and the ventilatory settings were optimized for mean IPAP of 26 ± 6 cmH2O, EPAP of 6 ± 2 cmH2O, RR of 17.3 ± 1.9 cpm, and O2 supplementation of 2.8 ± 01.4 l/min. After the increase in ventilatory dependence, the patients had an average daily use of 18h: 37 ± 3h: 46, mean leakage of 42 ± 11 l/min, mean RR of 19 ± 3 cpm, mean% of activated breaths of 38 ± 30%. Under prolonged ventilatory support, the patients presented mean 24-hour oximetry values of 92.9 ± 2.7% with mean % time < 90% of 17.2 ± 23.4% and PaCO2 of 50.4 ± 7.3 mmHg. The mean duration of nocturnal NIV is 71 ± 51 months and the mean duration of prolonged ventilatory support (NIV > 12 hours/day) is 32 ± 30 months. During the time of NIV, 5 patients (25%) died. During the time under NIV the emergency episodes and hospital admissions of respiratory cause were on average 4.7 ± 5.4 and 3.0 ± 4.1, respectively. Despite prolonged ventilatory support, 16 patients (80%) maintained the ability to ambulate with NIV and O2 supplementation (portable use).
Conclusions: In patients with APD with indication for dNIV, the ventilatory dependence may increase according to the disease progression and these patients have great potential for the use of prolonged ventilatory support effectively.

Keywords: *Prolonged ventilatory support. Advanced pulmonary disease.*

CO 045. EXACERBATIONS OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE. FACTORS ASSOCIATED WITH MORTALITY IN A NON-INVASIVE VENTILATION UNIT IN A PULMONOLOGY SERVICE

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Introduction: Exacerbations of Chronic Obstructive Pulmonary Disease (COPD) are associated to high mortality. The identification of factors associated with an increased risk of death allows the prognostic stratification of these patients and their management. In recent years, several papers have been published to identify these potential factors.
Objectives: To identify factors associated with higher mortality in patients hospitalized for COPD exacerbation in a Non-Invasive Ventilation Unit in a Pulmonology Service of a Central Hospital.
Methods: Retrospective study among patients admitted to the Non-Invasive Ventilation Unit of the Pulmonology Service of Centro Hospitalar Lisboa Ocidental due to COPD exacerbation during 2018. The sample was divided into 2 groups: in Group 1 (G1) were the patients who died during hospitalization and in Group 2 (G2) the surviving patients. We collected data regarding demographic characteristics, forced expiratory volume in the first second (FEV1) value, blood eosinophil count in stable phase, number of COPD exacerbations in the past year, days of hospitalization, C-reactive protein (CRP) value, pH and pCO2 value and PaO2/FiO2 ratio at admission. The APACHE II (Acute Physiology and Chronic Health Evaluation II) scale and the Charlson comorbidity index were also applied. Statistical analysis was performed to compare differences between groups.
Results: 43 patients, mean age 72 years, 64.8% men (n = 24); there were 6 deaths (14%) - G1. Comparing both groups, patients included in G1 had a lower mean FEV1 value (37.33% versus 48.67% in G2, p = 0.02), higher APACHE II mean score (19.17 versus 10.97 in G2, p < 0.01) higher Charlson comorbidity index (8.83 versus 4.04 in G2, p < 0.01) and at admission: lower pH value (7.21 versus 7.31 in G2, p < 0.01), higher pCO2 value (96.5 versus 75.64 in G2, p = 0.01) and lower PaO2/FiO2 ratio (145.8 versus 219.9 in G2, p = 0.02). There were no statistically significant differences regarding gender, age, days of hospitalization, CRP value at admission, blood eosinophil count and presence of exacerbations in the previous year.
Conclusions: Despite the reduced sampling, it was possible to identify potential factors associated with higher mortality that are described in the literature, namely FEV1 value, Charlson comorbidity index and severity of respiratory acidemia and hypercapnia. Although APACHE II scale is only validated for Intensive Care Units, its use in this context has enabled the identification of patients at higher risk of death. Contrary to what is described in the literature, there was no significant differences regarding the presence of previous exacerbations and age which we attributed the small sample size. The analyzed data are widely used in clinical practice, so the authors propose the maintenance of data collection in patients ad-

mitted to this Unit as an initial assessment tool, to be further analyzed with a larger sample.

Keywords: *Chronic obstructive pulmonary disease. Exacerbation. Mortality factors.*

CO 046. IMPACT OF NONINVASIVE VENTILATION IN STABLE COPD PATIENTS

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Introduction: There is an increasing use of noninvasive ventilation (NIV) in stable COPD patients and chronic respiratory failure with hypercapnia. However, studies have shown controversial results regarding criteria about using NIV in stable COPD.
Objectives: To assess the impact of NIV in stable COPD patients concerning different outcomes (blood gas analysis, functional respiratory parameters, and exacerbations free time).
Methods: Retrospective cohort study of COPD patients with home NIV for at least 6 month followed at our hospital in 2018. Patients with chest deformity, neuromuscular disease and Overlap syndrome with severe OSA and mild to moderate COPD (AHI ≥ 30 and post-bronchodilator FEV1 ≥ 50%) were excluded.
Results: The study included 100 COPD patients with a median use of NIV of 40 months [percentil25: 24; percentil75: 67.5]. Mortality rate was 8% (n = 8). The results are summarized in the table.
Conclusions: During follow-up there was an increase in ventilatory parameters with significant improvement of hypoxemia and hypercapnia reduction. ER admissions and hospitalizations for respiratory illness significantly decreased after institution of NIV.

Keywords: *Noninvasive ventilation. Stable COPD. Outcomes.*

CO 047. OUTLINE OF THE IMPLEMENTATION OF A NATIONAL CONSENSUS TO OPTIMIZE THE USE OF SYSTEMIC ORAL CORTICOSTEROIDS IN THE TREATMENT OF SEVERE ASTHMA IN ADULTS

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Introduction: In patients with severe difficult to control asthma, the regular use of chronic systemic corticotherapy (CSC) was often the only effective option to control patients who did not respond to standard therapeutic approaches. The current therapeutic options include the use of biologic agents, with future perspectives that CSC may be replaced by existing biologic agents and others under development. A systematic review published by Cochrane on the use CSC in asthma demonstrated that the evidence is weak to conclude whether SOC regimens with lower dose or shorter periods are less effective than those with higher doses or longer periods, or if the latter are associated with more adverse events. In view of the lack of consensus on the best practice in the use of CSC, there is a need to perform a national consensus on this subject.
Methods: To accomplish this consensus, a 3-round modified Delphi process will be conducted, which relies on a Scientific Committee of the areas of Pulmonology and Allergology and will be implemented in September 2019. After a first extended meeting with experts in this area – the PRECISION Meeting - and an exhaustive bibliographic search, the criteria to be included in Delphi were identified and then validated by the Scientific Committee, from which resulted the Delphi questionnaire, comprising three topics: (i) Chronic systemic corticosteroid therapy in asthma; (ii) Therapeutic regimens of systemic corticotherapy in acute and maintenance settings and (iii) safety and monitoring of SC in asthma, each with several statements. The panel of experts comprises more than 50 prominent personalities in the national medical community, with notorious clinical and academic relevance, ensuring an enlarged geographic distribution and heterogeneous composition both with pulmonologists and allergologists. Each expert will receive the Delphi questionnaire by email and will have 2 weeks to respond to each of the rounds, in which they will be asked to express their degree of agreement with each of the statements, on a 5 point-Likert scale (1-completely disagree, 2-disagree, 3-do not agree, nor disagree, 4-agree and 5-completely agree). The analysis of the results will be made considering the aggregation of responses given to categories 1 and 2 and Categories 4 and 5, considering a negative consensus if 75% of the answers correspond to the categories (1 + 2) and positive if 75% of the responses were in the categories (4 + 5). The stability analysis will be assessed by the proportion of experts who have varied their response between rounds and the percentual variation of the proportion of concordance between rounds will be used as an indicator of convergence.
Conclusions: With the methodology outlined in this work, consensus is expected to be gathered with regard to the following topics: Prescription of CSC in patients eligible for treatment with biologic agent; Prescription of chronic systemic corticosteroids in patients not eligible for treatment with biologic agent; How to do dose de-escalation; How to evaluate and monitor the adverse effects of the use of CSC therapy.

Keywords: *Adult severe asthma. Systemic oral corticosteroids. Delphi method. National consensus.*

CO 048. EVALUATION OF ASTHMA EXACERBATION OUTCOMES IN HOSPITAL CARE

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Introduction: EvAsthmapt was a multicentre study whose main objective was to evaluate the relationship between clinical practice, and clinical and organizational factors, with the results of asthma exacerbations that resulted in entry into the hospital emergency in Portugal. It involved the recruitment of patients in the emergency room (ER) due to asthma exacerbation, data collection and analysis of the outcome of the ER visit, and telephone follow-up at 30 and 60 days after inclusion in the ER. Three areas of improvement were identified in this study: increased monitoring, including spirometry; increase prescription for control medications and; increase access to unscheduled medical appointments. The Hospital Geral do Centro Hospitalar e Universitário de Coimbra (CHUC-HG) was one of the centres that participated in the study.
Objectives: To evaluate the results of the EvAsthmapt study for CHUC-HG and fit them into the national overview; and to evaluate the implementation of areas identified for improvement.
Methods: Analysis of EvAsthmapt study data for CHUC-HG and compare it with the national results. Telephone contact for late follow-up (2 years) of patients who participated in the initial study.
Results: For EvAsthmapt, CHUC-HG recruited 29 patients. Twelve (12; 41.4%) had a history of at least one asthma exacerbation in the previous year, and four needed hospitalization for this reason. Most patients were already being treated for asthma (n = 28; 96.6%), with emphasis on the use of ICS/LABA in 22 (75.9%) patients. At inclusion, 9 (31%) patients needed to be hospitalized due to asthma exacerbation. The outcome was favorable in all. Follow-up at 30 and 60 days was performed in 25 (86.2%) patients. Of these, 5 had at least one exacerbation at 30 days (20%) and 3 re-

quired evaluation in the ER. At 60 days, three patients had at least one exacerbation (8%) and two of them resorted to ER. No patient required hospitalization during the entire follow-up period. All patients who were followed at 60 days accepted reevaluation at 2 years. Nine (9, 36%) reported asthma exacerbations during this period, 4 of which required medical evaluation in the ER and 2 hospitalization.
Conclusions: CHUC-HG results were generally superimposed on national ones. Asthma exacerbation rates in the year prior to study enrollment and at 60-day follow-up were slightly lower in CHUC-HG than the national ones. Hospitalization rates at study inclusion and asthma exacerbations during the 30-day follow-up were slightly higher in CHUC-HG. At 2 years, there was an increase in the percentage of exacerbations compared with 60-day follow-up, with a concomitant relative increase in emergency admissions. This data may suggest that the areas of improvement identified in EvAsthmapt are not being implemented correctly. A new prospective study, adapting the original protocol, may help clarify this scenario.

Keywords: *Asthma. Asthma exacerbation. Treatment. Emergency room.*

CO 049. EPIDEMIOLOGY OF ALLERGENS IN THE ADULT POPULATION OF BEIRA INTERIOR

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Introduction: Worldwide, the rise in the prevalence of allergic diseases has continued in the industrialized world for more than 50 years. Therefore, it is urgent to know the allergic pattern of the population to prevent the aggravation of respiratory diseases and improve quality of life. The sensitization profiles vary according to genetic predisposition, geographical areas of residence and patient´s age. Currently, no studies are showing the current pattern of allergen sensitization in the interior of Portugal, specifically in Beira Interior.
Objectives: This study aims to determine a median prevalence and summarize the main allergies in the general adult population in the Beira Interior of Portugal.
Methods: Retrospective study from 2 years, where we collected the demographic data and results of Prick test made in the Hospital of Guarda, a region of Beira Interior, Portugal. Patients referred by physicians of multiple specialities for suspected allergies. Allergy skin tests were performed on all patients with positive control, negative control and thirteen most common allergens in the Beira Interior region. Papule diameters were measured and compared to identify skin reactivity. Results are presented as mean and standard deviation for continuous variables and number/percentage for categorical variables. We performed statistical analysis with the SPSS version 23 program, assuming a 95% confidence interval.
Results: We enrol 259 patients, mostly female (175/67.6%), mean age of 48.9 (± 18.2) years. The prevalence of allergy in this screened sample was 89/34.8%. The most common skin positive reactivity test was Dermatophagoides pteronyssinus and Dermatophagoides farinae (house dust mite) with 62/69.7%, followed by Olea europaea (olive tree) 32/36%, gramineae 31/34.8%, artemisia 15/16.9%, plantago 14/15.7%, trees 9/10.1%, cat and dog 5/5.6%, flowers 4/4.5% and finally fungus 1/1.1%. Among elderly patients, the most common skin reactivity remained house dust mites at 9/81.8%, followed by gramineae 3/27.3%, artemisia and olive tree 2/18.2%, dog danger and fungus 1/9.1%. Sensitization to multiple allergens was common in our patients, with 42/47.2% of the sensitized responding to at least two allergens, with statistically significant differences between ages ($p = 0.024$).
Conclusions: The high prevalence of house dust mite is concordant with the literature by being the most common allergy. Nevertheless, the allergy to the olive tree is not negligible. Although there are no significant changes in the allergic profile, however, there seems to be a decrease in sensitization within the elderly population. Polysensitization is also common in our adult population, especially in the younger ones.

Keywords: *Skin allergy tests. Sensitization allergies. Beira interior.*

CO 050. SMALL AIRWAYS IN ASTHMA: ANOTHER SEVERITY MARKER?

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Introduction: Severe asthma affects 3.8% of asthmatic patients and represents more than half of the costs associated with treating the disease. Contrary to the role established for FEV1 and FEV1/FVC ratio in the diagnosis and monitoring of the disease, the clinical utility of FEF25-75 is still poorly studied. However, there is evidence that reduced FEF25-75 values may be related to disease severity.
Objectives: To determine if there is a relationship between FEF25-75 values and asthma severity.
Methods: A retrospective study was conducted with the inclusion of adult patients followed in asthma consultation in a period of 12 months, excluding those with a smoking load > 5 PPY. In addition to anthropometric data, serum inflammatory markers (eosinophils and total IgE) and functional markers (FEV1, ITGV, RV, FEF25-75) were also recorded. Patients were classified into two groups: mild to moderate asthma (G0) and severe asthma (G1) according to the criteria defined by the 2014 ERS/ATS Taskforce. Statistical data were processed using the SPSS® program, version 24.
Results: 125 patients with a mean age of 55 (± 18) years, female predominance (75%, n = 94) and mean BMI of 29.1 kg/m^2 were included. Ninety-two (73.6%) patients were classified in G0 and 33 (26.4%) in G1. Regarding the functional markers, there was a decrease in FEV1 (%predicted) in G1 (64% vs 88%, $p < 0.001$) and FEF25-75 (23% vs 59%, $p < 0.001$) and an increase in RV in G1 (143% vs 110%, $p < 0.001$). After multivariable analysis it was found that reduced values of FEF25-75 are an independent functional marker of severe asthma (OR 0.9, $p < 0.001$). Regarding inflammatory markers, it was found that patients with total IgE ≥ 400 and peripheral eosinophilia ≥ 250 had lower mean FEF25-75 values.
Conclusions: Small airway alterations can be assessed by FEF25-75 and our results show that reduced FEF25-75 values may correlate with the presence of severe asthma, both with functional and serum inflammatory markers. Given the complexity of the management of patients with severe asthma, these data reinforce the importance of FEF25-75 as a potential functional marker in this group of patients.

Keywords: *FEF25-75. Small airways. Severe asthma. Functional marker.*

CO 051. EVOLUTION IN RESPIRATORY INHALERS PRESCRIPTION IN PORTUGAL FROM 2004 TO 2018. THE ACTION STUDY

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Introduction: The trends of physician's decision making concerning the different pharmacological classes of inhaled therapy available for the management of asthma and chronic obstructive pulmonary disease (COPD) is unknown in Portugal.

Methods: The Asthma and COPD Trends in Inhaler prescriptiON (ACTION) is a Portuguese 15-year prospective analysis, performed between 2004-2018 inclusive, of a physician's decision-making process concerning the different pharmacological classes of inhaled therapy for the management of asthma and COPD. In addition, it compares the trends on the use of dry powder inhaler (DPI) and pressurized metered dose inhaler (pMDI) devices. The study comprises data provided by IQVIA (The Human Data Science Company; information, technology and solution services for the healthcare industry). The data was collected from Base Dataview Plus (Portugal, retail), in units from 2004 to 2018, by NFC2 (New Form Codes), Prod and Pack; and corresponds to the yearly units supplied by wholesalers to community pharmacies. The analysis was done considering the timeline of changes provided by the documents GINA (Global INitiative for Asthma) and GOLD (Global initiative for chronic Obstructive Lung Disease), in the same period. The analysis considered inhalers containing four different pharmacological classes, for the management of asthma and COPD: the inhaled corticosteroid (ICS), the long-acting muscarinic antagonist (LAMA), the long-acting β2-agonist (LABA), and the short-acting β2-agonist (SABA). The monotherapies and combination of LAMA/LABA and ICS/LABA were considered. There was no way in this study to assign the prescription with the corresponding disease, asthma, COPD or other.
Results: In a 15-year analysis (2004 to 2018) we observed 64.0% increase in total inhaled therapy. The use of SABA has decreased by 10.8% in the last 15 years. In the same period, ICS (monotherapy or in combination with LABA) in absolute numbers increased by 94.2%. In a 5-year analysis (2014 to 2018) we observed 16.0% increase in total inhaled therapy. In absolute values, SABA increased by 3.5% and ICS/LABA increased by 35.3%. In 2018, ICS/LABA DPI remains preferred by 74.3% over pMDI. The ICS/LABA pMDI in absolute values showed 129.0% increase, that can be explained by the introduction of new pMDI inhalers containing new ICS/LABA formulations and by recent reimbursement of spacers (valved-holding chambers) by the Portuguese Government (Ordinance 246/2015). The decline observed both for LAMA and LABA monotherapies is in line with the 2014´s introduction of LAMA/LABA for the management of COPD patients.
Conclusions: In Portugal from 2004 to 2018, inhaled therapy increased by 64.0%. Although the use of SABA alone has decreased by 10.8% in the last 15 years, there has been a 3.5% increase in the last 5 years. The use of ICS (alone or in combination) has increased by 94.2% and 23.4% in the last 15 years and 5 years, respectively. LABA and LABA monotherapy prescription decreased from 2014 to 2018, together with the increase in the LAMA/LABA combination. In 2018, DPI were the most commonly prescribed devices, representing 63.3%, and the use of ICS (alone or in combination) represented 47.4% of the total number of prescribed inhalers in Portugal.

Keywords: *Asthma. DPOC. Respiratory inhalers. Prescription trends. SABA. ICS. LAMA. LABA. LAMA/LABA. ICS/LABA.*

CO 052. RADIOLOGICAL PHENOTYPES IN ASTHMA

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CHUC.

Introduction: Radiological findings in asthmatic patients, being variable, may be associated with different clinical presentations of the disease, possibly related to the underlying endotypes.
Objectives: Evaluate the existence of radiological "phenotypes" in asthma and characterize them according to clinical, biological and risk markers, namely respiratory functional parameters, eosinophilia and exacerbations.
Methods: Retrospective study, which included patients followed at the Severe Asthma/Difficult Control consultation (2014-2019), with available chest computed tomography (CT). These were grouped by radiological pattern: air trapping, bronchial thickening, bronchiectasis and no changes. Results from pulmonary function tests and blood tests were collected, on the date of the CT. COPD patients were excluded. Statistical analysis was performed through IBM-SPSS (significance level 0.05).
Results: 50 patients were included, mean age 54.7 (± 16) years and female predominance (76%; n = 38). The most frequent radiological pattern was the air trapping (n = 23). Patients without air trapping had higher serum eosinophils, RV (L,pre-BD) and RV/TLC (pre-BD)(p = 0.040;p = 0.029; p = 0.047). In these there was a higher percentage of patients with eosinophils > 150 cells/μL (p = 0.043). Patients with bronchial thickening had higher values of TLC (L,pre-BD/post-BD), RV (L, pre/post-BD) and FeNO (ppb) (p = 0.006; p = 0.003; p = 0.005; p < 0.001; p = 0.001). In this group the percentage of patients on biological therapy was higher (p = 0.014), in relation to the remaining. Patients with bronchiectasis were older and had lower FEV1/FVC (pre/post-BD), MMEF75/25 (%, pre-BD) and DLCO-SB (mmol/min/kpa/%) (p = 0.041; p = 0.005; p = 0.005; p = 0.020; p = 0.039; p = 0.048). In this group there was a higher percentage of patients with obstruction (p = 0.017). Regarding the evaluation between radiological groups: the age varied significantly between the air trapping and the bronchiectasis groups (p = 0.008); there was a higher percentage of obese in the air trapping group; the eosinophilia was higher in the thickening group; concerning the symptom questionnaires, there was a higher percentage of patients with bronchiectasis with values compatible with less disease control; the group with the largest number of patients under biological disease was the thickening group; regarding the FEV1, it was found that patients with thickening and bronchiectasis had lower values, as well as FEV1/FVC and RV/TLC; concerning RV (pre/post-BD), it was found that patients with thickening had higher values when compared to the air trapping group, with statistical significance (p = 0.023; p = 0.018); DLCO was lower in patients with bronchiectasis; patients with thickening and bronchiectasis had higher FeNO values.
Conclusions: Considering that, in the presence of air trapping, BMI was higher, obesity may be a confounding factor in the interpretation of the results. Nevertheless, assuming today as either comorbidity or as implicated in the pathophysiological mechanism of the disease, larger studies should be performed to explore this finding. Peripheral eosinophilia, linked with a higher FeNO value, was more evident in the bronchial thickening group, with a higher percentage of patients under biological treatment. Since the role of eosinophilic inflammation in airway remodelling is recognized, this radiological feature may be integrated into the established type 2 asthma phenotype, eventually more serious. Finally, patients with bronchiectasis had a higher mean age, more exuberant symptomatology and greater bronchial obstruction. A "new" asthma/bronchiectasis phenotype can be considered, to be clarified with more studies.

Keywords: *Asthma. Phenotypes. Air trapping. Bronchial thickening. Bronchiectasis.*

CO 053. CLINICAL AND DEMOGRAPHIC CHARACTERIZATION OF PATIENTS UNDER MEPOLIZUMAB USING THE SEVERE ASTHMA RECORD PORTUGAL. A REFERENCE CENTER EXPERIENCE

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Introduction: Mepolizumab (MPZ) is a humanized anti-IL-5 monoclonal antibody indicated as an adjuvant treatment for severe eo-

sinophilic asthma refractory to conventional therapy. It has shown a reduction in the number of exacerbations and systemic corticosteroid use in these patients (pts). The Severe Asthma Record Portugal (RAG) aims to improve the provision of healthcare for severe asthma in Portugal by promoting cooperation between centers and assisting the implementation of research projects. We aimed to do a demographic and clinical analysis of the pts under MPZ in our service.

Methods: Retrospective observational study with analysis of the demographic and clinical data entered in the RAG, regarding pts under MPZ of our service. All pts are in the grade 5 of asthma according to GINA guidelines, even after treatment optimization and management of comorbidities, and are (or have been) under subcutaneous MPZ at a dose of 100 mg 4/4 weeks.

Results: Twenty patients (pts) were included, of whom 14 are women, with a mean age of 53.5 ± 16.5 years (15-76 years). They were diagnosed with asthma 20 years before (on average) and severe asthma 10 years before. Fourteen pts have a BMI > 25 Kg/m^2, of which 6 are obese. None have current smoking habits but 2 are former smokers. The most common comorbidities are rhinitis (16 pts, mostly with mite sensitization), sinusitis (9 pts) and nasal polyposis (9 pts). Regarding therapy, all pts are treated with ICS + LABA and antileukotrienes, and only 3 pts are still in a low dose of systemic corticosteroids; 3 pts previously tried Omalizumab without symptomatic improvement. MPZ was started < 6 months (m) in one pt, 6-12m in 6 pts, 12-18m in 7 pts and 18-24m in 4 pts; in 2 pts it was suspended for lack of efficacy. In the remaining cases, clinical improvement was observed since 6m of treatment and continued afterwards, with an increase in the ACT score (14 to 20 at 6m and 21 at 12m), eosinophil count reduction (848 cel/L to 71 cel/L at 6 m and 64 cel/L at 12m), decreased number of exacerbations (4 to 1/year and 0 hospital admissions) and systemic corticotherapy use (3-4 cycles/year to 0-1/year). It was also noted a decrease in the work absenteeism rate and an increase in the quality of life. Concerning adverse effects, 2 pts reported myalgias that reverted with the administration of magnesium.

Conclusions: Our experience with MPZ showed a positive impact on asthma control and quality of life with a good safety profile. RAG proved to be a good working tool, facilitating the storage of the most relevant data for the demographic and clinical characterization of severe asthma pts.

Keywords: *Asthma. Eosinophilia. Il-5. Mepolizumab.*

CO 054. SMOKING CESSATION IN THE COMMUNITY PHARMACY: DETERMINANTS FOR SUCCESS

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Introduction: Despite the increasing number of smokers wishing to quit, the success rates remain low. The Community Pharmacist have a privileged position in the society to promote smoking cessation.

Objectives: To report the pharmacist's contribution and to study the determinants for the success of smoking cessation in the Community Pharmacy.

Methods: Retrospective and longitudinal study on a sample of smokers assisting pharmacist consultations. The work reported was performed in 8 Community Pharmacies on the South of Portugal between 2009 and 2019. Participants, aged 18 or over, were selected by convenience during the usual activities of the Pharmacy. Guidelines issued by Direção-Geral da Saúde were followed. Motivation was evaluated by the Richmond test and dependence by the Fagerström test. The Pharmacist's intervention was mainly centered on motivation and behavioral approach and nicotine replacement therapy (NRT). When needed participants were referred to the physician. Smoking abstinence was evaluated at the quit day, 1st, 3rd, 6th and 12th months and confirmed by measuring CO in the exhaled air. Statistical analysis was performed using SPSS (IBM SPSS V. 25). Bivariate analysis used χ^2 and Fisher's exact tests. An error probability of 0.05 of type I (α) was considered.

Results: For ten years, 135 smokers assisted pharmacist consultations, 79 (58.5%) were male. A median age of 47.8 ± 1.21 years was registered being the majority labor active (74.1%) with a basic or secondary educational level (80.0%). Overweight and obesity (60.0%), dyslipidemia (48.9%) and anxiety (30.4%) were the most prevalent pathologies. On average, each patient declared a daily consumption of 22.5 ± 0.98 cigarettes, assisted to 3.5 ± 0.28 face-to-face consultations and received 2.81 ± 0.31 telephone contacts. The majority of smokers presented moderated motivation (53.3%) and median dependence (43.0%). In parallel with the motivation and behavioral approach, 116 (85.9%) smokers received also pharmacological therapy: 108 (80.0%) were treated with NRT and 8 (5.9%) with non-nicotine medications. From smokers on NRT, 54 (40.0%) used only oral forms, 11 (9.5%) only patches and 32 (23.7%) used a combination of patches and oral forms simultaneously. Pharmacist interventions resulted in 70 (51.9%) complying quit day, from which 59 (43.7%) were smoking abstinent at the end of the first month. Success rates reduced to 32.6%, 28.1% and 20.7% at the end of the 3rd, 6th and 12th months, respectively. Smoking cessation was more successful for the participants taking pharmacological therapies (Fisher's exact test, $p < 0.001$), target of more pharmacist's consultations ($\chi^2 = 59.994$, $p < 0.001$) and more telephone contacts ($\chi^2 = 17.845$, $p < 0.001$). Similarly, the success was also positively associated with duration of smoking habits for more than 40 years ($\chi^2 = 12.403$, $p = 0.013$) and with the presence of dyslipidemia (Fisher's exact test, $p < 0.001$). On the contrary, smokers with depression presented lower success rates (Fisher's exact test, $p = 0.018$).

Conclusions: Based on the results presented, the community pharmacist can significantly contribute for the promotion of smoking cessation. We shall note that smokers more deeply accompanied by the pharmacist show increased success rates when compared with smokers having fewer contacts with this professional.

Keywords: *Smoking cessation. Pharmacist. Community pharmacy.*

CO 055. THE FIRST PORTUGUESE PSYCHIATRIC ACUTE INPATIENT UNIT FREE OF TOBACCO: A PIONEER EXPERIENCE

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The prevalence of smoking in the population with severe mental illness is significantly higher compared to the general population, and there is no single hypothesis justifying this association. Smoking is a major contributor to higher rates of severe morbidity and early mortality observed in this population and thus, it's a modifiable risk factor with significant importance that health professionals should focus on. Psychiatric hospitalization is, in itself, a unique opportunity to promote smoking cessation amongst patients, as long as it provides an environment that can help them through each step. However, the culture of smoking by patients and staff within mental health wards has been a long-standing and accepted cultural norm. In recent years, this has been challenged by the successful introduction of smoke-free policies in mental health settings in some countries. Nonetheless, in Portugal, total smoking bans have never been attempted. In fact, partial smoking bans are contemplated in the Portuguese Law for mental health services, which makes them one of the exceptions to the total smoking ban applied to places where health care is provided. Studies suggest that the main barrier for

the implementation of smoking ban policies in mental health services is the staff perception that this measure might lead to deterioration of patient's mental status, resulting in increased physical violence. Surprisingly, recent literature focusing on experiences of total smoking ban policies worldwide, prove that there is in fact a reduction in violent events after implementation. Regarding this matter, the authors aim to present the first experience in implementing a total smoking ban policy in an Acute Inpatient Psychiatry Ward, that took place in Hospital Professor Doutor Fernando Fonseca. This required a multidisciplinary approach involving mental health staff and collaboration of the pneumology smoking cessation team. To implement this project, a step-by-step approach was required, including review of the literature, focusing on experiences that took place in other countries; subsequently, and using a multidisciplinary approach, an internal protocol was designed and staff training in all psychiatry units was conducted; in order to assess the program's viability, data regarding violent events within the Acute Inpatient Unit was collected, before and after implementation of the smoking ban. Preliminary results showed that the implementation of this project was successful, with no increase in physical events, in spite of the occurrence of some violations to the ban, which has been reported in other countries. The establishment of a clear timeline and protocol, with multiple staff training sessions, appeared to be decisive to the success of this experience. This pioneer project, in the context of Portuguese health care, has set a precedent for reconceptualizing some outdated and enduring ideas concerning mental health services and patients themselves, still widespread in our society. The authors risk to say that this project is essential to reduce the existing stigma, verified even at a structural level, leading to an overall improvement on both mental and physical health of patients.

Keywords: *Psychiatric unit. Mental health. Smoking cessation. Smokefree policies. Smoking ban.*

CO 056. HOSPITAL SMOKING CESSATION ASSESSMENT NETWORKING PORTUGAL (SCANPT): A PRELIMINARY CROSS-SECTIONAL STUDY

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Introduction: Tobacco remains the main cause of respiratory diseases. Smoking cessation (SC) is the most cost-effective measure of chronic disease interventions, especially in special populations such as hospitalized patients with multiple co-morbidities. Nevertheless, tobacco cessation is not routinely implemented in healthcare. In Portugal, health services research in smoking cessation is scarce.
Objectives: To describe and compare the implementation of hospital-based smoking cessation services (SCS) in the National Health Service (NHS) in mainland Portugal.
Methods: A questionnaire-based cross-sectional study was carried during March-May 2019. The questionnaire applied a validated self-audit tool developed by a Delfi panel: the European Smoking Cessation Assessment Network (ESCAN) self-audit. The ESCAN self-audit assesses the level of implementation of SC services through eight dimensions (human resources, signage, good clinical practice, population of smokers, participation in tobacco cessation training and community activities, data gathering, evaluation and research) using an ordinal scale 0-4 from not implemented to totally implemented. Hospitals were matched by region (from NUTS II to North, Center and South). In March 2019, data gathering began via electronic mail. The coordinators of the NHS hospital-based SCS completed the self-audit-scan. A descriptive and comparative analysis was made and hospital-based SCS were compared.
Results: From 32 hospital-based SCS, 27 (84.3%) were evaluated, (55.6% from South, 25.9% from Center Portugal). The great majority of SCS are individual face-to-face programs delivered by respiratory physicians trained in SC. Nurses are not systematically involved. The mean score of good practice, signage and effort to achieve adequate human resources was around 3. In contrast, the mean score for the other items (delivery of SC to special population of smokers, participation in SC training and community activities, data gathering, evaluation and research) was around 2, $p < 0.005$. No statistically significant differences were observed among hospital-based SCS from different regions, except for participation in community activities. Community involvement was stronger in hospitals based in smaller cities.
Conclusions: there is room to improve hospital-based smoking cessation services, such as the following: delivery of group sessions, tailored programs to special populations of smokers, active involvement and training of a multidisciplinary team, and community involvement. There is a need to train and establish a smoking cessation research network.

Keywords: *Smoking cessation. Hospitals. Health services research.*

CO 057. COMMUNITY-BASED PULMONARY REHABILITATION IS AT LEAST THREE TIMES MORE EFFECTIVE THAN PHARMACOLOGICAL TREATMENT ONLY

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Despite the unquestionable benefits of pulmonary rehabilitation (PR) for people with chronic respiratory diseases, this non-pharmacological intervention, is highly inaccessible when compared with pharmacological treatments. Reasons for this lack of accessibility are not limited to but include programmes being hospital-based and directed to patients in more severe stages of the disease. Novel PR models near patients' residence and directed to less complex patients, independently of their disease severity, have been encouraged to improve accessibility. A convincing argument for policymakers to support the widespread of such initiative would be the availability of evidence about PR programmes with less specialised resources continuing to overweight the results of pharmacological treatments only. This study aimed to compare the results of community-based PR programme with pharmacological treatment only, i.e., long-acting bronchodilator (either a long-acting beta agonist or an anti-cholinergic long-acting muscarinic antagonist) in people with chronic obstructive pulmonary disease (COPD). A quasi-experimental pre-post retrospective study was conducted with people with COPD, referred by general practitioners/pulmonologists to the Respiratory Research and Rehabilitation Laboratory-Lab3R, School of Health Sciences, University of Aveiro. Experimental group (EG) was composed of those participating in a 12-week community-based PR programme. Control group (CG) was composed of those who chose not to participate in PR but accepted to be part of the study. All participants were taking pharmacological therapy. Data were collected at baseline and at 12-weeks. The following measures were collected: dyspnoea during activities with the modified medical research council-dyspnoea scale (mMRC); quadriceps muscle strength (QMS) with the handheld dynamometer; functionality with the 1-minute sit-to-stand (1-min STS); exercise tolerance with the six-minute walk test (6MWT); impact of the disease with the COPD Assessment Test (CAT) and health-related quality of life with the St. George's Respiratory Questionnaire (SGRQ). Baseline characteristics were compared between groups with t-tests, Mann Whitney U-tests and chi-squared tests as appropriated. For each measure, mean differences were calculated and differences between groups were tested with t-tests or Mann Whitney U-tests. A two-way analysis of

variance was used to determine the effects of time and time × group interaction. Established minimal clinically important difference (MCID) were plotted in the mean change graphs. Two hundred and four people with COPD participated: 110 in the EG (68.9 ± 9.1 years old; 86 [78.2%] male; BMI = 27.1 ± 4.8 kg/m^2; FEV1pp = 55.4 ± 21.1; GOLD stages: A-33 [30%]; B-54 [49.1%], C-2 [1.8%]; D-21 [19.1%]) and 94 in the CG (67.6 ± 9.4 years old; 75 [79.8%] male; BMI = 27.2 ± 3.5 kg/m^2; FEV1pp = 54.6 ± 23.3; GOLD stages: A-29 [30.9%], B-41 [43.6%], C-9 [9.6%], D-15 [16%]. No significant differences were found between groups for clinical characteristics or medication at baseline. After 12-weeks, differences between groups ($p \leq 0.023$) and for time × group interaction (mMRC, $p = 0.001$; FMQ, $p = 0.020$; 1-minSTS, $p = 0.009$; TM6M, $p = 0.006$, CAT, $p = 0.003$; SGRQ, $p = 0.023$) were significantly different. Improvements of the EG were at least 3 times larger than those of the CG. MCIDs were only exceeded by the EG. Community-based PR is highly effective and necessary for improvements, in people with COPD, above what has been established as minimum in fundamental outcomes. Strong efforts should continue to be taken to lead community-based PR to prosper in Portugal.

Keywords: *Pulmonary rehabilitation. LABA. LAMA. Low-resources. COPD.*

CO 058. PULMONARY AMYLOIDOSIS. A RARE DISEASE WITH SEVERAL PRESENTATIONS

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Introduction: Amyloidosis is a rare disease characterized by abnormal proteins deposition in the extracellular matrix, resulting in disordered structure and dysfunction of the organs involved. Pulmonary amyloidosis may be localized or part of systemic amyloidosis. There are 3 different forms: nodular, diffuse parenchymal and tracheobronchial.
Objectives: To analyze the population with respiratory amyloidosis whose diagnosis or endobronchial treatment were made at our institution.
Methods: Analytical, cross-sectional, retrospective study of patients with respiratory amyloidosis whose diagnosis or endobronchial treatment were made at our institution between 1/1/2000 and 31/07/2019. We analyzed the following variables: gender, age at time of diagnosis, smoking habits, main symptoms at diagnosis, pulmonary function tests (PFTs), radiology, endobronchial abnormalities, complementary exams, treatment and follow-up.
Results: From the review of the patients submitted to bronchoscopy in this institution we found 10 patients with respiratory amyloidosis. Half of these patients were women and the average age at time of diagnosis was 58.9 ± 8.2 years old. At time of diagnosis, the main symptoms were dysphonia (n = 7) and dyspnea (n = 5) and 1 patient was asymptomatic and started the investigation because of radiological findings. In symptomatic patients the mean diagnostic delay was 18.9 ± 24.7 months since the onset of symptoms. Six patients were non-smokers, 2 were smokers and 2 were former smokers (mean of 13.0 ± 21.5 pack per year). PFTs showed obstruction in 4 patients and they were normal in 3 cases, with DLCO decreased in 3 and normal in other 3 patients. Chest CT showed: tracheal mucosa thickening (n = 4) or tracheobronchial (n = 3), tracheal mass (n = 1), bilateral pulmonary nodules (n = 1) and single pulmonary nodule (n = 1). At the bronchoscopies performed in these patients the main endobronchial changes were: infiltration with a nodular component in 6 patients, from these, 2 had a massive tracheobronchial involvement, 1 with a sessile mass and 1 patient with subglottic involvement leading to stenosis. Two patients had a normal endobronchial exam. In 9 cases the diagnosis was made by bronchoscopy and in 1 of these patients we used radial endobronchial ultrasound and an image intensifier at the same exam, to help the diagnosis. Only 1 patient needed surgery to identify amyloidosis. The most common form was tracheobronchial amyloidosis (n = 8), followed by nodular form (n = 1) and diffuse parenchymal amyloidosis (n = 1). Two patients had larynx involvement. After this diagnosis, 6 patients had bone marrow biopsy, 2 had abdominal fat biopsy and 6 had blood and urine immunofixation test, with monoclonal gammopathy of undetermined significance diagnosis in 2 patients and amyloidosis in abdominal fat biopsy in 1 patient. About the treatment, 2 patients needed surgery and 6 patients needed laser endoscopic treatment, electrocoagulation, mechanical resection, dilatation with a balloon or a prosthesis. Two patients started treatment with glucocorticoids and chemotherapy.
Conclusions: Amyloidosis at the respiratory tract is rare, with a wide range of symptoms and radiological abnormalities, making this a challenging and sometimes unexpected diagnosis. Treatment approach depends on localization, disease extension, endobronchial involvement and symptoms. For the endobronchial involvement disease, endoscopic treatment has a fundamental role to symptoms palliation.

Keywords: *Bronchoscopy. Amyloidosis.*

CO 059. LYMPHOPROLIFERATIVE DISEASES APPROACH BY LINEAR ENDOBRONCHIAL ULTRASOUND

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Introduction: Linear endobronchial ultrasound (EBUS) is a minimally invasive procedure that allows the evaluation of adenopathies and mediastinal and hilar masses, having replaced the mediastinoscopy as the initial exam in this diagnostic search. It has high sensitivity and specificity for the diagnosis of lung cancer and some benign pathologies. However, its usefulness in the diagnosis and classification of lymphoproliferative diseases is still unclear.
Objectives: To analyze the utility of EBUS in the diagnosis of lymphoproliferative disease.
Methods: Analytical, cross-sectional, retrospective study of patients with lymphoma diagnosed by EBUS in an institution between 1/1/2015 and 12/31/2018. The exams were performed under general anesthesia and in the presence of a cytopathologist, thus allowing a quick observation of the material obtained. The following variables were analyzed: gender, age at the time of the exam, previous oncologic diagnosis, indication for the exam, imaging, endobronchial abnormalities, number of punctured targets and their location, size and number of punctures, final diagnosis and complications.
Results: During the considered period, 563 EBUS were performed, 22 of which (3.9%) because of suspected lymphoproliferative disease. Lymphoma was diagnosed in 14 patients. EBUS was negative in the remaining 8 cases with suspected lymphoproliferative disease, and subsequent examinations were negative. Patients with lymphoma were mostly males (n = 9), with a mean age at the time of the diagnostic exam of 51.1 ± 23.2 years. Nine patients had history of lymphoma, 4 had no cancer history and only 1 had history of rectal cancer. Regarding endoscopic abnormalities, 7 exams were normal, 3 had inflammatory signs, 3 had indirect signs of cancer and another had osteochondroplastic tracheobronchopathy. An average of 2.0 ± 1.1 lymph node stations were evaluated per exam and in 2 patients we identified masses attached to the airway. The most punctured lymph node stations were the subcarinal (n = 9), right inferior paratracheal (n = 6) and right hilar (n = 4). Its average size was 18.5 ± 9.9 mm, with an average of 2.6 ± 1.2 punctures per lymph node station, while masses average size was 21.5 ± 4.9 mm, with a mean of 5.5 ± 0.7 punctures. In addition to smears, flow cytometry material was also obtained in 10 patients and cytoblock in 4. Only 1 patient required a transthoracic biopsy to obtain more

material for a more accurate lymphoma classification. The histopathological diagnoses obtained were: non-Hodgkin's lymphoma in 10 patients and Hodgkin's lymphoma in 4. In one of these patients, a simultaneous diagnosis of lung adenocarcinoma was made. Lymphoma recurrence was confirmed in 9 patients and 5 new diagnoses were made. There were no complications secondary to these tests.
Conclusions: EBUS is a safe, minimally invasive test that allows, in most cases, to obtain sufficient biological material for accurate diagnosis and classification of lymphoproliferative diseases. This shows that because of the advances in molecular and genetic biology, it is now possible to make an accurate and precise diagnosis without resorting to studies with large tissue samples that allow a histopathological morphology.

Keywords: *Endobronchial ultrasound. Lymphoma.*

CO 060. WHAT IS THE ROLE OF LINEAR ENDOBRONCHIAL ULTRASOUND IN DIAGNOSIS OF INTRATHORACIC METASTASIS IN PATIENTS WITH SOLID EXTRATHORACIC TUMORS?

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Introduction: Several extrathoracic malignancies can metastasize to the lungs and mediastinal lymph nodes, changing staging, treatment strategy and prognosis. Linear endobronchial ultrasound (EBUS) is an alternative to mediastinoscopy and thoracoscopy that allows obtaining samples from several mediastinal lymph node stations and airway-related lesions, enabling the investigation of metastasis at this level.
Objectives: To analyze the utility of EBUS in staging patients with extrathoracic malignancies.
Methods: Analytical, cross-sectional, retrospective study of patients previously diagnosed with extrathoracic tumors and suspected mediastinal/pulmonary metastasis undergoing EBUS in an institution from 1/1/2015 to 12/31/2018. The exams were performed under general anesthesia and in the presence of a cytopathologist, allowing immediate observation of the material obtained. Variables analyzed: gender, age at the time of examination, basal neoplasia, imaging, endobronchial abnormalities, number of punctured targets, their location, size and number of punctures, final diagnosis, complications and follow-up.
Results: From the 563 EBUS performed during the considered period, 63 (11.2%) were performed in 61 patients with extrathoracic cancer and suspected thoracic metastasis: 55.6% were men, with a mean age at the time of exam of 65.4 ± 9.8 years. The most commonly observed extrathoracic tumors were: colon and rectum (17.5%, n = 11), breast (15.9%, n = 10) and laryngeal/piriform sinus (14.3%, n = 9). Eight patients had various cancers. Fifty exams showed no endobronchial alterations, 6 had inflammatory alterations, 3 had direct signs of neoplasia and 4 had indirect signs. A total of 111 lymph nodes stations were punctured (average 1.9 ± 1.1 per patient) and 5 tumoral masses attached to the airway. These lymph nodes had an average size of 13.1 ± 7.1 mm and were punctured 2.9 ± 1.3 times, with predominance of the right lower paratracheal (n = 33) and infracarinal (n = 28); the masses measured 24.8 ± 13.2 mm, with an average of 2.8 ± 1.1 punctures. EBUS confirmed neoplasia in 31 (49.2%) patients: 25 (39.7%) were metastases in agreement with the previous cancer, 5 (7.9%) were diagnosed with primary lung cancer and 1 patient (1.6%) was diagnosed with carcinoma without differential diagnosis possibility between metastasis and second cancer. The remaining tests had no neoplasia: in 36.5% (n = 23) only lymph node was identified, 7.9% (n = 5) had granulomatous lymphadenitis, in 4.8% (n = 3) the obtained material wasn't appropriate and in one case we identified thyroid tissue without atypia. Following these patients without cancer identification, 12 (37.5%) underwent further invasive examinations (bronchoscopy, surgery and transthoracic biopsy). The diagnosis of cancer was confirmed in 8 (66.7%), 7 of which in other target lesions other than those approached by EBUS: 4 with new primary lung cancer, 3 with metastasis consistent with the known cancer and 1 with thymoma. As a complication related to this technique there was a case of vocal cord trauma.
Conclusions: Although mediastinoscopy remains the gold standard, EBUS has gained a key role in the first line of investigation for suspected metastatic adenopathy in patients with extrathoracic malignancies as it is minimally invasive, with few complications. In our study, in 49.2% of cases, EBUS was diagnostic, without the need for more invasive diagnostic methods.

Keywords: *Endobronchial ultrasound. Metastasis. Extrathoracic malignancies.*

CO 061. ENDOBRONCHIAL METASTASIS OF MALIGNANT MELANOMA - SERIES OF 18 CASES

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Introduction: Pulmonary metastatic spread from solid extrapulmonary tumors is common in the clinical practice although the presentation as endobronchial metastasis is rare, is probably underestimated. Malignant melanoma (MM), despite its high metastatic potential, accounts for less than 5% of endobronchial metastasis. Therefore, data available concerning clinical and radiological presentation and survival of these patients is lacking, with only small series available and anecdotal cases reports.
Methods: Retrospective study from a single oncologic institution. We selected patients with endobronchial metastasis of MM from January 1991 to June 2019. The following data was collected: sex, age at diagnosis of the endobronchial metastasis, initial symptoms, radiological presentation, endobronchial localization and appearance, endoscopic treatment, primary tumour characteristics and patient vital status.
Results: We obtained a total of 18 patients, mostly of female sex (66.7%, n = 12), with mean age of 59.56 ± 12.45 years. The primary tumour originated from the skin in 72.2% (n = 13). In two patients no primary tumour was found. The most usual initial symptoms were cough (n = 12; 75%), dyspnoea (n = 9; 56.3%) and haemoptysis (n = 6; 37.5%). Two patients were asymptomatic. Pulmonary masses (n = 7) and nodules (n = 7), solitary or multiple, were the most frequent radiological presentations. Five patients had partial or total atelectasis at diagnosis. At the time of diagnosis of the endobronchial metastasis of MM most patients (n = 10; 55.6%) had metastasis in other sites besides the lung, mostly the liver (n = 6; 33.3%) and soft tissues (n = 5; 27.8%). Concerning endobronchial characterization, most lesions were unilateral (n = 10; 55.6%) and just in one site (n = 11; 61.1%). Morphologically, mostly were single vegetative lesions (n = 9). We also observed multiple vegetative lesions (n = 5), polypoid lesions (n = 2), one sessile lesion and melanotic spots (n = 2). In 7 cases (43.8%) the lesions were pigmented. Endoscopic treatment was performed in 55.6% of cases (n = 10), namely mechanical resection (n = 7), Nd-YAG laser (n = 6) and endobronchial stent placement (n = 3). The median latency between the diagnosis of the primary tumour and the occurrence of endobronchial metastasis was 43 months (interquartile range (IQR) of 47.5; minimum of 4 and maximum of 208 months). The median survival after the diagnosis of was 23.86 weeks. Poorest survival was associated with the presence of malignant pleural effusion (5.29 CI not calculable VS 29.43 CI [0-76.73] weeks; p = 0.001) and extrapulmonary metastasis at diagnosis (10.29 IC [9.84-10.73] vs 109 IC [0-223.14] weeks; p = 0.006). Patients with fever as initial symptom also had worse survival (10.14 IC [9.16-11.12] vs 49.71 IC [16.44-82.99]; p < 0.001).

Conclusions: Endobronchial metastasis of MM are rare and can occur either as an initial presentation of MM or several years after the diagnosis of the primitive tumour. The prognosis is reserved. The presence of malignant pleural effusion and of other metastatic sites besides the lung at diagnosis was associated with worse survival, as well as fever at diagnosis. However, it is not clear that fever was associated to the presence of endobronchial metastasis, reason why we can't infer that its presence clearly influenced the survival of these patients. Endoscopic treatment was a relevant element in the palliation of these patients.

Keywords: *Melanoma. Endobronchial. Metastasis. Bronchoscopy.*

CO 062. CAN PULMONOLOGISTS TREAT SPONTANEOUS PNEUMOTHORAX THROUGH THORACOSCOPY? A PORTUGUESE PULMONOLOGY DEPARTMENT 22-YEAR EXPERIENCE

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Introduction: Management of persistent or recurrent spontaneous pneumothorax continues to be debated, with growing evidence suggesting at least one technique towards a definitive treatment. Interventional pulmonology offers execution of most techniques with less invasive methods, through medical thoracoscopy. The authors present a retrospective observational study of patients with spontaneous pneumothorax subjected to different sealing methods through medical thoracoscopy.
Methods: Patients who underwent medical thoracoscopy for primary, secondary and iatrogenic pneumothorax, between 1996 and 2018, in a tertiary care hospital Pulmonology Department were selected, including patients in paediatric range. Data were extracted from medical records, until the last medical consultation or death. Statistical analysis was made with SPSS program, version 20.
Results: A total of 129 thoracoscopies was performed, in 126 patients. Pneumothorax was primary in 72% (n = 93), secondary in 25.6% (n = 33) and iatrogenic in 2.3% (n = 3) of cases. Patients were predominantly male (84.1%), with a median age of 33.2 ± 14.6 years (9 to 80), and 66.7% were active smokers at the time of diagnosis. Pneumothorax was left-sided in 51.4%. Vanderschueren classification was used to stage endoscopic findings, with the following results: 21.1% (n = 27) of patients were stage I, 16.4% (n = 21) were stage II, 46.9% (n = 60) stage III and 15.6% (n = 20) stage IV. Pleurodesis was performed in 89.2% (n = 115) of patients, of whom 85.2% (n = 98) through talc poudrage and 14.8% (n = 17) through mechanical abrasion. Resection with endostapler of blebs/bullae was performed in 39.5% (n = 51). Thoracoscopic coagulation, through use of electrocoagulation or argon plasma, was performed in 30.2% (n = 39) and 6.2% (n = 8), respectively. Relapse occurred in 9.8% (n = 9) of primary pneumothoraces and in 12.5% (n = 4) of secondary pneumothoraces, between 0.3 and 24 months of follow-up, median 1.5 months. Only 5 of these patients needed referral to thoracic surgery. Concerning different techniques, relapses occurred in 6.1% (n = 6) of the talc poudrage patients, 29.4% (N = 5) of patients subjected to pleural abrasion and 5.9% (n = 3) of patients submitted to resection with endostapler.
Conclusions: Talc poudrage had a low incidence of relapses. Resection of blebs and bullae with endostapler, performed by experienced interventional pulmonologists, also appears to be a safe and efficient way of sealing and prevention of relapses. There was a low referral rate for thoracic surgery. Most sealing techniques can be provided by experienced interventional pulmonologists, allowing management of persistent or recurrent pneumothorax without the need for surgical referral.

Keywords: *Thoracoscopy. Pneumothorax. Relapse.*

CO 063. BRONCHIAL ARTERIAL EMBOLIZATION - THE EXPERIENCE OF A RADIOLOGY SERVICE OF A TERTIARY HOSPITAL

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Introduction: Embolization of bronchial arteries plays an important role in the management of massive hemoptysis of various etiologies.
Methods: Retrospective study of patients with massive hemoptysis referred to the Radiology Service for bronchial arteriography and bronchial arterial embolization between 2015 and 2018.
Results: A total of 38 patients were identified, 21 (55%) males, with a mean age of 60.5 years (34-90 years). The main causes of hemoptysis were bronchiectasis (n = 12, 32%), idiopathic/cryptogenic (n = 9, 24%), tuberculosis sequelae (n = 6, 16%), neoplasia (n = 2) and congenital pulmonary AVM (n = 2). The less common causes were Behçet's Disease, Scimitar Syndrome, mediastinal lymphangioma, fungal infection, hemotorax, thoracic and cardiac surgeries. Bronchofibroscopy was performed in 10 cases, and the bleeding point was identified in 6 and direct signs of neoplasia in 1. Bronchial arteriography showed hypertrophy and tortuosity (n = 14, 37%), neovascularization (n = 14, 37%), vascular ectasia (n = 7, 18%), aneurysm (n = 2) and arteriovenous shunt. The changes occurred essentially at the level of bronchial vascularization: right bronchial artery (n = 11, 29%), left (n = 7, 18%) and bilaterally (n = 7, 18%). Superselective catheterization was performed by microcatheter in all cases, with placement of embospheres in 36, placement of metallic coils in 1 and unknown in 1. Only two techniques (5%) were complicated with pleuritic pain and generalized papular rash, both self-limiting. There was recurrence in 10 patients (26%): 4 cases of bronchiectasis, 4 of tuberculosis sequelae, 1 post cardiac surgery and 1 idiopathic. The mean recurrence time was 22.34 months. The cases were submitted to a new bronchial arterial embolization; in 2 cases there was hemoptocytic relapse with the need for a third attempt. In none of the cases was surgery sought. There was 1 death of a hospitalized patient for placement of mechanical mitral prosthesis and tricuspid annuloplasty in the context of rheumatic valvulopathy.
Conclusions: Embolization of bronchial arteries is a safe and minimally invasive procedure, but its recurrence rate remains high and should be considered as definitive treatment only in patients who are not surgical candidates or with bilateral diffuse and pulmonary disease.

Keywords: *Embolization of bronchial arteries. Hemoptysis. Complications. Relapse.*

CO 064. THE ROLE OF ULTRASONOGRAPHY IN THE DIAGNOSIS AND DECISION ALGORITHM FOR THE MANAGEMENT OF PNEUMOTHORAX AFTER TRANSBRONCHIAL LUNG CRYOBIOPSY: FINAL DATA OF A PILOT STUDY

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Introduction: One of the main complications of Transbronchial Lung Cryobiopsy (TBLC) is pneumothorax, which is routinely assessed with post-procedural chest X-Ray (CXR). However, chest ultrasound (CUS) is an attractive alternative, given the greater specificity and sensitivity for pneumothorax detection, with a less expensive and less time consuming exam, which is radiation free and easily performed at bedside of the patient at the bronchoscopy suite.

Objectives: To test pneumothorax diagnostic accuracy of CUS versus CXR after TBLC and to evaluate its role in the decision algorithm for pneumothorax management. Secondary objectives were to evaluate the post-procedure pneumothorax prevalence and risk factors.
Methods: Consecutive patients eligible for TBLC from September 2017 to March 2019 were included. Cryobiopsy was performed during rigid bronchoscopy in deep sedation, with fluoroscopic guidance. CUS was performed 30 min and 2h after TBLC and CXR 2h after the procedure. Pneumothorax by CUS was defined by the absence of lung sliding/lung pulse, B lines and by the presence of lung point and stratosphere sign on M mode. Clinical data, lung function tests and histology results were collected. All patients signed informed consent and the study was approved by the Ethics Committee.
Results: Sixty-seven patients were included (mean age 63 ± 9.7 years, 56.7% male). Most TLBC were performed on the right lung (64.2%), median of 3 biopsies per procedure, mostly done in single lobe (59.7%). Pneumothorax developed in 23.1% of patients. Higher pleural representation on histology was significantly higher in patients with pneumothorax (67.9% vs 28.2%; p = 0.001). Pneumothorax rate had a tendency to increase in patients with biopsies in two lobes. Final diagnosis was achieved in 79.1% of patients, with the most frequent diagnosis being hypersensitivity pneumonitis (39.4%). Considering patients with complete protocol assessment (n = 50), 42.1% of the 19 pneumothoraces detected at 2h were already present at the first CUS evaluation. For patients with at least one paired evaluation with CUS and CXR (same timing), 3 discordant results were observed (κ = 0.88, 95%CI: 0.76-1.00, p < 0.001), cases in which pneumothorax was detected only by CUS. The specificity and sensitivity of CUS were 97.5% (95%CI: 86.8-99.9) and 100.0% (95%CI: 87.2-100.0), respectively. In addition, the positive likelihood ratio was 40.0% (95%CI: 5.8-277.1) and negative likelihood ratio 0%. The proportion of CUS-determined large volume pneumothoraces that required drainage (chest tube placement, or small-bore catheter connected to a one-way Heimlich valve) was comparable to those determined by CXR methods (see table).
Conclusions: CUS is superior to CXR in detecting or excluding the presence of post-TBLC pneumothorax. It is, therefore, a useful method that optimizes time spent at the bronchology unit, allows immediate response in symptomatic patients and prevents exposure to ionizing radiation. The lung point site can reliably indicate pneumothorax size as compared to interpleural distance measured by CXR, which can be helpful in choosing optimal treatment strategies for these patients.

Keywords: *Transbronchial lung cryobiopsy. Interstitial lung diseases. Pneumothorax. Ultrasonography.*

CO 065. SHORT AND MEDIUM-TERM OUTCOMES IN THERAPEUTIC BRONCHOSCOPY FOR MALIGNANT CENTRAL AIRWAY OBSTRUCTION: A TEN-YEAR CENTRE EXPERIENCE

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Introduction: Therapeutic bronchoscopy (TB) for malignant central airway obstruction (mCAO) is performed for more than 25 years. However, little is known about contributing factors for a successful procedure.
Objectives: to find out whether there are determinants of successful airway reopening, clinical improvement and need for redo TB.
Methods: retrospective unicentre study including all patients submitted to TB due to significant and symptomatic mCAO, from January 2008 to December 2018. Significant mCAO was defined as reducing airway to 50% or less of the normal lumen. Data related to patient and lesion characteristics, endobronchial procedure and need for new intervention were collected. Short-term outcomes were defined as successful airway reopening (to > 50% of normal lumen) and dyspnoea improvement. Medium-term outcome was need for reintervention, either due to mCAO relapse or other cause.
Results: sixty-five patients were included: 42 (64.6%) male, mean age 61.8 ± 12.9 years, who had 81 procedures: 65 (80.2%) first TB and 16 (19.8%) redo TB. Previous to TB, 82.7% patients were classified as performance status 1 or less, 76.5% referred dyspnoea, 58% had atelectasis of lung parenchyma distally to the mCAO and 13.6% referred haemoptysis. Procedure was considered emergent in 12.3% cases and urgent in 22.7%. Bronchoscopic findings were classified into endobronchial tumor (64.2%), extrinsic compression (7.4%) or mixed (28.4%), and the degree of stenosis into 50-69% (21%), 70-89% (26%) or > 90% (53%). The therapeutic interventions used were argon-plasma coagulation (74.1%), mechanical debulking (59.3%), electrocautery (24.7%), balloon dilatation (21%), cryotherapy (2.5%), and/or stent placement (28.4%). In 35.8% cases there was suction of purulent secretions distally to the obstruction. Successful reopening of the airway was achieved in 58% of TB. Absence of haemoptysis (p = 0.001) and atelectasis (p = 0.013) were significantly associated with success. Stenosis < 90%, balloon dilatation and suction of purulent secretions were also significantly associated with successful airway reopening (p = 0.002, p = 0.022 and p = 0.015, respectively). Concerning dyspnoea improvement (45.7%), it was significantly associated with performance status 1 or less (p = 0.030) and was present in all patients with atelectasis reversal after TB (p = 0.003). The performance of an emergent procedure was identified as an independent risk factor for the need to redo TB, in univariate logistic regression (OR 4.385, 95%CI 1.105-17.397).
Conclusions: In this work, successful reopening was achieved in half of procedures. Moreover, we identified clinical and bronchoscopic determinants that seem to be associated with successful procedure, clinical improvement and need for reintervention; being aware of them may help us improving short- and medium-term outcomes in our daily practice.

Keywords: *Airway obstruction. Therapeutic bronchoscopy. Success. Dyspnoea. Reintervention.*

CO 066. ATYPICAL MICOBACTERIOSIS

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Introduction: The prevalence and epidemiology of non-tuberculous mycobacterial (NTM) infection is largely unknown. It is estimated that the number of NTM infections has been increasing especially with the reduction in the incidence of tuberculosis in our country. In regions with low incidence of tuberculosis, a 7-fold higher prevalence of NMT infection has been estimated. Consequently NMT infection may become frequent in our clinical practice in the near future.
Objectives: To characterize NMT infections that began treatment at the Coimbra Pulmonological Diagnostic Center (CDP-Coimbra).
Methods: Retrospective analysis of patients who started treatment for NTM between 2015 and 2019. Demographic, clinical and radiological data were collected.
Results: A sample of 25 patients was obtained with a mean age of 64.6 ± 22.7 years, 21 were female (84%). They had an average weight of 53.9 ± 17.0 kg. The most frequent profession was domestic (11 patients, 44%), followed by health professionals (4 patients, 16%). There has been an increase in the number of cases per year since 2015. In 2015 2 patients were diagnosed, 1 patient in 2016, 5 in 2017, 13 in 2018 and 4 until May 2019. Pulmonary infection was found in 23 cases (92%) and ganglionar infection in 2 (8%), both of

pediatric age. The most common mycobacterium was Mycobacterium avium complex (20 patients, 80%), followed by Mycobacterium kansasii (2 patients, 8%), Mycobacterium gordonae (2 patients, 8%) and Mycobacterium fortuitum (1 patient, 4%). The most frequent comorbidity was bronchiectasis with 60% of our sample having bronchiectasis documented by chest CT. 2 patients had COPD and 2 had a neoplastic history. 8 patients had some degree of immunosuppression, 4 being HIV positive, 3 were under systemic corticosteroid therapy and 1 under systemic corticosteroid therapy and azathioprine. Of the respiratory infections, 13 patients had only respiratory symptoms (53%), 7 patients had respiratory and constitutional symptoms (28%), 1 patient had constitutional symptoms and 2 patients were asymptomatic. The most frequent respiratory symptoms were productive cough (11 patients) and hemoptysis (4 patients). The most frequent constitutional symptoms were fever (7 patients) and asthenia (4 patients). Radiologically, 8 patients had micronodulation, 5 pulmonary cavitation, 3 mediastinal adenomegalies and 1 pleural effusion. The most commonly used diagnostic methods were culture in 2 sputum samples (10 patients), culture in bronchial aspirate (5 patients) and bronchoalveolar lavage (4 patients). The most commonly used treatment regimens were Rifampicin (R), Ethambutol (E) and Clarithromycin (68%), RE and Azithromycin (16%) and Isoniazid (H) RE (8%). In patients who completed treatment, the mean duration of treatment was 12.7 ± 1.5 months and the average time to culture negativity was 2.5 ± 1.0 months. There was recurrence of infection in 2 patients.
Conclusions: Knowing the epidemiology of NMT infection becomes increasingly important as the number of new diagnoses increases. It is an infection that is difficult to eradicate and is prolonged in treatment, so its knowledge leads to early diagnosis and improved quality of life for patients.

Keywords: *Non-tuberculous mycobacteria. Pulmonary infection.*

CO 067. INCREASED FREQUENCY OF ISOLATION OF GRAM-NEGATIVE STRAINS IN RESPIRATORY SAMPLES

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Introduction: Knowledge of the microbiology and epidemiology of bacterial infections are formative skills of utmost relevance to clinicians. In addition, increased antimicrobial resistance poses an additional challenge in the selection of the most appropriate antimicrobial therapy for the treatment of bacterial respiratory infections.
Objectives: The main goal of this study was to identify the predominant microorganisms in respiratory samples collected in a hospital setting for 5 years (2014-2019).
Methods: Retrospective and observational study conducted between January 2014 and June 2019. The results of 1160 samples collected from respiratory products, identified in a hospital setting at a hospital, were analysed, namely: 2014 (n = 225, 19%), 2015 (n = 213, 18%), 2016 (n = 252, 22%), 2017 (n = 227, 20%), 2018 (n = 162, 14%), 2019 (n = 81, 7%). The frequency of identification of the predominant microorganisms in each year was assessed, as well as whether it was characterized as multiresistant and a producer of extended spectrum beta-lactamases (ESBL). Hospital services where bacterial microorganisms were identified were also identified.
Results: In 2014, the predominant microorganisms were: Pseudomonas aeruginosa (25%), Staphylococcus aureus (13%), Haemophilus influenzae (9%) and Streptococcus pneumoniae (7%). In turn, in 2019, the predominant microorganisms were Pseudomonas aeruginosa (26%), Klebsiella pneumoniae (20%), Haemophilus influenzae (14%) and Escherichia coli (10%). The growing importance of K. pneumoniae should be noted, whose frequency of identification evolved from 5% in 2014 to 20% in 2019, and it was currently the second most frequently identified microorganism in respiratory samples. 31% of K. pneumoniae isolates were identified as multiresistant and producers of ESBL. Escherichia coli also had a significant increase from 4% in 2014 to 10% in 2019, reinforcing the growing importance of Gram-negative isolates in respiratory samples.
Conclusions: Changes in the epidemiology of bacterial infections have an impact on clinical decisions, particularly in the selection of empirical antimicrobial therapy. The increased frequency of identification of Gram-negative bacteria in respiratory samples should contribute to a greater awareness among clinicians and to an increase in studies on the molecular characterization of these pathogens.

Keywords: *Antimicrobials. Gram-negative bacteria. Respiratory infections. Epidemiology.*

CO 068. INFECTIONS CAUSED BY PSEUDOMONAS AERUGINOSA IN PORTUGUESE ICUS: CEFTOLOZANE/TAZOBACTAM AND COMPARATORS SUSCEPTIBILITY. STEP STUDY

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Introduction: The emergence of multidrug resistant Gram-negative bacteria has impact on the mortality and morbidity of patients admitted to intensive care units (ICU). Ceftolozane/tazobactam (C/T) is approved for complicated urinary tract infections (cUTIs), including pyelonephritis, and in combination with metronidazole for complicated intra-abdominal infections (cIAIs). C/T is also currently under revision, by EMA, for nosocomial pneumonia, including ventilator associated pneumonia. The aim of the STEP study was to assess the in-vitro activity of C/T and comparators against isolates prospectively collected from patients with cUTI, cIAIs and lower respiratory tract infections (LRTI) admitted at ICUs in Portugal.
Methods: Isolates collected in 11 Portuguese hospitals (June 2017-July 2018) from patients with cUTIs, cIAIs and LRTI admitted in ICUs, with 396 isolates of P. aeruginosa. Antimicrobial susceptibility was evaluated by standard broth microdilution for C/T, piperacillin-tazobactam, ceftazidime, cefepime, aztreonam, imipenem, meropenem, ciprofloxacin, gentamicin, tobramycin, amikacin, and colistin and interpreted using EUCAST guidelines.
Results: Isolates were recovered from cUTI (n = 90; 22.7%), cIAI (n = 80; 20.2%) and LRTI (n = 226; 57.1%). Among all the isolates, 21.2%, 23.2% and 0.8% were classified as MDR, XDR and pan-resistant, respectively. C/T was the agent with best activity for P. aeruginosa (94.7/95.5% S; MIC50/90, 1/4 mg/L), followed by amikacin and tobramycin (both 88.9% S).
Conclusions: In this study, C/T was the agent with better activity against P. aeruginosa. The activity was maintained among the dif-

ferent sources of infection (cUTI, cIAI or LRTI) and resistance phenotypes, with the exception of carbapenemase producers. These results allow a better knowledge of the national ecology and antibiotic susceptibility pattern among P. aeruginosa isolates.

***Keywords**: Ceftolozane/tazobactam. Intensive care unit. Pseudomonas aeruginosa.*

CO 069. OUTBREAK IN AN AVIARY. WHAT KIND OF BACTERIUM?

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Introduction: Chlamydophila pneumoniae is an obligate intracellular bacterium that can cause atypical pneumonia characterized by an indolent illness with fever and nonproductive cough or productive mucoid sputum only. However, the emergence of outbreaks of C. pneumoniae are uncommon but with a growing importance. Serologies of C. pneumoniae have a great relevance in diagnosis of acute infection, especially in a presence of an outbreak.
Objectives: To present an uncommon outbreak of C. pneumoniae in one aviary, measures for its containment and evaluate risk factors for development of acute respiratory illness.
Methods: We identified the aviary workers that developed the acute respiratory illness caused by C. pneumoniae in December 2017 and January 2018. Diagnosis was confirmed by radiological examination and serological tests (C. pneumoniae IgG and IgM antibodies). Due to the rapid spread of disease, Public Health Unit screened the remaining workers and serological tests (IgG and IgM antibodies) were performed to detect and treat acute infection.
Results: We analysed 29 patients. Pneumonia caused by C. pneumoniae was confirmed in 13 patients: 5 radiologically only, 5 by serology only, and 5 by radiology and serology. We found evidence of previous infection of C. pneumoniae in 7 patients. Among the patients with pneumonia 8 went to the emergency room and 5 of them (mean age = 46.8 years; 3 with obesity) were hospitalized in the Pulmonology Department with a length of stay of 8 days. In most patients azithromycin associated with amoxicilin/clavulanic acid was the chosen antibiotic.
Conclusions: In some published studies has been demonstrated that outbreaks of C. pneumoniae infection appeared in closed contacts or in groups with a great social interaction. In this outbreak the rapid spread of disease forced the Public Health Unit in collaboration with the Pulmonology Department to respond quickly and contain the disease.

***Keywords**: Outbreak. Atypical respiratory infection. C. pneumoniae.*

CO 070. INFLUENZA VACCINATION AT THE LOCAL HEALTH UNIT OF GUARDA: ADHERENCE AMONG HEALTHCARE PROFESSIONALS

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Introduction: Influenza (seasonal flu) is an acute viral infection that usually affects the upper respiratory tract, caused by the influenza virus. The World Health Organization (WHO) estimates that, during the autumn/winter months, influenza can affect, approximately, 20% of the WHO European region (depending on the type of circulating virus). There are two main types of seasonal influenza viruses that can infect humans: A and B. Although it usually has a benign evolution, in some individuals influenza virus can cause severe disease, particularly in vulnerable populations. Annual vaccination is safe and the most effective way to prevent the infection, and possible severe outcomes, being recommended by WHO for specific groups. According to these recommendations the Direcção Geral de Saúde (DGS) established as priority groups for influenza vaccination in the 2018/2019 season: individuals aged 65 and over, individuals with chronic diseases and immunocompromised with 6 months or older, pregnant women, health care workers and other caregivers. Vaccination of healthcare professionals is of particular importance not only because it prevents the spread of infection to patients, but also for individual protection, as these professionals, through their daily and close contact with patients, are especially exposed to respiratory pathogens.
Objectives: To study the adherence to seasonal influenza vaccination among the Guarda Local Health Unit (LHU) healthcare professionals, in the 2018/2019 season.
Methods: The data was collected by the Occupational Health Unit, who operationalizes the vaccination, and its posterior evaluation is sent to the Public Health Unit, more specifically to the Vaccination Local Coordinator Group.
Results: Following the DGS guidelines, the LHU has provided to the healthcare workers of the Sousa Martins Hospital (SMH), Nossa Sra. da Assunção Hospital and all primary care units the opportunity to be vaccinated, as of October 2018. Among the 1,553 eligible healthcare workers (medical doctors, nurses, technical assistants, operating assistants and other professionals) the vaccination coverage was 35.7%. The medical doctors were the group of professionals with the higher immunization coverage - 56.1%. At the SMH, in the Pain and Intensive Care Units, General Emergency and the medical services of Oncology, Cardiology, Gynaecology, Physiatry, Imageology and Pneumology, 100% of medical doctors were vaccinated against the influenza virus. Nurses were the least receptive professional group to vaccination, with an overall coverage of 28.4%: 59% of these professionals worked at primary care units. Technical assistants, operating assistants and other professionals achieved vaccination coverages of 32.4%, 37.4% and 40.6%, respectively.
Conclusions: Although some units and services have presented a high vaccination coverage, the proportion of influenza vaccinated healthcare professionals, in the LHU of Guarda is substantially lower than the national: 35.7 vs 52% (according to the Vacinómetro data, for the same period). Raising awareness among professionals about the importance of vaccination is needed, not only for their own health (and possible impact on work absenteeism), but also for the well-being of patients.

***Keywords**: Vaccination. Seasonal flu. Influenza. Healthcare professionals.*

CO 071. CARDIAC EVENTS IN PATIENTS WITH COMMUNITY-ACQUIRED PNEUMONIA ADMITTED TO A PORTUGUESE INTERNAL MEDICINE WARD

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Introduction: Community-acquired pneumonia (CAP) is a major cause of hospitalization, morbidity and mortality. There is a well-known relationship between CAP and acute cardiac events. The goal of this study was to assess the incidence, risk factors and the impact of acute cardiac complications on duration of hospital stay and mortality in patients hospitalized due to CAP in 2018.
Methods: Data on demographics, comorbidities, clinical presentation, laboratory tests, total duration of hospital stay and clinical outcomes were collected. Cardiac events were defined as new or

worsening heart failure, arrhythmias or myocardial infarction. Comparison between CAP patients with and without cardiac complications was performed using SPSS. For descriptive statistics, median, mean and standard deviation (SD) were used. Chi-square test or Fisher exact test were used to compare categorical variables as appropriate. Statistical analysis of clinical characteristics between the two groups consisted of Mann-Whitney U tests. Factors associated with incident cardiac events with a univariate significance level of $p < 0.10$ were selected and included in a multivariate binary logistic regression model and odds ratios (OR) with 95% confidence intervals (CI) were calculated for each factor. A value of $p < 0.05$ was considered statistically significant.
Results: A total of 270 CAP hospitalized patients were included, 54.4% were females. The median age was 84 years. The most common comorbidities were arterial hypertension (76.3%), chronic heart failure (40.4%) and type 2 diabetes (25.9%). Approximately two thirds of patients presented with acute hypoxaemic respiratory failure. Forty-three percent of patients developed at least one cardiac event (102 congestive heart failure (of which 15 were acute pulmonary oedema), 38 arrhythmia and 7 myocardial infarction). The mean CURB-65 score was 2.65 (SD 1.05) and 2.33 (SD 1.16) for patients with and without cardiac events, respectively. Mean duration of hospital stay was significantly higher in patients who developed cardiac complications [13.25 (SD 9.66) days vs 9.97 (SD 6.65) days; $p = 0.01$]. There were no statistically significant differences in hospital mortality between the two groups. Factors associated with the incidence of cardiac complications with a univariate significance level of $P < 0.10$ were previous history of heart failure, arterial hypertension or atrial fibrillation, blood urea nitrogen > 7 mmol/L, age ≥ 65 years, arterial blood pH < 7.35 and arterial blood $pCO2 > 45$ mmHg. CURB-65 score was significantly associated with the incidence of cardiac events in the univariate analysis (OR 1.29; 95%CI 1.04-1.61), but it was not selected to the multivariate binary logistic regression model to prevent collinearity. According to the multivariate binary logistic regression analysis, previous history of heart failure was significantly associated with the incidence of acute cardiac events [OR 2.6; 95%CI 1.5-4.6].
Conclusions: Our findings demonstrate that, in this population of CAP hospitalized patients, major cardiac complications occur in a substantial proportion of cases. Their occurrence is shown to significantly increase the duration of hospital stay, even though there is no difference in mortality between the two groups. CURB-65 score and previous history of heart failure are associated with the development of acute cardiac events.

***Keywords**: Community-acquired pneumonia. Cardiac events.*

CO 072. ENDARTERECTOMY YES!!! AND THEN?

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Introduction: Endarterectomy is the first-line treatment of chronic thromboembolic pulmonary hypertension. However, persistent, residual or recurrent pulmonary hypertension (rPH) may affect up to 50% of the operated patients. This previously undervalued entity is becoming a growing concern due to the associated morbidity and mortality. Identifying patients who are at risk for this is critical so that balloon angioplasty or medical therapy can be offered the earliest possible.
Objectives: To determine parameters that permit to identify patients who are at greater risk of developing recurrent Pulmonary Hypertension (rPH) after endarterectomy.
Methods: The clinical files of the submitted to endarterectomy at the Royal Papworth Hospital (United Kingdom) between April 2016 and March 2019 were retrospectively evaluated. Those who had an immediate postoperative mean pulmonary artery pressure (mPAP) < 25 mmHg and postoperative follow-up > 6 months were selected to enter the study. From these, NTproBNP values, World Health Organization (WHO) functional class, 6-minute Walk Test distance (6MWT) and preoperative and postoperative hemodynamic parameters were collected.
Results: During this period, 31 patients underwent endarterectomy. Sixteen patients were excluded: 7 for not having the necessary data (including 1 deceased and lost for follow-up), 2 with postoperative time ≤ 6 months and 7 who presented mPAP ≥ 25 mmHg in the immediate postoperative catheterization (persistent or residual Pulmonary hypertension). Of the 15 patients included, 6 had rPH (Group 1) and 9 remained with mPAP < 25 mmHg during follow-up (Group 2). In Group 1, with a mean age of 67.3 ± 12 years, all patients were female; in Group 2, with a mean age of 51.6 ± 12 years, 33% (n = 3) were female. In Group 1, the majority of patients were in functional class III (n = 4). The walking distance of the 6MWT was 233.8 ± 58m (mean + SD), NTproBNP 596.3 ± 582 pg/mL, mPAP 43.5 ± 5 mmHg and pulmonary vascular resistance (PVR) 7.1 ± 2.9 WU. In Group 2 the patients were in functional class II (n = 5) and III (n = 4); the walking distance of the 6MWT was 417.3 ± 163m, NT-proBNP 441.4 ± 574 pg/mL, mPAP 52.1 ± 15 mmHg and RVP 10.2 ± 4 WU.The walked distance in the 6MWT was the only parameter that reached statistical significance ($p < 0.05$).
Conclusions: This study has several limitations. It is retrospective and, due to different follow-up protocols, 5 patient files (16%) did not have the required data. Although 31 patients were operated only 15 could be included. Of the included patients we found rPH in 40%. Due to the small sample size this value can be overestimated. It is, nevertheless, relevant. Despite the small sample size, the 6MWT stands out as an important parameter in determining the risk of developing HPr. The studies are scarce in effort evaluation as a sensitive and noninvasive tool for early identification of pulmonary hypertension. The authors propose to conduct a prospective study with post endarterectomy 6MWT and CPET follow up in order to determine their role in early and noninvasive detection of patients at risk of relapse after endarterectomy.

***Keywords**: Relapse HTP. Endarterectomy. 6 minute-walk-test.*

CO 073. INTEGRATED RESPIRATORY CARE FOR PATIENTS ON PROLONGED HOME MECHANICAL VENTILATION: PRELIMINARY RESULTS OF THE CAI_VENT PROGRAM

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Introduction: The use of Home Mechanical Ventilation (HMV) has been steadily increasing as it actually reduces the morbidity and mortality of patients with chronic respiratory failure, particularly patients with chest wall disease, patients with severe COPD, hypoventilation-obesity syndrome and patients with neuromuscular disorders. The number of patients requiring prolonged HMV has been increasing, but home surveillance and monitoring has not been sufficient to ensure more consistent therapeutic efficacy in these patients. The CAI_Vent Program-Integrated Support Center for patients under Prolonged Mechanical Ventilation proposes a patient-centered organizational alternative for HMV with the aim of maintaining continuity of care at home, ensuring effective monitoring and accessibility to the healthcare team 24 hours a day, 7 days a week in partnership with primary health care.
Objectives: To describe the organizational aspects of the CAI_Vent program and the impact of the implementation of this hospital initiative home care program in the reduction of the use of the Emer-

gency Service (ES), the number of days of hospitalization and the number of outpatient consultations for patients under prolonged HMV included in the program.
Methods: Patients followed at the S. João University Hospital (inpatient or outpatient) living in the referral area of ACES Porto Oriental and ACES Maia Valongo with indication for prolonged HMV (> 12h day) were included in the CAI_Vent program. All patients were visited monthly by the program team and had access to a 24-hour telephone line. All monitoring was performed by frequent reading of the data provided by the ventilator memory card. Data from the first half of 2019 on the number of visits to the ES, days of hospitalization and number of outpatient visits were recorded and compared with the same data from the first half of 2018 (time period without access to the CAI_Vent program).
Results: We included 39 patients (16 women) with a mean age of 60.2 ± 14.57 years with the following diagnoses: COPD (n = 18), Neuromuscular Diseases (n = 11), Obesity Hypoventilation Syndrome (n = 4), Kyphoscoliosis (n = 4), Interstitial lung disease (n = 2), with an average HMV use of 18.6 ± 4.5 hours/day. During the 6 months of analysis (1st semester of 2019), 106 home visits and 84 telephone calls were recorded. During the analysis time, 8 patients died (6 in palliative care hospitalization). Compared to the first half of 2018, during the first half of 2019 (program implementation period) we observed a reduction in days of hospitalization (140 days versus 77 days), a reduction in the number of visits to the ES (45 episodes versus 26 episodes) and a reduction in the number of outpatient consultations (50 consultations versus 27 consultations).
Conclusions: The implementation of an integrated support program for patients with prolonged HMV allows better monitoring of ventilated patients at home, promoting patient and caregiver literacy, early therapeutic interventions, avoiding the use of hospital resources.

Keywords: *Home mechanical ventilation. Integrated respiratory care. Ventilatory monitoring.*

CO 074. MULTIDISCIPLINARY PROTOCOL FOR EPISTAXIS APPROACH IN RESPIRATORY INTENSIVE CARE UNIT

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Introduction: Epistaxis is the most common otorhinological urgency in the world, with an estimated 60% of the population having at least one episode in their lifetime. In most cases the bleeding is slight and easily manageable but can in some situations be potentially fatal. In admitted patients its incidence is not known, however, these patients are often exposed to risk factors that increase the probability of this complication and its potential severity, such as anticoagulation, nasal oxygen therapy, naso-gastric intubation, bronchofibroscopy or barotrauma secondary to noninvasive ventilation, among others. The patient with respiratory pathology in general and especially the patient in need of hospitalization in the respiratory intensive care unit certainly presents an increased risk due to the set of therapeutic interventions to which they are subjected and their most fragile state.
Methods: The authors proposed the creation of an approach protocol for the inpatient that develops epistaxis aiming at the standardization of initial evaluation and therapy in these situations and ensuring maximum patient safety. With close collaboration between the Respiratory Intensive Care Unit and the Otorhinolaryngology of our hospital unit, a sequence of procedures was developed based on the following objectives: 1. Maintain airway patency and adequate ventilation; 2. Control of bleeding by mechanical tamponade measures and/or pharmacological intervention; 3. Hemodynamic stabilization, volume replacement and/or hemoglobin if necessary; 4. Definition of the appropriate timings for more differentiated evaluation and when it is necessary or not; 5. Ensuring the devices and drugs available in the unit are suitable for the necessary therapeutic interventions. Although the application of this protocol is initially intended for the patient admitted to a particular intensive care unit, with proper adaptations it may also be extended to other areas of the hospital and even to other health facilities.
Conclusions: Ideally, epistaxis in which bleeding cannot be stopped with initial tamponade measures should be rapidly evaluated by Otorhinolaryngology. In the real world not all hospitals have this possibility 24/7 and even in those who have it the othorhinolaryngologist is not always immediately available, a set of measures is needed to stabilize patients and control bleeding assuring they can safely wait for observation or be transferred to a more differentiated unit. The elaboration and implementation of medical action protocols contributes substantially to the standardization of procedures and consequently significant risk reduction, which is why we dedicated ourselves to this project and considered its presentation relevant.

Keywords: *Epistaxis. Respiratory intensive care unit. Protocol.*

CO 075. PNEUMOCOCCI AND LEGIONELLA PNEUMONIA, A COMPARATIVE STUDY

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Introduction: Community acquired pneumonia (CAP) is one of the main admission causes in Intensive Care Units (ICU). Streptococcus pneumoniae (SP) is the commonest agent in severe CAP, motivating admission to medical ward or ICU. Legionella pneumophila (LP) is in a lot of series severe CAP second most frequent agent. It is not clear if etiological agent influences characteristics and prognosis in severe CAP.
Objectives: Comparative analysis between CAP caused by SP and LP in patients admitted to an ICU, relatively to comorbidities, organ support need and mortality.
Methods: Retrospective analysis of clinical and laboratorial data from patients with CAP caused by SP or LP (isolated on blood cultures or by urinary antigen) admitted to ICU on a 5 years period. For study purposes, organ failure was defined as need for: 1. Invasive respiratory support; 2. Vasopressor support (norepinephrine or equivalent); or 3. Need for renal replacement therapy. Hyponatremia was defined as a serum sodium level under 135 mEq/dL. Ventilator free days were calculated until the tenth day after admission.
Results: The study included 56 patients (28 with SP and 28 with LP), the majority male (SP 61%, LP 71%). SP patients had higher mean age (65.96 ± 16.8 vs 56.6 ± 12.4 years, p = 0.022) and had frequently more comorbidities (75% vs 32%, p = 0.001), including heart failure (32% vs 11%), diabetes mellitus (32% vs 18%), COPD (21% vs 4%), chronic renal failure (14% vs 0%) and human immunodeficiency virus infection (7% vs 0%). Active smoking was common on both groups (14%). Inversely, SP patients had fewer analytical alterations (leukocytosis in 75% vs 86%), lower reactive C protein levels (36.44 vs 48.62 mg/dL) and fewer hyponatremia cases (39% vs 79%), the last two with statistical significant difference. SP patients had higher need for organ support (32% vs 25%), invasive mechanical ventilation (29% vs 18%), vasopressors (29% vs 4%) and renal replacement therapy (18% vs 4%). Ventilator-free days number, alive, was low and similar in both groups (SP 7.64 ± 4.14 days; LP 8.79 ± 3, p = 0.243). ICU mean length stay (survivors) was 5.25 days in SP patients and 3.32 in LP patients (p = 0.205). The difference between mortality rates was not statistical significant, with higher mortality

in SP group (14.3% vs 10.7%, p = 0.686). The difference between mortality rates presented an Odds ratio of 6.1 (95%CI 0.24-155.7).
Conclusions: Patients with CAP due to SP had more comorbidities and higher need for organ support. Mortality was similar between both groups. Hyponatremia was more common in LP, and reactive C protein levels were considerably higher in these patients.

***Keywords**: Pneumonia. Streptococcus pneumoniae. Legionella pneumophila.*

CO 076. EVALUATION OF THE NOTION OF BASIC KNOWLEDGE REGARDING THE MAIN DIFFUSE PARENCHYMAL DISEASE IN PRIMARY HEALTH CARE (PHC) IN ACES BAIXO VOUGA

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Introduction: Diffuse parenchymal disease (DPD) consists of a group of multiple entities with different relative rarity and often sharing some similarities in their clinical, functional and radiological manifestations. Although classically followed by Pulmonology, a General Practitioner (GP) is often the interface element with the clinical introduction, and a quality standard would be to undergo a dialogued follow-up along with the two health care specialties/dimensions. Among the most prevalent entities, one can find Sarcoidosis, Hypersensitivity Pneumonitis and Idiopathic Pulmonary Fibrosis (IPF). Since this is an area lacking educational intervention for GP, the symptoms of presentation are often non-specific and the patients are comorbid, this may cause important segments of delayed diagnosis, usually noticed in many of these diseases.
Objectives: Assess the level of knowledge regarding some general aspects related to the main forms of DPD - FPI, PHC, sarcoidosis, drug-induced interstitial disease, diffuse disease associated with conectivities - at the level of the PHC of AceS Baixo Vouga (BV).
Methods: Application of a multiple choice, under anonymity, to physicians from 5 AceS BV health units. Evaluation of differences by age segment between < 45 years and ≥ 45 years.
Results: A percentage of responses of 75% (33 of 44) was obtained. The mean age was approximately 43 years with a standard deviation of 14.9 and with a gender distribution of 4.5:1, with female prevalence. 832 of the 1205 questions were correctly answered, corresponding to 69% of correct answers, with no statistically significant difference between physicians below 45 years and those aged ≥ 45, except for some specific questions. Regarding the first question of the questionnaire-"I feel, as GP and for what my functions are, that I have sufficient training in relation to interstitial lung diseases"-we observed that their response that had an affirmative result in 65.5%, and interestingly, this is coincidentally with the percentage of correct answers in the questionnaire (69%). The nosological group associated with the best level of knowledge was sarcoidosis, with 94.9% of correct answers. Contrariwise, the group with the worst performance was the ILD, only with 54.0% of correct answers. Regarding questions about the semiological and anamnesic aspects important for early referral, 72.3% of correct answers were obtained.
Conclusions: A satisfactory level of knowledge was found, but with the possibility of growth, especially in the IPF area. In what is the longitudinal path of several DPD, a minimum knowledge base will be desirable for the complementarity of care between proximity of GP and the specific follow-up in pulmonology. Without prejudice to a rarer population incidence, it will be important to devote more particular attention to the targeted training of GP for some basic notions regarding DPD, which may have an impact not only on the modification of the exposure To specific risk factors (primary prevention), as well as the shortening of frequent and deleterious diagnosis delay in many of these entities, possibly with improvement of the quality of life of patients and their caregivers.

***Keywords**: Diffuse parenchymal disease. Primary health care.*

CO 077. TELOMERE SHORTENING AND ITS INFLUENCE IN THE RESPONSE TO IMMUNOSUPPRESSANT THERAPEUTICS FOR IDIOPATHIC PULMONARY FIBROSIS

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Introduction: In the Panther study conducted in 2012, there was an early arm withdrawal that included patients under triple therapy (prednisolone, azathioprine and N-acetylcysteine) compared to placebo with patients and patients with N-acetylcysteine due to a significant number of hospitalizations and mortality. In a recent analysis, it was found that a significant number of these patients had telomere shortening, and it was questioned whether patients with this characteristic could have greater toxicity and an unfavorable response to these therapeutic agents. Although IPF therapy is now performed with antifibrotics, this information is relevant for other fibrosing diseases, where a percentage of patients also have telomere shortening and in which immunosuppression is still the usual therapy.
Objectives: Determine the relationship between the telomere shortening and the survival rate in patients with an IPF diagnostic under immunosuppressant therapeutics.
Methods: A sample was gathered from the patients in the diffuse pulmonary diseases consultations between 2002 and 2015, with a diagnosis of IPF and subjected to triple therapeutics. Telomere length was analysed through quantitative PCR, using DNA from venous blood leukocytes. A comparative analysis was performed between patients with and without telomere shortening regarding their demographic characteristics, smoking habits, functional study at the beginning of therapy, namely FVC, DLCO and six-minute walk test, presence of emphysema, survival rate and exacerbations (up to one year of therapy and total). Statistical analysis was performed using Microsoft Excel 2013 and IBM SPSS Statistics SPSS v.23.
Results: 37 patients were included, 24 of which had telomere shortening (64.9%). Of the 24 patients with telomeric shortening, 8 were treated with triple therapy. On the other hand, only 5 patients without telomere shortening were treated with triple therapy. In both groups there was a higher prevalence of male patients (100% in the shortened group and 80% in the non-shortened group) and a slightly lower average age in the shortened group (62 years vs 66 years; p = 0.34). In the group with telomere shortening, mean percentage values of CVF (63.4% vs 88.15%; p = 0.33) and DLCO (41.8% vs 52.64%; p = 0.76) were inferior to the group without shortening, although without statistical significance. Similar smoking habits were found in both groups, and in the shortened group 13% were active smokers, 63% were former smokers and 25% non-smokers (vs 0%, 60% and 40%, respectively). However, a higher percentage of emphysema was found in patients with shortened telomeres (50% vs 20%; p = 0.56). Survival rate was lower in patients with telomeric shortening (39.75 vs 44 months; p = 0.94), although not statistically significant.
Conclusions: A trend towards a shorter survival rate is found in patients with telomere shortening under triple therapy, although without a statistically significant association, which may be justified by the small number of analyzed patients. Given the widespread treatment with immunosuppression in several fibrotic pneumonias, clarification of this relationship evaluated in this study is necessary, thus making it urgent to investigate several cohorts with an adequate number of patients with these characteristics.

***Keywords**: Telomere shortening. IPF. Immunosuppressive therapy. Survival rate. Genotype.*

CO 078. TRANSBRONCHIAL LUNG CRYOBIOPSY'S ROLE IN THE DIAGNOSIS OF HYPERSENSITIVITY PNEUMONITIS

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Introduction: In Hypersensitivity Pneumonitis (HP), there are some cases in which history, radiological pattern and bronchoalveolar lavage (BAL), evaluated by a multidisciplinary group, aren't enough for a confident diagnosis, requiring a lung biopsy. This situation is particularly frequent in chronic HP cases, where there is a significant overlap with other fibrosing interstitial pneumonias. Transbronchial lung cryobiopsy has been assuming a pivotal role as a safe and high-yield procedure in the diagnosis of diffuse lung diseases, appearing to also be a good option in the diagnostic algorithm of HP.
Methods: Retrospective analysis of demographic data and clinical characteristics of patients submitted to transbronchial lung cryobiopsy with a final diagnosis of hypersensitivity pneumonitis between 2014 and 2019 in a university hospital.
Results: Out of a total of 305 patients submitted to a cryobiopsy in this period, a final diagnosis of HP was made in 107 (35%), with a mean age of 69 ± 8.2 years. The main radiological findings in these patients were a UIP "like" pattern (n = 59), ground glass nodules (n = 30), mosaic pattern (n = 23), NSIP pattern (n = 7) and cystic disease (n = 3). With regard to lung function, most patients had normal lung volumes at the time of the biopsy (mean FVC of 87 ± 19.6%), but a diminished CO diffusion capacity (mean DLCO of 54 ± 15.3%). On average 4 biopsies were taken. Biopsies in two lobes were made in 54% of the cases. The mean length of the fragments was 5.5mm and they included pleural tissue in 50%. The most significant complication was pneumothorax, which occurred in 20.1% of the cases (n = 22). Histology wasn't conclusive in only 9 cases, out of which in 3 a surgical lung biopsy was required, while in the rest the HP diagnosis was assumed in a multidisciplinary meeting.
Discussion: In this sample, transbronchial lung cryobiopsy was a safe and high-yield procedure for the histological characterization on hypersensitivity pneumonitis, and together with a detailed expositional history, imaging exams and BAL a confident diagnosis of HP was possible in a significant number of cases.

Keywords: *Transbronchial lung cryobiopsy. Hypersensitivity pneumonitis.*

CO 079. SYSTEMIC SCLEROSIS WITHOUT TOMOGRAPHIC INTERSTITIAL LUNG DISEASE: THE ROLE OF PULMONARY FUNCTION TESTS

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Introduction: Systemic sclerosis (SSc) is a chronic autoimmune disease with microvasculopathy and fibrosis predominantly of the skin. Ninety percent of SSc patients presents with some form of lung involvement over the natural course of the disease including radiologic patterns characterized as interstitial lung disease (ILD) related to SSc (ILD-SSc).
Objectives: Determine the role of pulmonary functional tests (PFTs) for initial evaluation of SSc patients without known ILD-SSc.
Methods: A retrospective descriptive observational analysis was performed including all SSc patients referred to our respiratory function laboratory between January 2018 and February 2019. The 2013 classification criteria for SSc (ACR/EULAR) was used to confirm the diagnosis. Exclusion criteria included: patients older than 80 years, mean number of pack-years > 20, BMI > 35 Kg/m^2, pulmonary diseases such as COPD, asthma and lung cancer, history of relevant occupational air exposition, heart failure and overlap autoimmune disease. Besides PFTs results, we collected demographic data, SSc classification (diffuse/limited/sine scleroderma), dyspnea assessed by modified Medical Research Council (mMRC) scale and estimated pulmonary artery systolic pressure (ePASP) evaluated by echocardiography. With collaboration of a radiologist, thoracic CT scan of all patients were analysed and we included in our study only SSc patients without ILD-SSc.
Results: We identified 13 non-ILD-SSc, all women, with a mean age of 56 (± 11), mean BMI of 24 (± 4), five (38%) were smokers or former smokers, with less than 20 pack-years. Regarding the SSc classification, three had a diffuse subtype, 9 had a limited subtype and 1 had sine scleroderma. The majority of patients had a mMRC < 2 (11 in 13 patients). No patients had suspected pulmonary arterial hypertension (PAH). The median ePASP was 29 mmHg (22-40) two confirmed by right heart catheterisation. Concerning the PFTs results, the median values of FVC, RV and FEF 25-75% were 101% (78-132) predicted, 128% (68-162) predicted and 77 (54-164) predicted, respectively. The median RV/TLC ratio was 102% (76-134) of predicted. In terms of diffusing capacity, the median DLCO and KCO was 71% (43-98) predicted and 75% (53-104) predicted, respectively. All the 13 patients had some change in the following parameters: FVC < 80% predicted (1 patient); RV/TLC > 120% (3 patients); FEF 25-75% < 80% predicted (9 patients); and KCO < 80% (7 patients).
Conclusions: Besides the small size of our sample, these results shows the importance of performing PFTs to all SSc patients since they can provide important information for screening and monitoring lung involvement, independently of the presence of characteristic tomographic interstitial lung disease or pulmonary hypertension. We also reinforce the need for further studies in this sub-group of patients.

Keywords: *Systemic sclerosis. Pulmonary function. Autoimmunity. Interstitial lung disease.*

CO 080. INTERSTITIAL LUNG DISEASE IN AN INTENSIVE AND INTERMEDIATE CARE UNIT

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Introduction: Interstitial lung disease (ILD) includes a wide spectrum of entities with different physiopathological mechanisms of inflammation and/or fibrosis. Disease flares and infections often require hospital admission, frequently with respiratory failure.
Objectives: Understand the epidemiology, reasons for admission, and determine the risk factors for mortality of patients admitted to an intensive and intermediate care unit (ICU).
Methods: Retrospective analysis of patients admitted in the ICU with respiratory failure between the years of 2010 and 2018.
Results: A total of 64 patients with ILD were identified, 50 of which were included. Average age was 66.8 ± 11.8 years old, 62% were males and 60% non-smokers. The most frequent disease was vasculitis (24%), followed by pneumoconiosis (12%), hypersensitivity pneumonitis (12%), connective tissue diseases (10%), organizing pneumonia (8%), IPF and drug induced lung disease (6% each), and sarcoidosis and idiopathic NSIP (2% each). Nine patients were labelled as unstratified lung fibrosis. Twenty-six patients already had pulmonary fibrosis. The main reasons for admission were ILD flare/initial ILD presentation (48%), and respiratory infection (46%). The average APACHE II and SAPS 2 score was 18.8 ± 7.3 and 37.8 ± 11.6, respectively. The PaO2/FiO2 ratio at admission me-

dian was 142.5 ± 165.8. The average length of stay at the ICU and at the hospital was 6 and 17 days, respectively. Half of the patients were submitted only to non-invasive ventilation, while 36% were invasively ventilated (VMI). The ICU and hospital mortality was 28% and 44%, respectively. Non-survivors at the ICU showed lower PaO2/FiO2 ratio (122 ± 79.8 vs 157.0 ± 166.8, p = 0.025), higher APACHE II (22.9 ± 5.6 vs 17.2 ± 7.3, p = 0.011) and SAPS 2 (44.6 ± 7.2 vs 35.1 ± 11.9, p = 0.001) scores, and increased need of VMI (64.3% vs 25%, p = 0.009). Hospital non-survivors showed older age (70.5 ± 9.9 vs 63.9 ± 12.6, p = 0.047), lower PaO2/FiO2 ratio (109.5 ± 72.0 vs 187.0 ± 150.8, p = 0.047) and higher APACHE II (21.9 ± 6.7 vs 16.3 ± 6.9, p = 0.006) and SAPS 2 (43.3 ± 8.6 vs 33.4 ± 11.8, p = 0.001) scores.
Conclusions: Lower PaO2/FiO2 ratio, higher APACHE II and SAPS 2 scores and increased need of VMI were associated with higher ICU mortality. In a similar sense lower PaO2/FiO2 ratio, higher APACHE II and SAPS 2 scores, but also older age were identified as risk factors for hospital mortality. This study underlines the worth of these severity scores, also in interstitial lung disease, and shows PaO2/FiO2 ratio at admission as an indicator of bad prognosis. These results are similar to current literature. The study also shows the significant prevalence of severe infections on this population. The limitations of this study are related to the reduced number of patients included, to the wide variety of ILDs, with different treatment regimens and prognosis, and to the long period of data collection, during which the definitions and treatment of ILDs were updated several times.

Keywords: *Intensive care. ILD. Prognosis.*

CO 081. FIBROSING INTERSTITIAL LUNG DISEASE: IMPACT OF FUNCTIONAL SEVERITY ON TRANSPLANTATION SURVIVAL

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Introduction: Fibrosing interstitial disease often has a progressive nature with the deterioration of lung function being associated with higher mortality. Therefore, selected cases may be indicated for lung transplantation (TxP).
Objectives and methods: To evaluate the impact of FVC (%), DLco (%), minimum oxygen saturation (SpO2) and walked distance at the 6-minute walk test (6MWT) at baseline on survival after TxP. A retrospective analysis of patients undergoing TxP due to fibrosing interstitial lung disease was performed from 2010 to 2018. Medians of the described parameters were compared between the group of patients who died in the first year post-TxP and those with survival longer than one year. Additionally, the overall survival analysis was performed by the Kaplan-Meier method. For this analysis, patients were divided into groups of functional severity according to FVC: moderate (FVC 60-69%), moderately severe (50-59%), severe (35-49%) and very severe (< 35%). and according to Dlco: Mild (Dlco > 60%), moderate (40-60%) and severe (< 40%).
Results: We selected 56 patients submitted to TxP due to fibrosing interstitial lung disease. 30 (53.6%) males, mean age 52 years with the diagnoses of: idiopathic pulmonary fibrosis (IPF) (39%), chronic hypersensitivity pneumonitis (PNH) (50%) and connective tissue disease (CTD) (11%). 11 patients (14%) died in the first year after TxP. There was no statistically significant difference between the mean age of patients who died in the first year post-TxP and the others (49 vs 53) and the average waiting time (14 vs 12 months). In the group of patients who died in the first year there was a predominance of IPF (55% vs 27% DTC and 18% PNH) and in the group with survival over one year of PNH (58% vs 36% IPF and 6% DTC). There were no statistically significant difference between the group of patients who died in the first year after TxP and the others regarding FVC (50 vs 48%), DLco (26 vs 25%), walked distance (340 vs 316 meters) or SpO2 (76 vs 77%) at 6MWT. In total, 21 patients (27%) died in the study period. Survival was of 80% at one year and 68% at 3 years. Comparative analysis of overall survival between the functional severity groups for FVC and DLco did not show a statistically significant difference.
Conclusions: The results obtained in our population demonstrate the absence of a significant negative impact of pulmonary function parameters at the time of referral on post-TxP overall survival. Given the mortality and loss of quality of life associated with deterioration of lung function, our results support the hypothesis that TxP is a therapeutic option for this group of patients.

Keywords: *Fibrosing interstitial lung disease. Lung transplant.*

CO 082. BIOMARKERS IN CLINICAL PRACTICE: SERUM ANGIOTENSIN-CONVERTING ENZYME AND RENIN-ANGIOTENSIN SYSTEM INHIBITORS

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Introduction: Serum angiotensin-converting enzyme (sACE) is a widely used biomarker of activity and diagnosis in sarcoidosis. ACE inhibitors (ACEi) are known to decrease sACE levels, but this effect has never been studied on patients with sarcoidosis.
Objectives: To study whether ACEi and angiotensin II receptor blockers (ARB) impact sACE levels in patients with sarcoidosis.
Methods: Retrospective analysis of patients with pulmonary sarcoidosis under follow-up at a tertiary centre. Demographic, clinical, radiological and analytical data (highest sACE during follow-up) were extracted. Drug prescriptions were assessed through local and national electronic platforms. Patients with an active malignancy or under immunomodulators or steroids at first sACE dosing were excluded.
Results: Seventy-one patients were included, of which 47.9% (n = 34) were male. Mean age at first sACE dosing was 51 years. Stage 2 sarcoidosis was most frequent (n = 41). There was extrapulmonary disease in 30.9% (n = 30) of the cases. sACE in patients under ACEi was lower (9.6 ± 3.1 U/L; n = 10) than in the remaining patients (79.7 ± 41.9 U/L; n = 61), p < 0.01). sACE in patients under ARB (77.8 ± 17.7 U/L; n = 8) was not statistically different from sACE in patients under no renin-angiotensin system inhibitor (80.0 ± 44.5 U/L; n = 53), p = 0.89.
Conclusions: We conclude sACE is suppressed in patients with sarcoidosis under ACEi, but not under ARB. This should be taken into account when ordering this biomarker.

Keywords: *Biomarkers. Sarcoidosis. Angiotensin-converting enzime.*

CO 083. CONNECTIVE TISSUE DISEASE-ASSOCIATED INTERSTITIAL LUNG DISEASE: PREDICTORS OF POOR PROGNOSIS

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Introduction: Interstitial lung disease (ILD) is a common complication of connective tissue disease (CTD) that has unique management and a poor prognosis. The identification of predictors of lung disease progression would allow clinicians to identify patients who need more frequent follow-up and may benefit from earlier treatment intervention.

Objectives: To identify prognostic predictive factors in connective tissue disease-associated interstitial lung disease (CTD-ILD).
Methods: Retrospective study including patients followed up in our outpatient ILD clinic, between January 2008 and December 2018, with diagnosis of CTD-ILD. Demographics, clinical, laboratorial and radiological data was collected. The radiological patterns were evaluated by an experienced radiologist. Primary outcomes: disease progression; referral to lung transplantation; need for supplemental oxygen; death during follow-up. Disease progression was defined as presence of at least one of the following criteria: decline in FVC of at least 10% and/or in DLCO of at least 15%, in one year period. Exclusion criteria were less than one year of follow up and missing data.
Results: From a total of 83 patients, 75 were included, with an average age of 62 ± 12 years-old and 68% of patients were female. Mean time of follow up was 74.4 ± 37.3 months. Twenty-five patients (33.3%) were smokers or former smokers. Thirty (40%) patients presented rheumatoid arthritis, 18 (24%) systemic sclerosis, 8 (10.7%) polymyositis/dermatomyositis, 7 (9.3%) Sjögren syndrome, 5 (6.7%) systemic lupus erythematosus, 5 (6.7%) undifferentiated connective tissue disease, 1 (1.3%) mixed connective tissue disease and 1 (1.3%) overlap syndrome. Higher initial values of FVC (L), DLCO (L) and 6-min walk distance were associated with less disease progression (p = 0.050, 0.009 and 0.014, respectively). Of these, the only predictive factor of disease progression was the 6-min walk distance (p = 0.018) (linear regression). Symptomatic patients presented higher disease progression (p = 0.023). Furthermore, patients with positive echocardiographic findings of pulmonary arterial hypertension (PAH) were associated with higher disease progression (p = 0.021), death (p < 0.001), need for oxygen therapy (p = 0.051), as well as lung transplantation referral (p = 0.021). PAH patients presented a 26% higher probability of death (p = 0.01) (linear regression). Seven patients died during follow up (9.3%).
Conclusions: Neither gender nor age were statistically associated with worse prognosis. No association was found between radiologic pattern and disease progression, mortality, need for oxygen therapy nor referral to lung transplantation. Lung function tests (FVC and DLCO) and 6-min walk distance proved association with disease progression. However, the only predictive factor of disease progression is the 6-min walk distance. PAH patients have a 26% higher probability of death.

Keywords: *Interstitial lung disease. Connective tissue disease. Prognosis. Radiological pattern. Lung function tests.*

CO 084. ASSESSING PROGNOSIS OF CHRONIC INTERSTITIAL LUNG DISEASES WITH THE ILD-GAP MODEL

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Introduction: The gender, age and physiology (GAP) model, is a risk/prognosis predicting tool for idiopathic pulmonary fibrosis (IPF). A similar model (ILD-GAP) has been proposed for other interstitial lung diseases (ILD). This model groups patients in four indexes (0-1, 2-3, 4-5 e > 5), by ascending order of severity.
Objectives: Determine whether this tool predicts mortality accurately in ILDs.
Methods: Retrospective review of patients with a first ILD appointment in 2014 and 2015 for IPF, chronic hypersensitivity pneumonitis (cHP) and connective tissue disease associated ILD (CTD-ILD). ILD-GAP score was calculated at the date of the first appointment. Patients without lung function tests within 3 months from that date were excluded. Follow-up data was assessed for mortality at 1, 2 and 3 years. Survival statistical analysis preformed through Kaplan-Meier test.
Results: Total of 51 patients, 58.8% female and mean age of 64.1 (± 12.8) years. There were 24 patients with CTD-ILD (54.2% with rheumatoid arthritis), 19 with cHP (57.9% with aviary exposure) and 8 with IPF. Radiologic pattern of UIP was present in 24.5% of patients. The one, two and three-year overall mortality was 11.8%, 19.6% and 27.5%, respectively. The ILD-GAP showed statistically significant difference in survival between the 0-1 and the other indexes (p < 0.010), and a tendency between the 2-3 and 4-5 index (p = 0.055) and between the 2-3 and > 5 index (p = 0.051). There was no significant difference between the 4-5 and the > 5 index. The area under the curve (AUC) for predicting 1-, 2- and 3-year mortality was 0.926, 0.896 and 0.841, respectively (p < 0.001).
Conclusions: The ILD-GAP model showed good accuracy predicting survival and 1-, 2- and 3-year mortality in this study. The lack of significance in more severe stages was probably due to the low sample size. A system such as the ILD-GAP, which allows for patients to be staged according to the severity of the disease, may be useful in clinical practice and in study design, for example assessing drug-response in each prognostic group. At this moment it is only studied as an initial prognosis evaluation, however in the future it may be applied in other moments, and the inclusion of other data (p.e imaging or biomarkers) may increase its strength.

Keywords: *ILD-GAP. Prognosis. Intersticial lung disease.*

CO 085. CYTOKINE GENE POLYMORPHISMS IN PIGEON BREEDER´S DISEASE EXPRESSION

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Introduction: Exaggerated immunological response to repeated inhalation of organic or chemical dusts may lead to Hypersensitivity Pneumonitis among sensitized individuals. Only a few exposed individuals became ill and disease expression pattern is highly variable which suggest that genetic factors may play a role.
Objectives: To investigate interferon (IFN)-γ, tumour necrosis factor (TNF)-α, interleukin (IL)-6, transforming growth factor (TGF)-β, and IL-10 gene polymorphisms in a cohort of pigeon breeder's disease (PBD) patients in comparison with asymptomatic exposed controls and the association with different patterns of disease.
Methods: We evaluated 40 PBD patients and 70 exposed controls. IFN-γ, TNF-α, IL-6, TGF-β, and IL-10 polymorphisms were determined by polymerase chain reaction–sequence specific primer amplification.
Results: Polymorphism analysis of IFN-γ, TNF-α, IL-6, TGF-β, and IL-10 genotypes and allele frequencies showed no differences between patients and controls. IFN-γ T/T genotype frequency was increased among patients with chronic presentation (RR = 2.33, p = 0.047) compared with those with acute/subacute presentation. Also, chronic presenting patients had an increased frequency of IFN-γ T allele (50% vs 22.5%, RR = 1.76, p = 0.011). No differences were found in TNF-α, IL-6, TGF-β, and IL-10 genotypes neither allelic frequencies between both groups of patients. IL-6 C/C genotype was more frequent in patients who showed chronic evolution (RR = 2.54, p = 0.017), when comparing with patients with disease resolution.
Conclusions: IFN-γ T/T and the IL-6 C/C genotypes seem to play a role in PBD expression, as their frequencies are increased in chronic presentations, or in those with chronic evolution one year after the initial diagnosis, respectively.

Keywords: *Pigeon breeder's disease. Hypersensitivity pneumonitis. Cytokines. Genetic polimorphisms.*

CO 086. CONNECTIVE TISSUE DISEASE-ASSOCIATED INTERSTITIAL LUNG DISEASE: POPULATION CHARACTERIZATION

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Introduction: The connective tissue diseases (CTDs) are a group of systemic disorders characterized by autoimmunity and autoimmunemediated organ damage. Lung involvement by interstitial lung disease (ILD) promotes high morbimortality and might be the initial presentation of the CTD.
Objectives: Descriptive analysis of patients diagnosed with ILDs associated with CTDs (CTD-ILD).
Methods: Retrospective study including patients followed up in our outpatient ILD clinic, between January 2008 and December 2018, with diagnosis of CTD-ILD. Demographics, clinical, laboratorial and radiological data was collected. The radiological patterns were evaluated by an experienced radiologist.
Results: Eighty-three patients were included in the study, with average age of 62 ± 11 year-old and 66.3% (n = 55) were female. Twenty-nine (34.9%) patients were smokers (n = 12) or former smokers (n = 17). The majority of patients was referenced by rheumatology (43.4%; n = 36) and internal medicine (28.9%; n = 24). Thirty-seven (44.6%) patients presented rheumatoid arthritis, 19 (22.9%) systemic sclerosis, 8 (9.6%) polymyositis/dermatomyositis, 7 (8.4%) Sjögren syndrome, 5 (6%) systemic lupus erythematosus, 5 (6%) undifferentiated connective tissue disease, 1 (1.2%) mixed connective tissue disease and 1 (1.2%) overlap syndrome. Interstitial lung disease was the initial presentation in 15.7% (n = 13) of patients. Twenty-one (25.3%) patients were asymptomatic from the respiratory point of view, thus were referenced by radiological findings. From the symptomatic patients, the most common symptom was dyspnea (94.9%; n = 56), followed by dry cough (55.9%; n = 33), wheezing (16.9%; n = 10), bloody sputum (6.8%; n = 4), weight decrease (6.8%; n = 4) and fever (5.1%; n = 3). Thirty-nine (47.0%) patients presented NSIP radiological pattern, while 15 (18.1%) presented UIP pattern. Five (6%) patients had lung transplantation referral, while only 1 was submitted to transplantation. Ten patients died during follow-up (11.9%).

Connetive tissue disease/Radiological Pattern	NSIP	UIP	Other
Rheumatoid arthritis	13	11	13
Systemic sclerosis	10	0	9
Systemic lupus erythematosus	1	2	2
Polymyositis/dermatomyositis	8	0	0
Sjogren Syndrome	3	1	3
Mixed connective tissue disease	1	0	0
Undifferentiated connective tissue disease	3	0	2
Overlap Syndrome	0	1	0
Total	39	15	29

Conclusions: Dyspnea was the most reported symptom and interstitial lung disease was the initial disease presentation on 15% of the patients. NSIP was the most frequent radiological pattern, which comes in agreement with current literature about CTD-ILD. Rheumatoid arthritis was the most common CTD associated with ILD and 1/3 of these patients presented UIP pattern.

Keywords: *Interstitial lung disease. Connective tissue disease. Radiological pattern.*

CO 087. DIAGNOSTIC YIELD AND SAFETY OF TRANSBRONCHIAL LUNG CRYOBIOPSY AND SURGICAL LUNG BIOPSY IN INTERSTITIAL LUNG DISEASES. A SYSTEMATIC REVIEW

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Introduction: Interstitial lung diseases (ILDs) are a heterogeneous group of disorders characterized by many degrees of inflammation and fibrosis, primarily affecting the lung interstitium. A precise diagnostic is difficult to achieve and sometimes the definitive diagnosis of ILD can be established only through histopathological examination of lung biopsy specimens, either by surgical lung biopsy (SLB) or transbronchial lung cryobiopsy (TBLC).
Objectives: The aim of this review was to compare the diagnostic yield (DY) and safety of TBLC and SLB in patients with suspected ILD.
Methods: The PubMed database were used to check all studies that reported on the DY or safety of SLB or TBLC in the diagnosis of ILD published in the last 10 years. The assessment of quality of individual studies was possible using the CASP. Data were extracted on study characteristics, DY, complication and mortality rates.
Results: Of 177 citations, 28 studies were selected for inclusion in this systematic review: 17 articles focused on TBLC, 10 in SLB and 1 in both. The quality of studies goes from moderate to high quality. A total of 3,452 patients with suspected ILD were included in our review: 1,400 patients were submitted to SLB and 2052 underwent TBLC. A diagnosis was obtained in 1,323 (94.5%) patients submitted to SLB, which ranged 81-100% in different studies. In the TBLC group, a diagnosis was achieved in 1,682 (82.0%), ranging 51-93.3%. Pooled estimates of moderate to severe bleeding and pneumothorax of TBLC were 5.3% and 14.6%, respectively. Surgical overall morbidity was 11.2%. The mortality rate estimated for TBLC and SLB was 0.4% and 2.2%, respectively.
Conclusions: Our review demonstrated a higher DY in SLB in the diagnosis of suspected ILDs. However, in comparison with TBLC, SLB showed higher mortality rate.

Keywords: *Interstitial lung disease. Cryobiopsy. Surgical lung biopsy. Safety. Diagnostic yield.*

CO 088. BREATHING ORGANIC PARTICLES

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Introduction: Hypersensitivity Pneumonitis (HP) is a challenging disease which requires a high index of suspicious. It results from sensitization to inhaled antigens. Clinical course and presentation vary according to the intensity and duration of exposure to the causative agent.
Objectives: Characterize the population with HP followed at Interstitial Lung Disease appointment at Faro Hospital.
Methods: This is an analytical, cross-sectional, retrospective study of patients with HP followed at Interstitial Lung Disease appointment at Faro Hospital from 1/1/2014 to 31/12/2018. The following variables were analyzed: gender, age at diagnosis, smoking history, exposure, main symptoms, PH classification, pulmonary function tests (PFT), radiological abnormalities and other complementary exams for diagnosis, therapy and follow-up.
Results: From the 154 patients followed at Interstitial Lung Disease appointment since 2014, 37 patients had HP (24%). The majority of these patients were women (51%) and the average age at time of diagnosis was 68 years old. 60% of the patients were non-smokers, 35% were former smokers and 5% were current smokers, with a mean of 33 ± 26 pack per year. All of the patients had cough, progressive dyspnea and exposure history (most common

to birds and mold). In symptomatic patients the mean diagnostic delay was 3 ± 5 years since the onset of symptoms. 73% avoided further exposure. PFT had restriction in 53% and diffusing capacity was severely decreased in 60%. Chest CT abnormalities identified were: reticulation (60%), honeycombing (24%), centrilobular nodules (5%), mosaic attenuation (5%), head-cheese pattern (3%) and ground-glass (3%). In 57% we had bronchoalveolar lavage, from which 95% had lymphocytosis. In 51% of the cases the diagnosis was made by surgical biopsy and in 14% by cryobiopsy. 76% of HP were chronic, 16% possible HP, 5% subacute, 3% acute. Glucocorticoid were started in 97% of the patients and 46% needed another immunosuppressive therapy. During therapy there was a stabilization of diffusing capacity (43.3 vs 46.1, p = 0.72) and FVC (70.8 vs 79.6, p = 0.48). Until now, 8% already suspended therapy due to clinical improvement. Only 3% had clinical, functional and radiological complete resolution. The median survival of these patients was 43 ± 49 months and 27% died, 60% of which due to pneumonia and 30% because of progression.
Conclusions: Non-smokers women with risk exposure history and chronic HP diagnosis were prevalent. Restriction on PFT was prevalent. 65% of the diagnosis were made by surgical lung biopsy or cryobiopsy. Diffusing capacity and FVC stabilized with therapy. The median survival was 43 months.

Keywords: *Hypersensitivity pneumonitis. Interstitial lung disease.*

CO 089. CHARACTERIZATION AND SURVIVAL ANALYSIS OF PATIENTS WITH EGFR MUTATED NON-SMALL CELL LUNG CANCER. RETROSPECTIVE STUDY

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Introduction: EGFR mutations are found in 10-12% of Caucasians with primary lung adenocarcinoma and are more frequent in non-smokers and women. Its presence predicts response to TKI's and is associated with better survival. Nonetheless the pivotal role of EGFR mutation and TKI in lung cancer, few real-life data is available evaluating the characteristics of this population.
Methods: Retrospective study. We selected all the patients with non-small cell lung cancer (NSCLC) diagnosed and followed in our institution with positivity to EGFR mutation from July 2016 to March 2019. Patients with history of other neoplasms were excluded. We collected data such as age at diagnosis, sex, smoking history, initial TNM stage and performance status and time of death. Data were inserted and analyzed in IBM SPSS statistics, version 25.
Results: 116 patients with NSCLC were tested for EGFR, 62.9% males and 46% non-smokers, mean age at diagnosis of 71.0 ± 9.0 years. EGFR mutation was found in 22 patients (19%). In this group the female sex was predominant (68.2%), as well as non-smokers (86.4%) and both had a significant association with the occurrence of the mutation (p = 0.001 and p < 0.001). Adenocarcinoma was the most frequent histologic type (90.9%) and most patients were diagnosed in stage IV (68.2%). TKI was used in 70% (n = 14) and afatinib in 78.6% (n = 11). The most common side effects were diarrhea (71.4%), mostly of CTCAE grade 1 and skin toxicity (64.3%), mostly grade 2. About half of the patients interrupted the treatment temporarily due to side effects (5 of 6 were under afatinib) and 35.7% needed a dose reduction (all under afatinib). One patient had to stop the treatment permanently due to grade 3 diarrhea. The overall median survival was 22 months, CI [11.3;32.7] and was significantly higher in the EGFR group (WT: 9.0 CI [3.9;14.1] months; EGFR: median survival not reached mean 23.2 CI [19.7;26.8] months, p = 0.002).
Conclusions: The frequency of the mutation in our population is similar to the one found in other studies. In spite of our sample size, significant differences were found in overall survival between the WT and EGFR positive groups, the latter with significant longer survival. Afatinib carried a higher rate of side effects and need for dose reduction.

Keywords: *Lung cancer. EGFR.*

CO 090. PHARMACOGENETICS OF ADVANCED LUNG CANCER: PREDICTIVE VALUE OF FUNCTIONAL GENETIC POLYMORPHISM AGXT PRO11LEU IN CLINICAL OUTCOME

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Introduction: Lung cancer is a leading cause of cancer death worldwide, with over one million new cases diagnosed annually and with an overall 5-year survival rate of less than 15%. The AGXT gene codes for the enzyme alanine glyoxylate aminotransferase, which is involved in hepatic peroxisomal metabolism of platinum-based chemotherapeutic agents. Some studies have shown that C > T substitution at locus 32, which results in Pro-Leu substitution located at codon 11 of exon 1 of the AGXT gene (rs34116584), creates a conformational change and is therefore related to a significant decrease in its activity. This same functional polymorphism of the AGXT gene has also been shown to be related to response to platinum based chemotherapy and progression-free survival (PFS) in patients with metastatic colon adenocarcinoma. The association of this genetic variant on the clinical outcome of patients with non-small cell lung cancer (NSCLC) remains to be established.
Objectives: To evaluate the association of functional AGXT gene polymorphism in NSCLC progression, considering as primary and secondary endpoint PFS and overall survival (OS), respectively. Our secondary aim was to study the association of AGXT gene polymorphism with the response to platinum-based chemotherapy.
Methods: The gene and genetic variant were selected considering the best scientific evidence and based on bioinformatic analysis in silico. Genotyping of the AGXT rs34116584 genetic polymorphism was performed by mass spectrometry (MassArray) on DNA samples from patients with NSCLC (stages IIIA-IVB) from the Pulmonology Department of the University Hospital Center of Coimbra. Univariate survival analysis included the study of Kaplan-Meier curves with the Log-Rank test, while Cox regression was used as a multivariate analysis.
Results: We included 172 patients [65 (58.0-72.6) years old], 73% male with NSCLC (70% adenocarcinoma, 24% epidermoid and 6% others) diagnosed between January 2016 and December 2018. Univariate analysis showed that patients carrying the allele T of the AGXT rs34116584 was associated with lower OS (p = 0.017). Multivariate analysis showed shorter PFS for T carriers [HR = 2.0, 95%CI, 1.4-2.9, p < 0.0001] globally, as well as in a subgroup of patients (n = 160) treated with first line platinum-based chemotherapy [HR = 1.6, 95%CI, 1.1-2.4, p = 0.018].
Conclusions: The functional impact of the AGXT rs34116584 genetic polymorphism in decreasing the peroxisomal activity of the enzyme alanine glyoxylate aminotransferase may influence oxalate accumulation. This effect has potential implications for cisplatin metabolization, with impact on toxicity and tumor development, and is associated with worse prognosis. This polymorphism seems to have an impact on NSCLC progression, opening new perspectives for its inclusion as a pharmacogenetic predictor of response to platinum based chemotherapy.

Keywords: *Genetic polymorphism. Pharmacogenetic. AGXT. Lung cancer.*

CO 091. OPTIMIZING T790M DETECTION IN EGFR-MUTATED ADVANCED NON-SMALL CELL LUNG CANCER

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Introduction: Disease progression in metastatic non-small cell lung cancer (NSCLC) with epidermal growth factor receptor (EGFR) mutation after treatment with 1st and 2nd generation tyrosine kinase inhibitors (TKI) is mostly due to T790M mutation. After disease progression, tumoral biopsy is the standard care for T790M evaluation; however, liquid biopsy is gaining significant importance in this context.
Methods: Retrospective analysis of EGFR-mutated NSCLC-patients submitted to re-biopsy or circulating tumour DNA (ctDNA) analysis, for the screening of T790M-mutation, between 2015 and 2019. Tumour samples were analysed by digital Polymerase Chain Reaction (PCR), and the plasma samples were analysed by digital PCR or Next-generation Sequencing (NGS). The agreement between tests was calculated with Cohen's Kappa test (SPSS® v.25).
Results: Thirty-six patients were eligible; the mean age was 65.8±11.7 years, and twenty one (58.3%) patients were women. The majority were non-smokers (n = 28, 77.8%). The most common mutations were exon 19 deletion (n = 23, 63.9%) and exon 21 L858R mutation (n = 8, 22.2%). At the time of screening of T790M-mutation, the majority presented only thoracic progression (n = 25, 69.4%), followed by local and systemic progression (n = 6, 16.7%), systemic progression (n = 3, 8.3%) and oligometastatic progression (n = 2, 5.6%). In total, ten patients underwent tumour biopsy, thirteen ctDNA analysis and thirteen underwent for both. T790M-mutation was detected in twenty-three (63.9%) patients. Seven patients underwent only tumour sampling and seven only ctDNA analysis. Nine patients underwent for both analysis, in three of these, T790M-mutation was not identified by ctDNA analysis, despite positivity in the tumour biopsy. Of the thirteen (36.1%) patients in whom the T790M mutation was not detected, four underwent both examinations. The degree of agreement was moderate (k = 0.552, p = 0.026).
Conclusions: Tumoral tissue biopsy and liquid biopsy play a key role in addressing progressive EGFR-mutated NSCLC-patients. In this sample, tumour biopsy and ctDNA analysis allowed the identification of the T790M mutation in 63.9% of patients. The use of each exam is complementary, and its real value depends on each clinical scenario.

***Keywords**: T790M mutation. Liquid biopsy. EGFR mutation.*

CO 092. CLINICAL AND PROGNOSTIC CHARACTERISATION OF LEPTOMENINGEAL CARCINOMATOSIS IN LUNG CANCER

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Introduction: Leptomeningeal carcinomatosis is the result of haematogenous metastisation of lung neoplasms to the dura and arachnoid membranes of the central nervous system. Albeit a rare complication, when present, a fatal outcome nearly always ensues.
Objectives: Characterisation of the clinical and prognostic features of leptomeningeal carcinomatosis secondary to lung neoplasms in a Portuguese central hospital.
Methods: Clinical records of the patients admitted to Coimbra University Hospital diagnosed with leptomeningeal carcinomatosis (through cranial imaging, cytology or histology) as of 01/01/2000 were reviewed. Among these, the subgroup with disease secondary to a lung neoplasm was analyzed with regard to clinical features, neoplasm characteristics and staging, therapy, and survival.
Results: From the population of patients diagnosed with leptomeningeal carcinomatosis (n = 121), 8.3% suffered from a lung neoplasm. Of these, 80% consisted of adenocarcinomata, the majority of which were of mixed histology. Thirty percent of the leptomeningeal carcinomatosis diagnoses were synchronous with the diagnosis of the lung neoplasm. The remainder arose in context of disease progression from neoplasms previously staged IVb. Regardless of the time of diagnosis, leptomeningeal carcinomatosis dominated the clinical picture, the most prevalent clinical features consisting of cachexia, decreased state of consciousness and signs of intracranial hypertension. No distinctive peripheral neoplasm markers suffered a significant increase. Diagnosis was invariably supported by meningeal enhancement in cranial CT. Clarification of CT findings through cranial MRI was obtained in 60%, and 30% benefited from anatomopathological confirmation from liquor cytology or histology. Cerebral metastases were present in 30% of patients prior to the diagnosis of leptomeningeal carcinomatosis and another 30% were diagnosed concomitantly. Presentation of leptomeningeal carcinomatosis was associated with de novo cerebral hemorrhage in 20%. Every patient exhibited dependence on corticosteroids to control symptoms of cranial hypertension from the time of the diagnosis, with a prednisolone-equivalent average dose of 122 mg. Anticonvulsant therapy was required for 50%. Half of the patients was subjected to holocranial irradiation. First line chemotherapeutic regimen was platinum-based for most. The most common second line treatment involved tyrosine kinase inhibitors. Palliative surgical intervention was required in 20% of cases. Clinical deterioration inexorably progressed, the median survival time after diagnosis of leptomeningeal carcinomatosis being 33 days. Survival rates were superior for patients under tyrosine kinase inhibitor therapy.
Conclusions: Leptomeningeal carcinomatosis remains an often-terminal event in the natural history of lung cancer. Interestingly, this analysis points to an association with other life-threatening complications of the central nervous system, thus further worsening prognosis. The data also showed that acquisition of cranial imaging by MRI prevented unnecessary lumbar puncture in a subgroup, which gains particular importance in advanced neoplasms where end-of-life care is privileged. Lastly, despite the use of intensive multimodal therapeutic regimens, available chemotherapeutic agents have reduced encephalic bioavailability, therefore limiting their efficacy. Patients under tyrosine kinase inhibitor therapy exhibited greater survival rates, possibly attributed to positive prognosticators intrinsic to neoplasms treated with these agents or due to a survival benefit from the use of these drugs in leptomeningeal carcinomatosis, an area of investigation for which there are yet no randomized controlled trials.

***Keywords**: Leptomeningeal carcinomatosis. Intracranial hypertension. Staging. Survival.*

CO 093. P16 RELATED BRONCHIAL EPITHELIAL HYPERPLASIA - A POSSIBLE PRE-NEOPLASTIC LESION

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Introduction: Guidelines for p16 detection in oral carcinomas and HPV infection related cervical squamous cell carcinoma might also be reflected in pulmonary carcinogenesis of epidermoid carcinoma and adenocarcinoma and respective metastasis. Viral DNA integration in host cell genome interferes with p53 (p14-MDM2-p53) and Rb (p16INK4a-cyclin D1-CDK4-RB) pathways, with downregulation of apoptosis.

Methods: Case report: 54-years-old woman with history of asthma, allergic rhinitis and heavy smoking habits with seasonal dyspnea and persistent dry cough. Thoracic CT scan: Endobronchial lesion in distal main left bronchus, biopsied during bronchoscopy.
Results: Biopsy sampling showed morphology of endobronchial squamous papilloma. Hyperplastic squamous metaplasia without significant nuclear atypia had relevant CK7, CK5 and p16 expression; TTF1 was not expressed; Ki67 presented with low rate and limited to the basal cell layers.
Conclusions: Squamous metaplasia, as an adaptative lesion, may be followed by epidermoid carcinoma in situ, a pre-neoplastic lesion of bronchial epithelium observed in response to toxic injury induced by cigarette smoke. HPV infection may be an additional agent in bronchial pre-neoplastic lesion development. In the presented case, CK7 expression might be relevant as a companion marker, whose persistence in smokers pure epidermoid metaplasia is uncommon due to pure basal cells adaptation. The final diagnosis was squamous cell papilloma with p16 expression suggestive of HPV infections. Basal cell hyperplasia with CK7 expression and low proliferation rate (Ki67), without expression of TTF1 and segmented CK5 positivity in lower cellular levels was recognized and might be the first description of a HPV related pre-neoplastic lesion, to the best of our knowledge. More studies are necessary for the definition of HPV role in lung cancer with p16 as a screening test for HPV infection and its influence in carcinogenesis/pre-neoplastic HPV related lesions.

Keywords: *P16. Bronchial epithelial hyperplasia. HPV.*

CO 094. PROGNOSTIC ROLE OF HISTOLOGICAL PATTERNS OF LUNG ADENOCARCINOMA IN PRE-OPERATIVE BIOPSY SPECIMENS

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Introduction: In 2011, a new classification for adenocarcinomas was published, based on predominant histological pattern, after which, a scale for risk stratification was proposed. Low risk adenocarcinomas include both microinvasive and in situ adenocarcinoma, while intermediate risk referred to patients with papillary, acinar or lepidic invasive adenocarcinoma patterns. At last, patients with either solid, micropapillary or mucinous patterns were included in the high risk group. The aim of this study is to evaluate the impact of the predominant histological pattern on the prognosis of patients submitted to lung adenocarcinoma resection surgery and to infer whether these patterns can be predicted pre-operatively, in lung biopsy specimens.
Methods: A retrospective study including all patients with the diagnosis of primary lung adenocarcinoma submitted to transthoracic biopsy and, subsequently, to lung resection surgery at the Centro Hospitalar Vila Nova de Gaia/Espinho between January 2014 and February 2019 was conducted. Patients whose diagnosis was confirmed through needle aspiration biopsy or bronchial lavage cytological analysis, or whose adenocarcinoma pattern was not described prior to surgery were excluded from our study. Demographic, histological and surgical data were collected from the patients' clinical files. Tumor size and staging were also assessed. Disease-free survival, recurrence and mortality rates were calculated and compared between histological risk groups. Concordance between histological patterns described in transthoracic pre-operative biopsies and surgical specimen definitive pathological analysis was determined using SPSS statistics.
Results: A total of 49 patients with a mean age of 65 were included in our study, with 3 patients within the low histological risk group, 33 with intermediate risk and 13 in the high risk group. The most frequently found histological pattern was acinar adenocarcinoma (23 out of 49 patients). Recurrence risk seemed to show a progressive increase throughout histological risk groups, although this association did not reach statistical significance when controlling for TNM staging and resection extension (lobar vs sublobar resection). The same tendency was found regarding disease-related death ($p = 0.057$). Opposingly, disease-free survival tended to decrease from low-risk ($\mu = 47$ months) to high risk groups ($\mu = 26$ months), although this could not be statistically proven. The sole existence of more than 5% of micropapillary pattern did not influence prognosis. Outcomes of patients with lepidic predominant pattern did not differ significantly from those with in situ or microinvasive adenocarcinoma. Histological pattern-related risk groups identified in pre-operative biopsies showed a good concordance with those found in definitive lung specimen analysis (kappa = 0.7).
Conclusions: No statistically significant conclusions can be achieved due to the low sample size, although, adenocarcinoma patterns may be relevant predictive factors for recurrence and mortality risk in patients submitted to surgery for lung adenocarcinoma, as larger studies have already proposed. Histological risk groups may be accurately predicted through pre-operative biopsy analysis and may eventually play a relevant role in pre-operative staging and surgical planning. Larger studies need to be conducted in order to identify whether lepidic pattern adenocarcinomas might be included in the low-risk group.

Keywords: *Adenocarcinoma. Biopsy. Histology. Pattern. Prognosis. Surgery.*

CO 095. MOLECULAR PROFILING OF LUNG ADENOCARCINOMA USING NEXT GENERATION SEQUENCING. THE EXPERIENCE OF A UNIVERSITY HOSPITAL

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Introduction: Lung adenocarcinoma is the most frequent pulmonary malignancy. Due to the development of several targeted therapies, molecular profiling of the mutations found in the tumor has become mandatory, with a very significant therapeutical and prognostical implication. Next Generation Sequencing (NGS) allows the simultaneous detection of an enlarged panel of alterations, and is one of the main methods in use for this analysis.
Methods: Retrospective analysis of demographical and clinical data and mutational study of patients whose tumors were submitted to NGS between 2017 and 2019 in a university hospital.
Results: 390 patients were included. 255 (65.4%) were male, with a mean age of 66.5 ± 10.9 years. By the time of diagnosis, 25% of patients were active smokers, 33% ex-smokers and 42% non-smokers. In 143 patients (35%) no molecular alterations were found. The most frequente mutation was in the KRAS gene, present in 106 patients (26%), followed by EGFR (n = 70, 17%) and ALK (n = 21, 5%). 78% of female patients had at least one identified mutation, while only 55% of male patients did (OR 2.94, $p < 0.005$). Female patients had EGFR gene mutations more frequently (OR 7.600, $p < 0.005$), but fewer KRAS mutations (OR 0.450, $p < 0.005$). There was no significant difference in ALK mutations between genders. When different age groups were compared (< 50 years, 50 to 70 years, > 70 years) no significant differences were found in the frequency of the most common mutations. Patients with a history of smoking had a lower odd of expressing mutations on NGS (OR 0.34, $p < 0.005$). However, KRAS mutations were more frequent in this group (OR 10.14, $p < 0.005$). It is important to notice that in 117 out of 390 patients (30%) a mutation with an available targeted therapy was found.
Conclusions: NGS in an effective method for the molecular profiling of lung adenocarcinoma, allowing to optimize the identification of candidates to personalized therapies. Certain demographic and clinical factors, like gender and smoking history, have a significant influence on the frequency of the most important mutations.

Keywords: *Lung cancer. Lung adenocarcinoma. Next generation sequencing.*

CO 096. ADVERSE EFFECTS OF IMMUNOTHERAPY IN NON SMALL CELL LUNG CANCER

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Introduction: Immunotherapy (IO) has several indications in the treatment of non-small cell lung cancer (NSCLC) and has emerged as an effective and generally well tolerated therapeutic alternative. However, its mechanism of action may cause immunomediated toxicities that are not characterized in the Portuguese population.
Objectives and methods: To characterize the adverse effects of IO in patients with NSCLC followed at Centro Hospitalar Lisboa Central since its introduction in 2016, through the review of their clinical files.
Results: We identified 67 patients, 42 male, with a mean age 65 years. All patients had previous smoking habits and none had underlying autoimmune disease. From the histological and staging point of view, 48 cases of adenocarcinoma and 19 of squamous cell cancer were identified. Most (n = 60) had early stage IV and 7 had undergone stage III chemotherapy and radiotherapy (for maintenance therapy with IO). 16 patients underwent first line with pembrolizumab; secondline with pembrolizumab, nivolumab and atezolizumab 9, 33 and 2 patients, respectively; and maintenance therapy with durvalumab 7 patients. Seven patients treated with OI were under corticosteroid therapy for other indications: spinal cord compression, bone or central nervous system metastasis. In stage IV patients, the average time of IO therapy was 4.42 months (minimum 1 and maximum 30 months). Of these patients, 3 discontinued due to toxicity, 10 discontinued due to disease progression, 18 died on treatment and 21 still have ongoing therapy (mean 4.60 months). Of the patients receiving durvalumab therapy 2 patients completed 1 year of therapy, 2 patients discontinued due to toxicity, 3 patients due to disease progression and 2 still have ongoing therapy. The most common adverse effects were asthenia (n = 21), skin changes (n = 11), thyroid dysfunction (n = 12) and intestinal transit disorders (n = 5), 40 of the symptoms being of grade 1 and treated symptomatically, without corticotherapy or immunosuppression and without interruption of treatment. The most serious adverse effects were grade 4 pneumonitis and grade 3 toxidermy to durvalumab and hyperthyroidism, asthenia and grade 3 decompensated heart failure to nivolumab. In two other cases under durvalumab and nivolumab, unconfirmed suspicion of pneumonitis was reported. These 7 cases required transient drug discontinuation and treatment with corticosteroid/immunosuppression. The case of grade 4 pneumonitis occurred in a patient under durvalumab undergoing maintenance after 3 months of therapy, which required hospitalization in an Intensive Care Unit with invasive mechanical ventilation, corticosteroid therapy and cyclosporine immunosuppression. The patient transiently improved but died within 6 months of the last IO cycle. Of other side effects, although its relationship with immunotherapy is not established, it is highlighted the occurrence of urinary tract infection in 8 patients.
Conclusions: IO is a safe and generally well tolerated treatment. A considerable proportion of patients had some adverse effects (n = 50 patients), but most were grade 1 (n = 40 episodes). Grade 3 or grade 4 adverse events requiring discontinuation of therapy occurred in 7 patients. We report 1 case of grade 4 pneumonitis with patient death.

Keywords: *Lung cancer. Non-small cell lung cancer. Immunotherapy. Adverse effects.*

CO 097. NINTEDANIB PLUS DOCETAXEL IN ADVANCED NON-SMALL CELL LUNG CANCER: THE EXPERIENCE OF ONE CENTRE

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Introduction: Immune checkpoint inhibitors (ICI) are a new standard of care in advanced non-small-cell lung cancer (NSCLC), but the optimal treatment sequence after progression on ICI and/or chemotherapy remains to be established. Nintedanib is a triple angiokinase inhibitor that has been approved by the European Agency Medicines in combination with docetaxel for the treatment of advanced NSCLC of adenocarcinoma histology, after first-line chemotherapy.
Objectives: To characterize the population of patients treated with nintedanib/docetaxel for NSCLC and evaluate its effectiveness and safety.
Methods: Retrospective analysis of clinical records of patients with NSCLC, accompanied in oncologic pulmonology and treated with nintedanib/docetaxel. Clinical, demographic and efficacy data were analyzed.
Results: Thirteen patients with advanced NSCLC were enrolled, of which 69.2% were male, and had a mean age of 62.3 years (min. 40-max. 74). Most patients were former/current smokers (69.2%) and had an ECOG performance status of 1 (53.8%). Regarding the histology, 12 patients had adenocarcinoma and 1 adenosquamous. PD-L1 expression was positive in two patients with expression of 5 and 50%. Two patients had driver mutations: 1 EGFR mutation and 1 ALK-EML4 translocation. All the patients had received first-line platinum-based doublet chemotherapy. In 3 cases, nintedanib/docetaxel was used in second-line and in 10 patients conducted in third-line setting. Regarding last 10 patients, 8 had been treated with immunotherapy (nivolumab = 6; pembrolizumab = 2) and 2 with tyrosine kinase inhibitors, previously as a second-line therapy. In the total population, the overall response rate was 36.3% and disease control rate was 63.6%. At the time of survival analysis, 9 progression-free survival (PFS) events had occurred (4 patients had disease progression and 5 died); the median PFS with nintedanib/docetaxel was 4.5 months (95%CI 1.9-6.9; range 2.3-9.2). Safety was evaluated in all 13 patients. The drug adverse events (AEs) with nintedanib/docetaxel were diarrhoea (n = 4), nausea (n = 3) and neutropenia (n = 1). Neutropenia was the only reported ≥ 3 AE and was fatal.
Conclusions: This sample, although short, is in line with previous studies suggesting the benefit of nintedanib/docetaxel as a therapeutic approach in patients with NSCLC, following disease progression under chemotherapy more or less immunotherapy. Larger studies are required to further explore the potential of this therapy.

Keywords: *Non-small-cell lung cancer. Adenocarcinoma. Nintedanib and docetaxel.*

CO 098. ADVERSE EVENTS ASSOCIATED WITH PEMBROLIZUMAB - EXPERIENCE OF AN ONCOLOGY OUTPATIENT CLINIC

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Introduction: Pembrolizumab is an IgG4 monoclonal antibody that binds to T lymphocyte programmed-death receptor (PD1) and prevents its binding to tumor cell-expressed PD-L1 ligand, thereby enhancing the anti-tumor immune response. It is indicated for the treatment of metastatic non-small cell lung carcinoma (NSCLC) if PD-L1 expression ≥ 50% as first-line therapy and as second line if

PD-L1 expression 1-49% (with no genetic mutations). Pembrolizumab is associated with immune-related adverse events which may occur at any stage of treatment, affect various organs, have several degrees of severity and in some cases may imply stopping pembrolizumab.
Objectives: To evaluate immune-related adverse events observed in patients with non small cell lung cancer receiving pembrolizumab followed at an oncology outpatient clinic.
Methods: Retrospective study conducted among patients followed at an oncology outpatient clinic receiving pembrolizumab between March 2017 and June 2019. We collected demographic data and data about the characteristics of the NSCLC and treatment with pembrolizumab by consulting clinical files. Adverse events and their severity were assessed according to Common Terminology Criteria for Adverse Events v4.0 (CTCAE).
Results: Total 24 patients, 54.2% (n = 13) male, mean age 66.7 years. 91.7% had adenocarcinoma (n = 22) and the remaining squamous cell carcinoma. In 37.5% (n = 9) pembrolizumab was used as first-line therapy. The average duration of treatment was 7.2 months (minimum < 1 month; maximum 24.7 months). Adverse effects were reported in 79.2% (n = 19). Among these, fatigue was reported in 84% (n = 16), anorexia in 21% (n = 4) and vomiting in 10.5% (n = 2). Changes in liver tests (5.2%, n = 1) and renal function (10.5%, n = 2) were also reported. One patient (5.2%) had moderate arthralgias and needed systemic corticosteroid therapy in a low dose for a period. None of these patients stopped immunotherapy. Regarding endocrinopathies, only one patient (5.2%) had diabetes mellitus and started insulin therapy. In this case the immunotherapy was temporarily suspended until normalization of glycemia. Two patients (10.5%) had dermatological changes with severe maculopapular erythema (grade 3-4). One of the patients required prolonged hospitalization for this reason, and the diagnosis was confirmed by skin biopsy. In both cases the immunotherapy was permanently discontinued.
Conclusions: Mostly of the data obtained regarding immune-related adverse events are similar to those described in the literature. Regarding endocrinopathies, no thyroid changes were reported, which are one of the most frequent manifestations of immune-related adverse effects. Regarding dermatological changes, although frequent, they are generally mild and do not imply the suspension of immunotherapy, contrary to what was found in our sample. This divergence may be secondary to the small sample size. It is critical that physicians treating these patients are familiar with the broad spectrum of possible immune-related adverse events, since they may be life threatening, although rare. Early identification and treatment are essential to limit its duration and severity.

Keywords: *Non-small cell lung carcinoma. Pembrolizumab. Immune-related adverse events.*

CO 099. ABSCOPAL EFFECT. THE BOOST OF IMMUNOTHERAPY

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Introduction: The abscopal effect refers to the antitumoral effect of radiotherapy at distant sites that are not irradiated. There is some evidence that radiotherapy stimulates the immune system, promoting a systemic antitumoral response. The combination of radiotherapy and immunotherapy can potentiate this phenomenon. The authors present 2 cases of abscopal effect in lung cancer patients submitted to palliative radiotherapy after beginning of immunotherapy.
Case reports: Case 1: 71 year-old man, smoker, diagnosed lung adenocarcinoma stage IVa (cT3N0M1a) in 04/2016. No targeting-mutations detected and PD-L1 0%. Received 4 cycles of chemotherapy - carboplatinum and pemetrexed with partial remission and, 17 cycles of pemetrexed maintenance therapy. Started nivolumab in 09/2017 due to locoregional disease progression (significant increase of the thoracic lesion). Submitted to thoracic radiotherapy 20 Gy, 5 fr, 3DRT in 11/2017 because of pain unalleviated by optimized medical therapy. Chest CT in 01/2018 showed partial remission with significant reduction of the thoracic lesion and the ipsilateral mediastinal and hilar adenopathies. Nowadays, completed 47 administrations of immunotherapy with stable disease and no significant adverse effects. Case 2: 63 year-old man, smoker, diagnosed lung adenocarcinoma stage IVa (cT1bN0M1a) in 10/2017. Mutation c.35G > A (p.Gly12Asp) in exon 2 of the KRAS gene and PD-L1 0%. Received 4 cycles of chemotherapy - carboplatinum and pemetrexed with stable disease and, 12 cycles of pemetrexed maintenance therapy. Started nivolumab in 11/2018 due to distant disease progression (brain lesions and de novo left adrenal metastasis). Submitted to whole brain radiotherapy 30 Gy, 10 fr, 3DRT in 02/2019 and antalgic radiotherapy to the left adrenal metastasis 30 Gy, 10 fr, 3DRT in 03/2019. Chest and abdominal CT in 05/2019 showed partial remission with significant reduction of the left adrenal metastasis and the left hilar adenopathies. In 08/2019, after 16 administrations of immunotherapy, the patient developed a grade 2 colitis. At this point, nivolumab was stopped and the patient was treated with corticotherapy.
Discussion: These cases exemplify the possible capacity of immunotherapy to boost the abscopal effect of radiotherapy, described more than 60 years ago. In the era of "combination therapy", the association of immunotherapy and radiotherapy has become an attractive strategy for lung cancer patients.

Keywords: *Abscopal effect. Immunotherapy.*

CO 100. THORACIC MAGNETIC RESONANCE IMAGING IN THE CHARACTERISATION PULMONARY LESIONS: INITIAL EXPERIENCE OF A TERTIARY CENTRE

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Introduction: Lung nodules (LN) or masses characterization is a major clinical need. Recent technical advancements have made Magnetic Resonance imaging (MRI) with diffusion-weight imaging (DWI) adequate for lung malignant and benign lesions differentiation.
Objectives: To evaluate the performance of MRI in differentiating benign from malignant lung lesions, using apparent diffusion coefficient (ADC), signal intensity of the lesion-to-spinal cord ration (LSR) and the presence of restriction at DWI.
Methods: Retrospective unicentre study that includes all patients submitted to lung MRI in the study of LNs or masses from July 2012 to July 2018. Data related to lesion characterisation at Computed Tomography (CT) and MRI, and final anatomopathological diagnosis was collected.
Results: Forty-four patients were included: 22 male (54.5%): mean age 62 ± 9 years. Forty-seven lung lesions underwent both chest-CT and MRI with DWI: 26 (55.3%) performed ADC; 23 (48.9%) performed LSR; and 27 (57.4%) were classified for the presence or absence of restriction. Mean lesion size was 18.5 ± 12.0 mm at CT and 20.3 ± 13.6 mm at MRI. There was a positive, statistically significant and moderate correlation ($r = 0.58$; $p < 0.001$) between lesion sizes between both methods. The final diagnosis was benign 34% and malignant in 66% cases, which 53.2% were primary lung cancers and 12.8% metastasis from a non-lung cancer. Older patients were significantly more times diagnosed with malignancy ($p = 0.001$). Concerning lesion characterization at MRI, the calculated mean ADC for benign lesions was $(0.54 \pm 0.97) \times 10^{-3}$ $mm^2.sec^{-1}$ and for malignant lesions was $(0.09 \pm 0.81) \times 10^{-3}$ $mm^2.sec^{-1}$. The calculated median LSR and interquartile range (IQR) for benign and malignant lesions was 0.66 (IQR 0.77) $s.mm^{-2}$ and 0.68 (IQR 1.185) $s.mm^{-2}$, respec-

tively. There was no significant difference between benign and malignant lesions in relation to ADC and LSR (p = 0.871 and p = 0.301, respectively). The presence of restriction was observed in 8.3% of benign lesions and 73.3% of malignant lesion, being this difference statistically significantly (p = 0.001). Trough MRI, the evaluated pulmonary lesions were correctly classified in 83% of the cases (p < 0.001). In 90% cases of malignancy and 85.5% cases of benign lesions, the MRI classification was correct.
Conclusions: In this study, the evaluation of lung lesions trough MRI showed that the presence of restriction at DWI was the only parameter associated with malignancy and may be useful for differentiating between malignant and benign lesions.

Keywords: *Magnetic resonance imaging. Benign. Malignant.*

CO 101. LUNG CANCER, 17 YEARS LATER

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Introduction: In Portugal, lung cancer (LC) remains the main cause of cancer death in males. In recent decades, several international publications have pointed to changes in demographic characteristics and therapeutic strategies of patients with LC.
Objectives: To investigate and compare the demographic and clinical characteristics of LC patients diagnosed in oncologic pulmonology unit of our center, at two different time intervals.
Methods: 500 patients diagnosed with CP between 1990-1997 (group 1) and 500 patients diagnosed between 2014-2017 (group 2) were sequentially selected. Patients were characterized according to age, gender, smoking habits, performance status (PS), histology and therapeutic approach.
Results: In both groups most patients were male, however, in group 2 there was a significantly higher percentage of female than in group 1 (27.4% vs 16%, respectively). No statistically significant differences were found in age. Smoking habits were associated with gender. The smokers and former smokers were mainly male, and the percentage of former smokers was higher in group 2 (37.8% vs 15.8%). In both groups, most non-smoking patients were female. The patients in group 2 had poor performance status at the time of diagnosis. In group 2 there are more adenocarcinoma histology (group 2: 59.2% vs group 1: 32.8%) and fewer squamous cell carcinoma (group 2: 19.8% vs group 1: 49%). In both groups, most LC were diagnosed in advanced stage (group 1: 79.4%; group 2: 80.6%). Regarding treatment, there was a significant increase in chemotherapy alone used as the first therapeutic approach (group 2: 63.4% vs group 1: 31.6%) and, proportionally, a significant reduction in the number of patients in whom the only possible treatment was the best supportive therapy (group 2: 13.6% vs group 1: 45.8%). The use of a combined treatment strategy as the first option is similar in both groups (group 1: 13.2%; group 2: 13.4%). However, the proportion of combined therapies that included surgery was higher in group 2 (6.2% vs 3.4%).
Conclusions: In recent years, the demographic characteristics associated with LC have changed slightly. By comparing the two groups, with a time interval of 17 years, we found an increase in the diagnosis of LC in women. We have seen a decrease in the percentage of smokers and an increase in former smokers. The patient's performance status represents a decisive condition in the choice of treatment. We found a higher proportion of patients with PS 0-1 in the most recent group, which may be explained by improved socioeconomic conditions and easier access to specialized centers. There was also a clear reduction in the number of patients in whom the only therapeutic option was the best supportive therapy. In both groups, approximately 80% of patients had extensive disease at the time of diagnosis, highlighting the need for more effective early diagnosis strategies.

Keywords: *Lung cancer. Epidemiology. Therapeutic approach.*

CO 102. LUNG CANCER SCREENING IN COPD PATIENTS

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Introduction: COPD patients have a high risk of developing lung cancer and represent a preferred target to be included in screening programs. The largest screening study in Europe (NELSON) demonstrated a positive association between CT scanning and reduced mortality in high-risk populations. More recently, the COPD-LUCSS score has been validated as a predictive tool capable of identifying patients with COPD and high risk of lung cancer-associated mortality.
Objectives: Analyze and compare the value of both scores in a COPD patient population and determine the incidence of lung cancer.
Methods: Retrospective study of COPD patients followed in pulmonology consultation for a period of 10 years (2008 to 2018). The COPD-LUCSS score (BMI < 25, Pack years > 60, > 60 years and emphysema) and the NELSON score (50-75 years old, smokers or former smokers (less than 10 years old) of 15 or more cigarettes per day for more than 25 years or ten or more cigarettes for more than 30 years). The lung cancer incidence rate was calculated for each of the subgroups at the end of the period (2018).
Results: A total of 84 patients were included in the study (mean age 64.3 ± 9.5 years, 88.1% male and 44% former smokers). Regarding the GOLD classification, 6% were in stage I, 40.5% in stage II, 47.6% in stage III and 6% in stage IV. Applying the COPD-LUCSS score, 42 (50%) patients were classified as high risk and 42 (50%) as low risk. Of the total patients in the high-risk group, 17 (40.5%) were diagnosed with lung cancer at follow-up in contrast to only 3 (7.1%) diagnoses in the low-risk group. Using the NELSON study criteria, 48 patients (57.1%) would be eligible for lung cancer screening. In this subgroup, during the follow-up period, 16 patients (33.3%) were diagnosed with lung cancer compared with 4 patients (8.3%) in the subgroup not eligible for screening. Cox regression analysis showed that both COPD-LUCSS and NELSON criteria were significantly associated with lung cancer incidence (COPD-LUCSS with hazard ratio (HR) of 0.15, confidence interval of 0, 43-0.51, p < 0.05 and NELSON with HR 0.32, confidence interval 0.17-0.96, p < 0.05). The area under the ROC curve was 0.73 for COPD-LUCSS and 0.65 for NELSON. There was no statistically significant difference between the values of the area under the ROC curve of the two criteria (p > 0.05).
Conclusions: The COPD-LUCSS and NELSON scores predicted lung cancer or cancer in the population studied for COPD. COPD-LUCSS does not show greater accuracy than the NELSON study to predict lung cancer occurrence.

Keywords: *Lung cancer screening. COPD.*

CO 103. CURRENT KNOWLEDGE AND IMPLEMENTATION OF IDIOPATHIC PULMONARY FIBROSIS GUIDELINES AMONG PULMONOLOGISTS IN PORTUGAL - WHERE DO WE STAND?

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Introduction: Idiopathic pulmonary fibrosis (IPF) is a chronic, progressive fibrotic interstitial lung disease of unknown cause, predominant in male adults over 55 years and associated with a pattern of usual interstitial pneumonia (UIP) based on radiological or histological criteria. The diagnosis of IPF is a complex, multi-step process and delays in diagnosis cause a negative impact on the survival of patients. Additionally, a multidisciplinary team of pulmonologists, radiologists and pathologists is necessary for an accurate IPF diagnosis. The aim of the present study was to assess how IPF patients

are managed in Portugal and to evaluate the level of agreement of Portuguese pulmonologists with the clinical practices according to the Official ATS/ERS/JRS/ALAT Clinical Practice Guideline and the national consensus.
Methods: 78 practicing pulmonologists were enrolled (May-Aug 2019) in a survey development by IPF experts and comprising one round of 31 questions structured in three parts. The first part was related to the professional profile of the participants, the second part assessed their level of knowledge and practice agreement with national consensus and international guidelines for IPF as well as their access to other specialties as radiology and pathology for IPF diagnosis, and the third part was a self-evaluation of the guidelines' adherence for diagnosis and treatment in their daily practice.
Results: Participants represented a wide spectrum of pulmonologists from 14 districts of Portugal and autonomous regions of Azores and Madeira. The majority were female (65%), and within 5-19 years of experience (71%) and working in a public clinical center (83%). Of the total, 79% have a monthly volume > 70 of patients with any respiratory disorders. The yearly volume of IPF patients was 5-14 for 54% of the respondents. Importantly, the majority of pulmonologists follow their IPF patients (n = 43), while 22-26% referred IPF patients to other specialists in the same hospital or to another center. Within the pulmonologist that do not refer, 81% revisited their IPF patients every three months or less. Regarding the knowledge and agreement with IPF national consensus and international guidelines, 56% and 60% of pulmonologists evaluated their level as high, respectively. Interstitial Lung Diseases multi-disciplinary teams, that include radiology or pathology, were available for 40% or 29% of participants, respectively, while the majority of pulmonologists (92%) agreed or absolutely agreed multi-disciplinary discussions is recommended to accurately diagnose IPF. A pulmonary biopsy was not considered as required (99%) to establish an IPF diagnosis, but it could be considered (86%) in a context of 'possible/probable UIP'. In addition, 99% of the pulmonologists consider transbronchial cryobiopsy as a valid option to stablish an IPF diagnosis. The opinions regarding the terms probable or possible UIP are divided among pulmonologists: 9% show disagreement with the term "probable UIP" and this percentage raises for 36% with the term "possible UIP". Regarding treatment, 97% absolutely agreed or agreed that antifibrotic therapy should start once the IPF diagnosis is established. A high level of agreement was found for long-term oxygen therapy in patient with significant resting hypoxemia (94%), lung transplantation on appropriate patients (95%) and pulmonary rehabilitation for the majority of IPF patients (95%). Corticosteroid monotherapy, and combination therapy with n-acetylcysteine, azathioprine and prednisone, were not supported (92-95% disagreement). Finally, 71% stated that 6 months is the recommended time for follow-up visit in IPF patients whereas 25% answered 3 months.
Conclusions: To our knowledge, this survey represents the largest and most comprehensive assessment of the level of knowledge and acceptance of IPF National Consensus and international Official ATS/ERS/JRS/ALAT IPF Guidelines. We were able to capture a representative sample of pulmonologists (n = 78), most importantly the ones who follow a large number of IPF patients in their clinical practice (n = 43). Pulmonologists in this panel highly understand and agree with national consensus and international guidelines for IPF treatment however, their implementation in Portugal is heterogeneous, particularly in the level of assess to a specialized multidisciplinary team with experienced radiologist and pathologist.

Keywords: *Idiopathic pulmonary fibrosis. Diagnosis. Awareness. Guidelines. Consensus.*

CO 104. AROUSAL INDUCED CHANGES OF HEMODYNAMIC VARIATION DURING SLEEP

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Introduction: Obstructive sleep apnea (OSA) has been associated with non-dipping blood pressure (BP). The precise mechanism is still under investigation, but repetitive oxygen desaturation and arousal induced sleep fragmentation are considered the main contributors.
Methods: We analysed at sleep/wake transition beat-to-beat (Nexfin-HD®) the hemodynamic following parameters (HP): heart rate (HR); systolic blood pressure (SBP) and stroke volume (SV). Differences in mean HP values during wake and sleep and their standard deviations (SD) were compared between 34 controls (C) and 22 OSA patients. Statistically significance was evaluated by the student t-test for independent samples and the effect size by Cohen´s d (d). HP evolution was investigated by plotting the measured HP values against each consecutive pulse wave. A simple regression analysis was performed and the coefficient beta (SCB) was used to indicate HP evolution. In a hierarchical block regression, we investigated which variables increased the prediction for the SCB: model 1 BMI and age, model 2 + apnea/hypopnea index (AHI), model 3 + arousal index (AI) and model 4 + sleep efficiency.
Results: Between the two groups the SBP increased in OSA and decreased in C resulting in a significant difference ($p = 0.001$; $d = 0.92$). The SV demonstrated a similar development ($p = 0.047$; $d = 0.56$). The wake/sleep variation of the HP measured by the SD was higher in the OSA group: HR: $p < 0.001$; $d = 1.2$; SBP: $p = 0.001$; $d = 0.94$ and SV: $p = 0.005$; $d = 0.82$. The hierarchical regression analysis of the SCB demonstrated in SBP that the addition of AI to AHI resulted in: $\Delta R2$: + 0.163. and ΔF +13.257 ($p = 0.001$) and for SV $\Delta R2$: + 0.07 and ΔF 4.83 ($p = 0.003$). The arousal index but not the AHI remained statistically significant in the regression analysis model 3: SBP: $\beta = 0.717$; $p = 0.001$) SV: $\beta = 0.469$; $p = 0.033$).
Conclusions: In this study we demonstrated, that in OSA the physiological dipping in SBP and SV decreased, and the variation of all investigated parameter increased. Hierarchical regression analysis indicates that the addition of the arousal index increases the prediction of the HP evolution following sleep onset for both SBP and SV and may be the most important variable.

Keywords: *Arterial hypertension. Sleep apnea. Sleep fragmentation.*

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PC 001. DISTINGUISHING BENIGN FROM MALIGNANT LUNG DISEASE ASSOCIATED WITH ASBESTOS EXPOSURE - THE RADIOLOGICAL PERSPECTIVE

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Introduction: Asbestos refers to a group of naturally-occurring fibrous silicate minerals which have been traditionally used in manufacturing, mining and construction. When inhaled, asbestos dusts may be eliminated by the mucociliary system of the upper respiratory tract, but once the fibers reach the alveoli, a local immune response is triggered. This inflammatory reaction, mediated by macrophages and fibroblasts, is perpetuated as a chronic inflammatory process inducing lung fibrosis and increased risk of malignancy. Nowadays, the adverse health effects of inhalation of asbestos fibres are well-recognized, with the most severe consequences being lung cancer and mesothelioma. Although its usage has been banned or strongly restricted in more than 50 countries, owing to the long latency period from exposure to the disease presentation (up to 60 years), it is predicted that asbestos-related disease will not decrease in the next 10-15 years.
Objectives: The goals of this work were: 1) to provide a brief pictorial review of the most frequent lung parenchymal and pleural diseases related to asbestos exposure on chest X-ray and computed tomography (CT) and 2) to present discriminatory features that help distinguishing benign from malignant disease.
Methods: We have reviewed the cases of benign and malignant lung asbestos-related disease that have been seen in Pneumology consultation or admitted in the Pneumology Ward at the Centro Hospitalar Universitário do Algarve during a 10-year period. From these, we have chosen the most representative cases (n = 7) in order to provide a clear pictorial review of the most frequent pleuro-pulmonary diseases and most important radiographic findings that help clinicians distinguishing between benign and malignant disease.
Results: Benign disease radiologically displays as pleural effusions, pleural plaques, diffuse pleural thickening, round atelectasis (Blesovsky syndrome), fibrotic bands and asbestosis (diffuse interstitial fibrosis of the lungs). Neoplastic disease related to asbestos exposure manifests as malignant mesothelioma of the pleura, although it may arise in the peritoneum and pericardium (among other tissues), and bronchogenic carcinoma. Although the chest X-rays may suffice the diagnosis (namely for the diagnosis of benign pleural effusion and calcified pleural plaques), conventional and high resolution CT are generally more sensitive and specific. The most discriminatory features to differentiate benign from malignant pleural thickening are: presence of a pleural rind, pleural nodularity, pleural thickening greater than 1 cm and mediastinal pleural involvement.
Conclusions: Recognition of the radiological manifestations of the pleuro-pulmonary asbestos-related diseases is essential for all clinicians that follow patients with respiratory complaints and known (or unknown) previous asbestos exposure. Moreover, differentiation criteria between benign and malignant conditions, namely diffuse pleural thickening vs mesothelioma, should always be kept in mind.

Keywords: *Asbestos. Imaging. Pleural diseases. Lung parenchymal diseases.*

PC 002. TREATMENT OF IDIOPATHIC PULMONARY FIBROSIS WITH ANTIFIBROTICS: BRAGA HOSPITAL EXPERIENCE

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Introduction: Idiopathic pulmonary fibrosis (IPF) is a progressive chronic idiopathic interstitial pneumonia with a median survival after diagnosis of 2 to 5 years. It is characterized by a radiological and histopathological pattern of usual interstitial pneumonia. rate of disease progression as well as decreasing serious events such as acute exacerbation. In this sense, the introduction of pirfenidone and nintedanib offered a significant advance in the treatment of IPF.
Objectives: To retrospectively evaluate IPF patients undergoing treatment with pirfenidone and nintedanib at the Pulmonology Department of the Hospital de Braga.

Methods: Included in the study were patients with IPF followed by pulmonary interstitial consultation who started therapy with pirfenidone or nintedanib. The sample characterization was based on demographic, clinical, laboratory and pulmonary function tests. Results were recorded at baseline and at baseline. subsequent periodic evaluations (T0, T1, T2eT3), with respiratory function tests and frequency of side effects reported.
Results: Forty-one patients with IPF were identified, of whom 22 started antifibrotic treatment: pirfenidone (6) or nintedanib (16); 16 men and 6 women, with a mean age at diagnosis of 67.2 ± 9.2 years. Dyspnea was the most commonly reported symptom (86.4%) and 54.5% of patients reported dry cough. Most patients were former smokers (64%), with an average of 28 months between symptom onset and diagnosis. The mean interval between evaluations (T0-T1-T2-T3) was 6 months. Stability of FVC, FEV1, TLC and DLCO was observed after initiation of treatment throughout the three evaluations performed on patients receiving antifibrotic therapy. In patients treated with pirfenidone, CVF stability was observed (64.5%, 70.4%, 73.3%, 68%) and progressive decrease in DLCO (53.7%, 35.7%, 23.7%, 29.3%), in the respective evaluations. Similar results were recorded in the nintedanib treated group, but with DLCO stability: FVC (75.3%, 85.1%, 83.7%, 80.8%) and DLCO (35.7%, 33%, 31.1%, 38%). The main side effects reported were nausea, diarrhea, abdominal pain, weight loss and liver changes. Side effects were reported in 50% of patients. These effects were more frequent in patients receiving nintedanib therapy. In the nintedanib group, the following side effects were reported: diarrhea (7 patients), nausea (5 patients), weight loss (3 patients), liver toxicity (3 patients), abdominal pain (2 patients).In the treatment group with pirfenidone nausea (1 patient) and weight loss (1 patient). Therapy was discontinued in 5 patients receiving nintedanib; definitely in 4 patients (for diarrhea and liver toxicity) and temporarily in one patient. Pirfenidone was not discontinued in any patient. The average treatment time recorded was 19.7 ± 14.8 months. From the study sample there were 9 deaths as a result of acute exacerbation, an average of 16.5 months after initiation of treatment. As n < 30, it was not possible to establish comparisons between both drugs.
Conclusions: This study corroborates that both drugs appear to be a good therapeutic choice with regard to functional stability of patients with IPF. The higher number of side effects reported in patients receiving nintedanib therapy may be related to a larger sample of patients receiving nintedanib compared to the pirfenidone patient sample.

Keywords: *Idiopathic pulmonary fibrosis. Antifibrotics. Pirfenidone. Nintedanib.*

PC 003. ELECTRICAL CARDIOVERSION: AN ALMOST UNKNOWN CAUSE OF DIFFUSE ALVEOLAR HEMORRHAGE

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Introduction: Electrical cardioversion is a medical procedure used to treat arrhythmias with a low complication rate. Diffuse alveolar hemorrhage after cardioversion is a very rare event. To the best of our knowledge there is only one case-report published about this issue.
Case report: The present case report is about a 47-year-old male with history of dyslipidemia and paroxysmal atrial fibrillation with a past history of hemoptysis after electrical cardioversion in 2016. He presented to the emergency department with complaints of palpitations and fatigue. Electrocardiogram showed atrial fibrillation with tachycardia. After 4 unsuccessful electrical cardioversion attempts the patient was discharged with oral anticoagulation (apixaban) and amiodarone. A few hours later, he was readmitted due to orthopnea and moderate volume hemoptysis. Chest X-ray showed bilateral heterogeneous opacities. Chest CT scan revealed diffuse bilateral parabronchial ground glass opacities suggestive of diffuse alveolar hemorrhage and small bilateral pleural effusion. Transthoracic echocardiography revealed severe left ventricular dysfunction with diffuse hypokinesis and ventricular ejection fraction of 25%. Bronchoscopy was not performed due to severe cardiac dysfunction. Anticoagulation was stopped and aminocaproic acid was infused with resolution of hemoptysis. Secondary causes of hemoptysis were excluded such as bronchiectasis, vasculitis or infection. Control chest CT scan performed 2 weeks after the event showed a significant radiological improvement.
Discussion: Diffuse alveolar hemorrhage is a subset of diffuse pulmonary hemorrhage when bleeding is diffuse and directly into the alveolar spaces. In the present case the patient had an increased risk of bleeding due to anticoagulation therapy. Differential diagnosis included pulmonary edema due to severe cardiac dysfunction. However, hemoptysis is not a feature of pulmonary edema. In this case, hemoptysis was central for the clinical suspicion of alveolar hemorrhage. Perhaps the association between electrical cardioversion and alveolar hemorrhage is underreported in the absence of overt blood losses. To conclude, alveolar hemorrhage should be considered as a differential diagnosis in a patient with hemoptysis after electrical cardioversion.

Keywords: *Hemoptysis. Diffuse alveolar hemorrhage. Electrical cardioversion.*

PC 004. IDIOPATHIC PULMONARY HEMOSIDEROSIS IN AN ADULT WITH ALPHA-1 ANTITRYPSIN DEFICIENCY – COINCIDENCE OR AN UNKNOWN ASSOCIATION?

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Case report: We present the case of a 47-year-old woman, cleaning worker, with previous history of depression. She presented to the emergency department with small-volume hemoptysis for one week. The patient also mentioned two other self-limited similar episodes several months before. Physical examination, blood tests and chest radiography were unremarkable. She was discharged with a cough suppressant medication and was subsequently followed on a Pulmonology consultation. During the following months the patient maintained small but persistent hemoptysis. Bronchofibroscopy did not show any morphological abnormalities, but bronchoalveolar lavage was compatible with alveolar hemorrhage. Chest HRCT scan showed a few scattered non-specific ground glass opacities. Screening tests for autoimmune diseases, including anti-neutrophil cytoplasmic antibodies (ANCA), were negative. Due to family history of alpha-1 trypsin (AAT) deficiency (brother diagnosed with severe emphysema), the patient was tested and had a PiZZ genotype. Liver tests and echography were normal. The only abnormality on pulmonary function tests was a diminished DLCO (40% of the predicted). Due to worsening of the hemoptysis the patient was admitted in the hospital. At this time, she had a severe iron deficiency anemia. Iron supplementation was initiated, and the patient underwent a bronchial artery angiography, in which a small arterio-arterial fistula was embolized. In the two following months the patient maintained persistent small-volume hemoptysis, but she recovered from the anemia. A second angiography failed to show any abnormalities in the bronchial circulation. The patient was then submitted to a cryobiopsy, that showed blood-filled alveolar spaces but no features of vasculitis or other etiologies of alveolar hemorrhage. After the procedure the patient had a worsening of her clinical status, with aggravated dyspnea and diffuse ground glass opacities on chest HRCT scan. High dose glucocorticoids were initiated with a great clinical and radiological improvement after the first pulse. Due to the described results, in the absence of a specific etiology, the diagnosis of Idiopathic pulmonary hemosiderosis (IPH) was assumed and pulsed intravenous cyclophosphamide treatment was initiated.

Discussion: Although AAT deficiency is associated with ANCA-positive systemic vasculitis, its association with IPH has not been reported. It is unlikely that these two rare disorders would coexist without a physiopathological link. Although the exact etiology of IPH is still unknown, the response to immunosuppressive therapy suggests an immune mediated process. AAT has been demonstrated to have a relevant immune-modulating role by reducing production of pro-inflammatory cytokines, inhibiting apoptosis, blocking leukocyte degranulation and migration, and modulating local and systemic inflammatory responses. Further research is needed to help clarify this possible interaction and understand the pathogenesis of IPH.

Keywords: *Idiopathic pulmonary hemosiderosis.*

PC 005. OCCUPATIONAL CHRONIC BRONCHIOLITIS SECONDARY TO METALLURGICAL PICKLING WITH NITRIC ACID

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Centro Hospitalar do Baixo Vouga.

Introduction: Pulmonary toxicity after inhalation may result from exposure to a variety of chemical compounds. In the metallurgical industry, various substances used in galvanizing processes can cause severe effects on airway and lung parenchyma. The clinical course, pathophysiology and treatment of pulmonary toxicity induced by nitric acid are poorly documented in the literature.
Case reports: Female, 50 years-old, non-smoker and without relevant medical history. Complaints of grade 2 mMRC exertional dyspnea and unproductive, contumacious and refractory chronic cough even with the prescriptions of antitussives, bronchodilators and inhaled corticosteroids (Leicester Cough Quest: total 10.6 (physical-3.75; phycological-3.57; social-3.25). She worked as a metallurgical factory worker in the chrome plating section, handling nitric acid for pickling metals. Radiographically with diffuse reticulo-micronodular interstitial pattern with subsegmental alveolar consolidation foci in the middle levels. Chest CT showed areas of tree-in-bud opacification, foci of peribronchial alveolar densification and bronchiectasis in the right upper lobe, middle lobe, and lingula. Functionally with Tiffeneau-Pinelli Index-0.86, FEV1-109%, FVC-106%, TLC-104%, RV-107%, DLCOSB-77%, KCO-93%. Autoimmune workup was negative. Bronchofibroscopy without endoscopic abnormalities and the invasive microbiological study was negative. Under the suspicion of inhalation bronchiolitis and for documentation, she underwent VATS surgical lung biopsy (right upper and lower lobe). The biopsy showed preservation of the parenchymal architecture, lymphoplasmocyte infiltrate in the bronchiolar wall with polymorphonuclears, bronchial muscular layer hypertrophy and bronchiolar wall fibrosis, without foci of organizational pneumonia/myofibroblastic polyps or aspects of interstitial inflammation. After multidisciplinary discussion she was diagnosed with chronic inhaled bronchiolitis induced by nitric acid/NO2, caused by contact of nitric acid with metals. She began therapy with prednisolone and azithromycin (immunomodulation regimen), in parallel with palliative cough medication. She presented progressive improvement of dyspnea and cough resolution. HRCT showed partial resolution of the lesions. She is currently on maintenance dose of prednisolone (5 mg), with inhalation therapy and is being followed up at medical consultation of Pulmonology/Interstitial lung diseases.
Discussion: Inhalational lung toxicity depends on weight, structure and molecular concentration, as well as duration and narrowness of exposure. Nitric acid is often used in the metallurgical industry for chemical pickling prior to the chemical/electrochemical coating of metals (plating with chrome, nickel or zinc). In addition to its high solubility, it generates NO2 vapors in contact with metals, which can be inhaled, especially under inadequate ventilation or without the use of protective equipment. Exposure to toxic/irritants is a known cause of bronchiolitis probably resulting from oxidative damage to terminal bronchioles/alveoli, with some reports of nitric acid/NO2 toxicity in the literature. Bronchiolitis is usually the constrictive type and poorly responsive to corticosteroids. Clinically, it may have an acute or more insidious onset, like this case, and it´s frequent the diagnostic delay due to premature interpretations of possible asthma/COPD. This case illustrates a situation of diffuse parenchymal disease where a meticulous occupational history is crucial to final causal recognition. Despite the correct initial diagnostic suspicion, histological confirmation was useful for recognizing the disease as occupational (and facilitating the compensation of the injured worker), as well as contributing to the prognosis/expectation of responsiveness to corticosteroids.

Keywords: *Bronchiolitis. Nitric acid. NO2. Lung toxicity. Occupational.*

PC 006. THE IMPORTANCE OF BRONCHOALVEOLAR LAVAGE IN APPROACH OF INTERSTITIAL LUNG DISEASES

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Introduction: Bronchoalveolar lavage (BAL) is commonly used in diagnostic approach of interstitial lung diseases (ILD), in conjunction with clinical history and imaging findings, that may confirm or support the differential diagnosis. In patients with ILD with pulmonary fibrosis, its contribution may be important, given the challenging diagnosis of this pathology.
Objectives: To access the diagnostic value of BAL in different ILD, comparing the alveolar cellular profile. To evaluate the cytologic differences between different groups of ILD with pulmonary fibrosis.
Methods: Retrospective analysis of cases undergoing BAL on suspicion of ILD, between January 2017 and December 2018. We included all patients with BAL immunophenotyping and with definitive diagnosis of ILD established.
Results: We included 165 patients, with average age of 64 years old, of whom 60.6% were male. The following pathologic groups were analyzed: hypersensitivity pneumonitis (HP; n = 70), 18.8% of which corresponded to chronic hypersensitivity pneumonitis (CHP); pneumoconiosis (n = 36), 6.1% of which had massive fibrosis; sarcoidosis (n = 20), 1.8% of which belonged to stage IV; connective tissue diseases associated to ILD (CTD; n = 13), 1.2% of which had fibrosing pattern; idiopathic pulmonary fibrosis (IPF; n = 7); other idiopathic interstitial pneumonia (IIP) that included non-specific interstitial pneumonia, cryptogenic organizing pneumonia, respiratory bronchiolitis interstitial lung disease and desquamative interstitial pneumonia (n = 19), 21.2% of which were fibrosing. BAL cellular analysis revealed lymphocytosis in HP, sarcoidosis, CTD and pneumoconiosis groups, with significant difference between their mean values (36%, 35.2%, 22% and 15%, respectively, with p = 0.001). We also observed a higher neutrophil percentage in IPF (14%), IIP (7%) and CTD (6.5%). However, there was no significant statistical difference between the studied groups (p = 0.407). The analysis of the cellular profile of ILD with fibrosis (n = 57) and without fibrosis (n = 108) showed increased neutrophilia in the first group (5% versus 3%), with statistical significance (p = 0.026). Patients with acute/subacute HP had higher lymphocyte count compared to CHP (p = 0.009), with no difference in neutrophil count (p = 0.413). Comparing with IPF (16.6%), we also verified a difference in lymphocyte count percentage in CHP (26.7%), pneumoconiosis with massive fibrosis (20%) and sarcoidosis stage IV (45%), but only with statistical significance for the latter (p = 0.009).
Conclusions: In this study, BAL had an important role in approach of different ILD, verifying lymphocytic alveolitis in HP and sarcoidosis, and mixed alveolitis in CTD. ILD with fibrosis, as well as IPF, have demonstrated a significant increase in neutrophil count, in accordance with literature. By comparing acute/subacute HP with CHP, we observed a significant decrease in lymphocyte count with the chro-

nicity of the disease. This fact may difficult the differential diagnosis, namely with IPF, often leading to more invasive procedures.

Keywords: *Interstitial lung diseases. Bronchoalveolar lavage. Pulmonary fibrosis.*

PC 007. FAMILIAR PULMONARY FIBROSIS: DESCRIPTION OF A FAMILY CLUSTER OF TERT GENE MUTATION

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Introduction: Idiopathic pulmonary fibrosis (IPF) represents the most common form of idiopathic interstitial pneumonia. Although mostly sporadic, familiar clusters are identified in about 10% of cases -denominated familiar pulmonary fibrosis (FPF). More frequent mutations observed in FPF comprises telomerase complex -TERT and TERC genes- being also associated to haematological, hepatic and cutaneous manifestations.
Case report: We present the case of a 60-year-old female (proband), with past work in aviary, non-smoker and with no previous history of autoimmunity; she was diagnosed FPF. The patient presented usual interstitial pneumonia (UIP) –probable pattern– and moderate reduction of alveoli capillary diffusion of carbon monoxide at diagnosis. Her family history was full of confirmed/suspected cases of fibrotic pulmonary disease, including a maternal uncle and five brothers, all already dead with a mean age of 58 years (interval from 45 to 75 years), by cause attributed to complications of pulmonary fibrosis. The more complete information available was relative to the maternal uncle, who died at 75 years, by an exacerbation of disease, only 2 months after confirmation of IPF diagnosis. In his first evaluation, he presented a three-month clinical picture of dyspnea with efforts and dry cough, radiological pattern of definite UIP at chest computerized tomography and broncoalveolar lavage with high score of neutrophils and eosinophils. Genetic study was proceeded through NGS multigenic panel (clinical exome) of proband, in which was detected a pathogenic variant of TERT gene c. 1630T > C on exon 3. Due to reports of consanguinity between the proband and her husband (grandson of maternal uncle of proband), he was evaluated on screening consultation, presenting himself asymptomatic, however equally carrier of radiological changes of probable UIP pattern. Currently, his genetic study is ongoing. Both proband and her uncle presented obstructive sleep apnea syndrome, without other manifestations (including extrapulmonary) frequently described in association with FPF. Empty sella and Joubert syndromes' associated encephalopathy had been previously documented in proband.
Discussion: Even present only in a small percentage of IPF cases, pathogenic changes in TERT gene have been identified mainly in FPF cases. Genetic counseling becomes important in affected families, allowing an early diagnosis and beginning of appropriate treatment. Besides being risk factor for IPF, genetic variants may influence natural course of disease. Further studies should consider the presence of these variants, in order to establish a connection between genotype and therapeutic response, and then develop personalised medicines.

Keywords: *Familiar pulmonary fibrosis. Telomerase. TERT.*

PC 008. DISSIMILAR PRESENTATIONS OF SARCOIDOSIS

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Introduction: Imagiology is central in sarcoidosis diagnosis and following. The typical presentation on CT scan is the symmetrical bilateral hilar lymphadenopathies and well defined, with peribronchovascular predominance, in the upper lobes. However, several atypical presentations are documented, considering sarcoidosis as the "great pretender"
Case reports: Case 1. Female, 33 years old, with dyspnea and chest pain for about 5 years. Assumed the sarcoidosis diagnosis in private consultation. She was under corticotherapy for two years, with good response. Referenced to hospital five years later due to worsening. Thorax CT revealing diffuse ground-glass areas in both lungs and micronodular opacities with perilymphatic distribution, highly diffused, without sparing the lower lobes. The transthoracic biopsy (TTB) was compatible with sarcoidosis. Due to large pulmonary involvement and symptoms, immunosuppression was started. Case 2. Male, 29 years old, was sent to hospital for investigation of adenopathies. Thorax CT showed bilateral disseminated millimetric nodules. Cervical adenopathy biopsy revealed non-specific chronical granulomatous lymphadenopathy. Positron-emission tomography (PET) showing exuberant fixation with widespread bone involvement (column, pelvis, sternum, clavicle, scapula, ribs, humerus and femur) with high metabolical activity, suggesting as first possibility lymphoproliferative disease. However, considering symptoms, biopsy, BAL and the absence of malignant cells, diagnosis of sarcoidosis was assumed. Due to extensive involvement and asthenia, corticotherapy was started. Case 3. Male, 38 years old, antiphospholipid syndrome history. Constitutional symptoms and dry cough with 6 months evolution. Thorax X-ray with bilateral diffuse micronodular opacifications. CT evidenced several miliary micronodules, with upper lobe predominance. He was admitted on suspicion of tuberculosis, which was excluded. TTB showed a non-necrotizing granulomatous inflammation. The diagnosis of sarcoidosis was assumed; he remains under surveillance. Case 4. Male, 52 years, was attended in consultation for large volume mediastinal adenopathies, diffuse opacities in both lungs and hepatosplenomegaly. He was sent on suspicion of sarcoidosis. EBUS-TBNA, TTB and BAL were performed and were inconclusive, so he underwent transthoracic biopsy, revealing granulomas consistent with sarcoidosis. No improvement with immunosuppression, despite the disease activity. Two years later, thorax CT with diffuse distortion of pulmonary architecture and a nodule with air crescent sign, suggesting mycetoma, septal thickening and bronchiectasis, indicting an evolution to fibrosis. Currently, under portable oxygen therapy.
Discussion: In the first case, the parenchymal diffuse involvement, with inclusion of the lower lobes do not show sarcoidosis as main differential diagnosis. About one third of patients with sarcoidosis have palpable peripheric lymphadenopathies. Attention is drawn to the differential diagnosis between sarcoidosis and lymphoma, considering that both of them involve mediastinal lymph nodes and may have similar parenchymal presentations. The bone involvement is uncommon and it is believed to indicate a chronical and long clinical course. Miliary opacities constitute a rare pattern on sarcoidosis (< 1% of the cases), mimics other differential diagnosis. Multifocal opacities due to pulmonary sarcoidosis occur on about 10-20% of the patients. Cavitation of these lesions is a very rare finding. Thus, sarcoidosis mimics a wide variety of diagnosis with different etiology, being as such, considered an exclusion diagnosis.

Keywords: *Sarcoidosis. CT scan. Radiology. Pulmonary presentations.*

PC 009. PLEUROPARENCHYMAL FIBROELASTOSIS AND EPITELIAL REMODELLING: RECOGNITION AND PITFALL

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Introduction: Pleuroparenchymal fibroelastosis has been referred as rare and with unclear pathogenesis and acute lung injury or in-

terstitial inflammation repair has been recognized with reduplication of elastic fibers. There is a predilection for the upper lobes, predominantly in younger and nonsmoking patients. Although cases of older and smoker individuals have been diagnosed, associated with better prognosis and without relevant symptoms.
Case report: 29-years-old woman presented right pneumothorax, submitted to surgery due to complications of residual disease. Pulmonary tissue was collected during surgical procedures. At gross appearance, pulmonary tissue with 5.5 × 2.9 × 2.5 cm, revealed emphysema and sub-pleural congestion/densification. Histopathological study showed central broncho-vascular lesions with retention of birefringent particles and constrictive bronchiolitis. Lobular remodellation with sub-pleural fibroelastosis, fibrosis of alveolar septae and epitelial remodelling as well as scant and patchy lymphoplasmacytic infiltrate were also present. Imunohistochemistry allowed the clear understanding of pleuroparenchymal fibroelastosis envolving epithelial spaces where CK5 expression, along with TTF1, CK7 and vimentin were relevant, correlating with bronchialization of peripheral lung and bronchioli epithelium.
Discussion: Pleuroparenchymal fibroelastosis diagnosis is well defined by clinical, radiologic, and pathologic consensus of American Thoracic Society Documents (2013). Usual interstitial pneumonia causes effacement of the original parenchymal architecture - not present in our case. Fibroelastosis prognosis is poor with recurrent complications like pneumothorax. No effective therapy is available and particular attention should be driven in younger patients as the actual case report. Also important and relevant for clinical and pathology routine stands the recognition of epithelial remodelling raising pools of eventual carcinogenesis and may be a pitfall in frozen sections of lesions under 3 cm diameter.

Keywords: *Pleuroparenchymal fibroelastosis. Epithelial remodelling. Usual interstitial pneumonia.*

PC 010. MIXED CONNECTIVE TISSUE DISEASE IN A PATIENT WITH SPONTANEOUS PNEUMOTHORAX

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Introduction: Mixed Connective Tissue Disease (TCDM) is a systemic autoimmune connective tissue disease characterized by elevated anti-U1-ribonucleoprotein (RNP) antibody titers and clinical manifestations of systemic lupus erythematosus, scleroderma, polymyositis, dermatomyositis and rheumatoid arthritis. The authors present a case of a 28-year-old male patient with no past medical history and sporadic smoking habits since twelve years old.
Case reports: He complained of dyspnea and chest pain. On physical exam he was eupneic and had no breath sound in the left pulmonary field. Chest x-ray showed a left pneumothorax requiring a chest tube. On the second day of hospitalization, empiric antibiotic therapy was started for persistent fever and consistent elevation of inflammatory parameters. Chest CT presented pneumothorax and moderate left pleural effusion with bilateral severe para-septal emphysema in the upper lobes. Due to the persistence of fever and pleural effusion, a more detailed study of the medical history was conducted. The patient had a several months previous history of inflammatory and additive polyarthralgias with functional impotence associated with morning stiffness lasting more than one hour and improvement throughout the morning and sporadic episodes of Raynaud's phenomenon and intermittent diarrhea. Analytical evaluation showed normal alpha-1 antitrypsin, negative viral serology, positive ANA 1/1280, anti-SM negative and strongly positive RNP. Echocardiogram was normal and capillaroscopy suggested changes compatible with secondary Raynaud phenomenon. Diagnosis of Mixed Connective Tissue Disease was established.
Discussion: The relationship between pulmonary changes and connective tissue diseases is known. Given the severity of pulmonary changes in this young man we may be in the presence of a new entity with pulmonary and systemic involvement that can contribute to emphysema and pneumothorax.

Keywords: *Mixed connective tissue disease. Autoimune disease.*

PC 011. PARANEOPLASTIC EOSINOPHILIA, SUFFICIENT CAUSE OF PULMONARY DYSFUNCTION?

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Introduction: Eosinophilia can be associated with a wide variety of clinical conditions. Solid tumors are occasionally associated with peripheral eosinophilia and organ damage by tissue infiltration of eosinophils. This association usually reflects an aggressive course and poor prognosis.
Case report: We report a case of a 79-year-old non-smoker, Caucasian female. No known risk exposures or allergies. Retired accountant. The patient had hypertension under treatment with an angiotensin-converting-enzyme inhibitor and diuretic. Avaliated in medicine consultation after retinal vein thrombosis to study systemic causes. She had 6 month history of dry cough, dyspnea on moderate exertion and weight loss, 5 Kg. Physical examination revealed inspiratory crackles, diffuse wheezing and bilateral edema of lower limbs. Initial blood and cord tests showed eosinophilia (18.6%; 1.88 × 10^9/L) and elevated erythrocyte sedimentation rate (94 mm). Chest radiography showed diffuse interstitial densification and computed tomography (CT) showed fibrosis. Lung function tests revealed reduced diffusing capacity for carbon monoxide (DLCO). and moderate hypoxemia. No endobronchial lesions were detected by bronchoscopy. Bronchoalveolar lavage differential cell counts reveals eosinophilic alveolitis (16%). No microorganisms or malignant cells were detected. Autoimmunity and parasite research were negative. An abdominopelvic CT scan reveal a possible hydrometra with uterine enlargement. She underwent total hysterectomy and bilateral oophorectomy, with a pathologic diagnosis of endometrial adenocarcinoma, subtype endometrioid. At six month follow up with no evidence of eosinophilia. Large fibrose areas remitted to a long course disease. Could paraneoplastic eosinofilia alone cause this aggressive dysfunction? The patient continued to deteriorate, and died two years after the diagnosis.
Discussion: Peripheral eosinophilia in a malignant context is usually a sign of disseminated disease, and associated with a poor prognosis. Lung is one of the main target organs of eosinophilic disease. In all events, the presence of hypereosinophilia demands an extensive work-up, and paraneoplastic phenomena must be considered.

Keywords: *Eosinophilia. Paraneoplastic. Diffuse disease.*

PC 012. CHARACTERIZATION OF INTERSTITIAL LUNG DISEASE OUTPATIENT CLINIC OF VILA FRANCA DE XIRA HOSPITAL (HVFX)

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Introduction: HVFX interstitial lung disease outpatient clinic (ILDO) began in 2013. Appointments occur weekly and are conducted by two pulmonologists. On the day before cardiopulmonology technicians perform respiratory function tests. ILDO main goal is to provide differentiated and individualized care to each patient, with regular follow-up and systematic evaluation, optimizing their approach and treatment.
Objectives: Characterization of patients evaluated on ILDO.
Methods: a Retrospective cohort study of ILDO between 2012 and 2018. Data was collected using clinical files. Were considered for

analysis: age, gender, main diagnosis, origin of reference and death. Results are presented using descriptive statistics through SPSS® v 20.0.
Results: During this period were evaluated 117 patients (54.7% males), with a mean age of 69.1 ± 14.2 years. The majority were referred from general pulmonology and primary health care consultations (both 23.1%). The most frequent diagnosis was non-specific interstitial pneumonia (27.4%), followed by hypersensitivity pneumonitis (18.8%), sarcoidosis (16.2%) and idiopathic pulmonary fibrosis (12.8%). At the time of analysis, 67.5% of patients were still alive.
Conclusions: The multiplicity and specificity of interstitial lung disease reinforce the need for a differentiated approach of these patients, with regular and individualized follow-up, in a proper appointment consultation, and in a systematic way.

Keywords: *Interstitial lung disease.*

PC 013. MONOCLONAL ANTIBODY THERAPIES AS TARGETED TREATMENT FOR EOSINOPHILIC GRANULOMATOSIS WITH POLYANGIITIS

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Introduction: Eosinophilic granulomatosis with polyangiitis (EGPA) is a rare but potentially life-threatening systemic small-to-medium vessel vasculitis of unknown cause associated with prominent eosinophilia. Conventional treatment of EGPA consists of high doses of systemic steroids and immunosuppressive therapies in patients with severe or refractory diseases. Recent studies suggested treatment benefit with monoclonal antibodies (anti IgE and anti IL-5) however none of these drugs are formally indicated for EGPA.
Case report: A 52-year-old overweight (BMI 31 Kg/m^2) female patient with history of severe non allergic asthma, rhinosinusitis, bronchiectasis colonized by P. aeruginosa (under inhaled colistin) and breast cancer in 2014 (without relapse and under Letrozol) was diagnosed with Eosinophilic granulomatosis with polyangiitis (EGPA) in 2013. A pruritic macular erythematous rash in the tights associated with a marked elevation of eosinophil count (38.6%; 4,250/uL) and history of severe asthma/rhinosinusitis triggered the diagnostic hypothesis of EGPA, later confirmed by further laboratory tests and histology (skin and lung). The patient was treated with systemic corticosteroids (gradual tapering to 10 mg id), but still with frequent asthma exacerbations. In June 2017 she was started on omalizumab (Xolair® 375 mg every 2 weeks), with improvement of symptoms, decreased frequency of exacerbations and lower doses of systemic and inhaled corticosteroids. Due to ENT and respiratory symptoms, total withdrawal of systemic corticosteroids was not possible. In August 2018 the patient relapsed from EGPA (Five-Factor Score < 2; ground-glass opacities on chest CT), and was proposed to anti-IL5 treatment with mepolizumab (300 mg), with marked symptomatic and radiological improvement. Furthermore, it allowed total withdrawal of systemic corticosteroids after six months of treatment.
Discussion: This case shows evidence that monoclonal antibody therapies can improve asthma control in patients with EGPA with uncontrolled asthma by reducing asthma exacerbations and doses of oral steroids. Mepolizumab presented as the most efficacious therapy compared with omalizumab. In previous studies Mepolizumab has been shown as a steroid sparing agent in EGPA. Our case presents new data, since the patient not only spared the steroid treatment but also achieved its total withdrawal after only 6 months of mepolizumab.

Keywords: *Eosinophilic granulomatosis with polyangiitis. EGPA. Mepolizumab.*

PC 014. MICROBIOLOGICAL FINDINGS IN INTERSTITIAL LUNG DISEASE

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Objectives: To evaluate fiberoptic bronchoscopy microbiological results in patients with interstitial lung disease.
Methods: Retrospective analysis of patients with interstitial lung disease who underwent fiberoptic bronchoscopy at Pulmonology Department of Coimbra's University Hospital from January to December of 2014.
Results: 93 patients (44 male and 49 female), aged between 27 and 91 years old and mean age of 61 years old were identified. 32.3% (n = 30) of the procedures were performed during hospital admission and 67.7% (n = 63) in outpatient regimen. All the procedures were performed as part of a diagnostic workup: for sarcoidosis (35.5%; n = 33), usual interstitial pneumonia (16.1%; n = 15), hypersensitivity pneumonitis (14%; n = 13), non-specific interstitial pneumonia (9.7%; n = 9), ground glass opacities in thoracic ct scan (8.6%; n = 8), vasculitis (5.4%; n = 5), cryptogenic organizing pneumonia (4.3%; n = 4), pulmonary involvement in systemic lupus erythematosus (2.2%; n = 2) and pneumoconiosis (2.2%; n = 2). Finally, in one case (1.1%) it was used for respiratory bronchiolitis interstitial lung disease diagnosis and in another case in rheumatoid arthritis. Bronchial aspirate culture was carried out in all patients and Mycobacterium agents were screened in all but one. Bronchial washings cultures and Mycobacterium tests were carried out in 86 cases (92.5%). In 84 cases (90.3%), bronchial aspirate showed a polymicrobial or negative culture, in 4 patients (4.3%) a Staphylococcus aureus was identified (in 3 cases multidrug-resistant Staphylococcus aureus) and in 5 cases other agents were found: Enterobacter cloacae, Streptococcus pneumoniae, Klebsiella pneumoniae, Haemophilus influenzae and Pseudomonas aeruginosa. Bronchial lavage culture was positive in only 5 cases (5.8%), with two multidrug-resistant Staphylococcus aureus identifications, one Enterobacter cloacae, one Klebsiella pneumoniae, and one Pseudomonas aeruginosa. In all cases of positive bronchial lavage culture, the same agent identification was made on bronchial aspirate. In only one case a Mycobacterium avium was identified in bronchial aspirate of a patient with rheumatoid arthritis.
Conclusions: The studied population was heterogeneous but showed that interstitial lung disease microbiology is similar to general population (polymicrobial culture with commensal flora). Bronchial aspirate was superior to bronchial washings in microbiological identification of these patients. Staphylococcus aureus was the most frequent identified agent in this population.

Keywords: *Microbiology. Interstitial lung disease. Fiberoptic. Bronchoscopy.*

PC 015. DIAGNOSTIC CONTRIBUTION OF CONVENTIONAL TRANSBRONCHIAL LUNG BIOPSIES IN THE DIAGNOSIS OF A COHORT OF PATIENTS WITH HYPERSENSITIVITY PNEUMONITIS

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Introduction: Hypersensitivity Pneumonitis(HP) is a group of pulmonary granulomatous inflammatory diseases resulting from inhalation exposure and immune sensitization to antigens. Although more limited with chronic/fibrosing forms of HP, transbronchial lung biopsy (TBLB) has a recognized value in bronchiolocentric granulomatous diseases. Several factors may limit diagnostic acuity: sample size, artifacts, distribution/profusion of changes and difficulty in obtaining peripheral material.

Objectives: Retrospective study of the contribution of conventional TBLB in the diagnosis of HP cases followed at the Pulmonology/Interstitium consultation (June/2015-August/2019) of Centro Hospitalar Baixo Vouga and evaluated/discussed at Multidisciplinary Meeting.
Methods: Data collection of information from the clinical files of patients diagnosed with HP, with subsequent computer processing.
Results: It was identified 78 patients (mean age-66.6 years) with 59.0% women. About 61.5% had chronic/fibrotic HP, followed by subacute HP (25.6%). The most frequently identified antigens were: avian antigens (59.0%), fungi (20.5%) and other antigens (isocyanates, bacteria, antigen combination and cases without identifiable antigen). Of the 72 patients who underwent bronchofibroscopy, 36.1% (n = 26) underwent TBLB, most of them in the right lower lobe and an average of 3.9 biopsies/patient. Of these 26 patients, 26.9% of the samples were inadequate due to insufficient material or artefacts, 23.1% showed normal parenchyma, and the remaining 50.0% showed representative material with abnormally (and diagnostic input). The most frequent findings were: lymphoplasmacytic inflammatory infiltrate (58.3%); fibrotic changes (38.5%); presence of intralveolar macrophages (30.8%); alveolar septal thickening (30.8%), cellular bronchiolitis (15.4%) and with 7.7% each: poorly formed granulomas, foci of organizing pneumonia/Masson bodies, multinucleated giant cells, fibroblastic foci and hyperplasia of type-II pneumocytes. In 50.0% of the cases submitted to TBLB, a multidisciplinary diagnosis with a high level of confidence was reached, considering the histological contribution. For patients whose TBLB results were found to be devoid of contribution or cases where they were not performed: 73.1% had a diagnosis of (based on history, HRCT-pattern, bronchoalveolar lavage profile(BAL), specific IgG, visit/home sampling) without the need for surgical biopsy/cryobiopsy; 15.4% were diagnosed after surgical biopsy/cryobiopsy; in the remaining 11.5%, considered as unacceptable risk or didn't allow surgical biopsy/cryobiopsy, a multidisciplinary diagnosis was established with a satisfactory confidence level. As complications there were two cases of moderate bleeding and one pneumothorax.
Conclusions: TBLB were performed only in 36.1% of the cases, probably because they were dispensed: in cases of chronic/fibrotic HP due to the additional low value (if necessary, referred for surgical biopsy/cryobiopsy) and in cases with an initial clinical-radiological context of very high probability. It was concluded that half of the cases in which TBLB were performed they had a diagnostic contribution. In cases of interstitial disease where histological analysis is indispensable for diagnosis, surgical lung biopsy remains the "gold standard". Cryobiopsy, although an alternative to surgical biopsy, does not replace it, requires readjustment of resources, is associated with a relevant percentage of complications, and is not a technique available in most centers. This study supports that TBLB may still play a role in the diagnosis of HP, especially in acute/inflammatory forms, with the advantage of being a universally available, low-risk technique that can be obtained simultaneously with BAL.

Keywords: *Hypersensitivity pneumonitis. Transbronchial lung biopsy. Interstitial. Multidisciplinary.*

PC 016. CURRENT PRACTICES ON ANTIFIBROTIC APPROACH IN THE TREATMENT OF IDIOPATHIC PULMONARY FIBROSIS (IPF) AND NON-IPF INTERSTITIAL LUNG DISEASES: A SINGLE CENTER EXPERIENCE

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Introduction: Interstitial Lung Diseases (ILDs) represent a heterogeneous group of diseases. While IPF is a primarily fibrosing ILD, other ILDs, although primarily inflammatory in nature, often shift toward a fibrosing disease course, including entities as nonspecific interstitial pneumonia (NSIP), connective tissue disease (CTD)-associated ILDs such as rheumatoid arthritis (RA-ILD) and systemic sclerosis (SSc-ILD), chronic hypersensitivity pneumonitis (cHP) and pneumoconiosis. Anti-fibrotics have initiated a new era in the treatment of fibrosing ILD, with consistent benefits on IPF. The treatment of other fibrosing interstitial lung diseases (ILD) remains challenging with some recent and uncontrolled studies investigating anti- fibrotics in non-IPF ILDs, suggesting potential benefits.
Objectives: To characterize one center experience and describe the results on a group of patients under anti-fibrotic treatment due to IPF or non-IPF ILDs. To do a literature review on the most recent experience from observational studies, reported RCTs and other data on anti-fibrotics in non-IPF ILDs.
Methods: A retrospective study was performed on a group of 23 patients with pulmonary fibrosis secondary to IPF on non-IPF interstitial lung disease under anti-fibrotic therapies, followed on Outpatient Clinic of Pulmonology, Interstitial Lung Diseases. Clinical data were collected from baseline and during the follow-up. The assessment included age, gender, ILD, clinical behavior, lung function test parameters, exacerbations and adverse effects.
Results: 23 patients were enrolled on this study, mostly men (81.8%, n = 18) with a median age of 69 years old (min 48, max 86). With regards to the diagnosis, 73.9% (n = 17) had a definitive diagnosis of IPF, four patients had a CTD-associated lung fibrosis secondary to SSc (n = 1), Sjögren syndrome (n = 1), Overlap SSc/Sjögren syndrome (n = 1) and rheumatoid arthritis (n = 1). The others were cases of hypersensitivity pneumonitis with UIP-like pattern and combined pulmonary fibrosis and emphysema (CPFE). Pirfenidone was the anti-fibrotic chosen on 52% (n = 12) of patients (being 8 of these from IPF group) and the other 11 patients were under Nintedanib (9 of them from IPF group). The 2 patients with SSc and overlap SSc/Sjögren were under micophenolate mofetil and rituximab respectively, in addition to antifibrotics. The most common adverse reactions of nintedanib were diarrhea (n = 2) and nausea (n = 1) (with need to dose reduction to 100 mg in 1 patient); with pirfenidone, upper abdominal pain (n = 2), weight loss (n = 2) and nausea (n = 1). There was 1 case of angioedema with pirfenidone with permanent discontinuation of treatment. At the beginning of treatment, 14 patients had a restrictive pattern, in the most of the cases moderate (n = 8) to severe (n = 3). The lung function remained stable in 12 patients, 6 from the pirfenidone group and 6 in nintedanib group. There were 4 deaths on IPF group, 2 for disease progression, 1 for acute exacerbation and the other for unknown cause.
Conclusions: Recent studies showed consistent benefits on IPF patients under anti-fibrotics but on non-IPF ILDs the data is weak. A number of randomized controlled trials are currently enrolling or planned. The emergent findings could bring a new hope in the treatment, regarding the reported lack of efficacy of other treatments.

Keywords: *Interstitial lung diseases. Idiopathic. Connective tissue disease. Anti- fibrotics.*

PC 017. ILD-GAP INDEX PREDICTING MORTALITY IN CHRONIC HYPERSENSITIVITY PNEUMONITIS

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Introduction: The pathological mechanisms of chronic hypersensitivity pneumonitis (CHP) are currently not fully understood and its clinical evolution tends to be heterogenous and hard to predict. ILD-GAP index was validated as a score predictive of mortality in chronic interstitial lung disease.
Objectives: To characterise the clinical outcome of patients with CHP according to their corresponding ILD-GAP score at the time of diagnosis.
Methods: Retrospective analysis of clinical records of patients with CHP followed on interstitial lung disease outpatient clinic of ULS

Guarda. Demographic, clinic, imaging and functional data were retrieved and analysed. Follow-up time inferior than one year was an exclusion criterium. Statistical analysis was performed using IBM SPSS v23.
Results: Twenty-three patients were diagnosed with CHP. Four patients were excluded due to insufficient follow-up time. The nineteen patients included had a mean age of 66.5 ± 8.6 years old and were mostly female (57.9%). Inhaled antigen exposure was suspected in 89.5%, though serum precipitins were only identified in 57.9% (more commonly avian proteins). Radiologically, a typical UIP was found in 15.8% of patients. Additionally, 10.5% presented a probable UIP pattern. The mean follow-up time was 43.8 months. At diagnosis, 13 (68.4%) patients had an ILD-GAP index of 0-1, 5 (26.3%) scored 2-3 and one patient scored 4-5. No patient had a score higher than 5. When a UIP pattern was present, patients scored higher at ILD-GAP, 60% of these having an index equal or higher than 2, contrasting with 27.3% of those without this radiological finding. Overall mortality at 1-year was 5.3%, at 2-year 11.8% and 3-year 33.3%. At the group scoring 0-1 in ILD-GAP index, the 1, 2 and 3-year mortality was 7.7%, 7.7% e 18.2% respectively. Those with an ILD-GAP index equal or higher than 2 had 0%, 25.0% and 75.0% mortality respectively.
Conclusions: In our experience, despite a small sample size, a higher score at ILD-GAP was associated with higher mortality, in line with previously published data. There seems to exist a higher prevalence of high ILD-GAP in patients with UIP pattern, which is a known independent predictive factor for mortality in these patients.

Keywords: *Chronic hypersensitivity pneumonitis. ILD-GAP.*

PC 018. ORGANIZING PNEUMONIA AND CHRONIC EOSINOPHILIC PNEUMONIA. SIMILARITIES AND DIFFERENCES IN A CASE SERIES

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Introduction: Chronic Eoninophilic Pneumonia (CEP) and Organizing Pneumonia (OP) are types of rare diffuse parenquimatous diseases that present with respiratory and non-specific constitutional symptoms in the presence of de novo radiologic findings, with frequent diagnostic delay due to initial presumption of community-acquired Pneumonia (CAP). Both have a variable prognosis with some patients following a remission-relapse course.
Objectives: Characterization of a series of cases of OP and CEP regarding clinical presentation, demography, diagnostic delay, laboratorial findings, bronchoalveolar lavage (BAL) profile, treatment and longitudinal behavior of the disease.
Methods: Query of electronic clinical records of patients diagnosed with OP or CEP followed at the external consult of Pulmonology/Interstice at Baixo Vouga Hospital Centre from 01/2015 to 06/2019.
Results: A total of 10 patients with OP and 3 with CEP were identified. In the OP group, 60% were male with a mean age of 71 years; 40% of OP cases were cryptogenic and 60% were secondary: 3 to amiodarone, 1 to nitrofurantoin, 1 to dermatomyositis and 1 to antisinthetase syndrome. 3 cases were identified as AFOP (Acute Fibrinous OP). In CEP, 100% were female with mean age of 42 years. The most frequent presenting symptoms were cough and dyspnea followed by fever (on CEP) and asthenia (on OP). All cases of CEP had peripheral eosinophilia (mean 3.51×10^9/L) with a higher erythrocyte sedimentation rate (69 vs 52 mm). OP patients had lymphopenia (mean 1.37×10^9/L) with higher C-reactive protein (7.32 vs 3.03 mg/dL). 100% of patients with CEP and 70% with OP were initially treated with antibiotics based on the first hypotheses of CAP. Mean diagnostic delay was 5 months for both diseases. In High-resolution CT scan, the most frequent patter found in CEP was peripheral alveolar consolidation with upper predominance; in OP it was ground-glass hyperattenuation and alveolar consolidation with lower predominance, with 2 cases of a "peri-lobular" radiological variant. In CEP the BAL showed a mean total cell count of 290 cels/µL with 60% eosinophils; in OP it showed 355 cels/µL with 40% lymphocytes (CD4/CD8 ratio of 1.1), 10% neutrophils and 4% eosinophils. Transbronchial lung biopsies were done in 4 cases of OP, all contributing to the diagnosis. All patients with CEP were started on systemic corticosteroids vs 70% in patients with OP. In CEP, 2 cases showed relapse after prednisolone suspension or reduction. In OP, relapses occurred in 33% of cases, after which some were started on azathioprine (n = 1), mofetil mycophenolate (n = 2) or cyclophosphamide (n = 1). Mortality rate during follow-up was 0% in CEP and 20% in OP.
Conclusions: CEP and OP are rare diseases that require an elevated suspicion index for a correct and timely diagnosis. The OP group was the only one with associated mortality, probably due to more aggressive variants (AFOP) and fulminant clinical presentation. The BAL proved to be a differentiating tool between both entities.

Keywords: *Organizing pneumonia. Chronic eosinophilic pneumonia. Community-acquired pneumonia. Peripheral eosinophilia. Bronchoalvelolar lavage. AFOP. Acute fibrinous organizing pneumonia. Corticosteroids.*

PC 019. PLEUROPARENCHYMAL FIBROELASTOSIS AS ANOTHER LUNG TOXICITY INDUCED BY AMIODARONE

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Introduction: Pleuroparenchymal fibroelastosis (PPFE) is a rare condition showing typically pleural thickening and subpleural fibrosis in the upper lobes, with the involvement of lower lobes being less marked or absent. It is often associated with a multiplicity of clinical entities namely other interstitial lung diseases (ILD), bronchiectasis, connective tissue disorders, recurrent infections, bone marrow/organ transplant, or ambient exposure. PPFE can also be associated with toxicity induced by drugs, such as chemotherapy either associated or not with radiation and methotrexate. Here we present a case of PPFE diagnosed in a patient under amiodarone prescription, an association not previously described.
Case report: A 68-year-old Caucasian woman with recurrent episodes of a dry cough and consolidations in both upper lobes in thoracic HRCT scan. She had atrial fibrillation diagnosed five years before, under amiodarone and warfarin since that time. Chest radiograph shows subpleural thickening at upper lobes; these findings are more evident in the chest HRCT scan, associated with parenchymal reticulation and peripheral traction bronchiectasis at upper lobes, with no abnormalities at lower lobes. Chest radiographs performed previously and during the amiodarone prescription did not show any relevant features. The histology obtained by CT-transthoracic biopsy showed fibrosis, with dense collagen and elastic fibers, compatible with PPFE. After discussion in a multidisciplinary meeting, since clinical, imaging and histology all were compatible with PPFE, this diagnosis was established. After a careful evaluation did not found any of the potential causes previously described, amiodarone was than considered as a likely cause. After a cardiac revaluation and based on this hypothesis, amiodarone was suspended. After that, a significant decrease in the frequency and intensity of cough episodes was reported by the patient, and during 12 months of follow-up, a clinical, functional and imaging stability was noticed.
Discussion: Association of PPFE with amiodarone has not yet been described but given the amount of lung toxicity cases induced by amiodarone, the multiplicity of clinical presentations observed, added to the description of PPFE as a possible pattern associated

with lung toxicity induced by drugs, sustain the hypothesis that PPFE can be the expression of lung toxicity caused by amiodarone. Moreover, the symptom regression after the amiodarone suspension and the absence of radiologic alterations before the amiodarone prescription support the hypothesis of the association between PPFE and amiodarone intake in this clinical case.

Keywords: *Pleuroparenchymal fibroelastosis. Amiodarone. Lung toxicity.*

PC 020. EVALUATION OF PATIENTS WITH RADIOLOGICAL UIP (USUAL INTERSTITIAL PNEUMONIA) PATTERN - DIFFERENCES BETWEEN IPF (IDIOPATHIC PULMONARY FIBROSIS) AND OTHER INTERSTITIAL FIBROTIC LUNG DISEASES

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Introduction: UIP pattern on high-resolution chest CT may exist in different interstitial lung diseases (ILD) and is usually associated with a worse prognosis.
Objectives: To evaluate differences between UIP-IPF patients and UIP-non IPF patients concerning pulmonary function, exacerbations and mortality during a 2 year follow up.
Methods: Retrospective cohort study of patients with UIP pattern.
Results: A total of 33 patients were evaluated, 16 with a diagnosis of IPF (all treated with anti-fibrotic drugs). In the IPF group, 87.5% (n = 14) were men with a mean age of 72.88 ± 8.59 years. In the non-IPF group, 94.1% (n = 16) were men with a mean age of 67.76 ± 9.46 years.
Conclusions: Although functional deterioration was observed in both groups, it seems there was a greater decline in non-IPF patients. A higher percentage of hospitalizations were observed in non-IPF patients, which may be related to the use of immunosuppressive therapy. These results may also reflect the positive effect of anti-fibrotic therapy in IPF patients.

Keywords: *UIP. IPF.*

PC 021. ATYPICAL PRESENTATION OF A CHRONIC EOSINOPHILIC PNEUMONIA MIMICKING A PULMONARY NEOPLASM

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Introduction: Chronic eosinophilic pneumonia is a rare form of interstitial lung disease, characterized by eosinophilic accumulation in the lung. Despite being a clinical diagnosis, characteristic analytical and radiologic features are highly suggestive of this illness but are not always present, at times exhibiting mimicking illnesses of a different nature, such as neoplasms.
Case report: An 85-year-old female patient, non-smoker and with no relevant history, was referred to the pulmonology practice for the suspicion of a lung neoplasm identified in a chest CT ordered for protracted respiratory symptoms. On inquiry, a slowly resolving flu-like illness in the six months prior was emphasized, with residual symptoms of dyspnoea for mild efforts, productive cough with mucoid sputum, anorexia and involuntary weight loss of over 10% of her usual weight. No history of atopy, asthma, or environmental exposure to parasites was elicited. There was no prior administration of drugs typically associated to pulmonary or systemic eosinophilia. Arterial blood gas sampling showed mild hypoxaemia. A normochromic normocytic anaemia, peripheral eosinophilia (~400/mL) and thrombocytosis were found. Additionally, there was elevation of inflammatory markers. The chest radiograph showed a large right upper lobe opacity of ill-defined borders. By chest CT, a 7-cm mass surrounding the right upper lobar bronchus was apparent, absent of a plane of cleavage with the right branch of the pulmonary artery and extending towards the mediastinal pleura. The patient was admitted for investigation and an abdominal ultrasound and bone scintigraphy were attained, with no evidence of metastasis. No significant elevation of tumour markers was found. The comprehensive parasitology stool test was negative. Bronchoscopy showed an infiltrative lesion on the right upper lobe, with gross characteristics of a neoplasm, producing segmental stenosis. Microbiology of both bronchoalveolar lavage fluid and bronchial aspirate were negative, including for mycobacteria and fungi. No eosinophilia in the lavage fluid was observed. Multiple lesional biopsies were obtained, which showed non-specific bronchial inflammation. The bronchial aspirate cell-block cytology, however, was compatible with squamous cell carcinoma of the lung, thus prompting transthoracic CT-guided biopsy. Of three biopsies, only the third yielded a diagnosis, exhibiting inflammatory cell infiltration containing eosinophils on a collagenous matrix. The patient was put on systemic corticosteroids with near-immediate improvement. Complete remission of peripheral eosinophilia and radiologic infiltrates was observed. With time, the patient's anaemia became sideropaenic and the radiologic infiltrates bilateral and migratory. Despite an initial favourable response and prognosis, this patient's illness was punctuated by periods of exacerbations and corticodependence.
Discussion: The diagnosis of chronic eosinophilic pneumonia was confounded by an atypical age of presentation and absence of comorbidities associated with eosinophilic inflammation, which had little expression in the peripheral blood. Initial analytic and radiologic findings were uncharacteristic and suggested a neoplastic process, as did the aspirate cytology. Complete response to corticotherapy, compounded by arisal of typical findings during follow-up substantiated the diagnosis. We report a case of chronic eosinophilic pneumonia that mimicked, until the moment of histological diagnosis, a lung neoplasm, thereby emphasizing the necessity for a low threshold of suspicion to achieve a successful diagnosis.

Keywords: *Chronic eosinophilic pneumonia. Pulmonary neoplasm.*

PC 022. PLEUROPARENCHYMAL FIBROELASTOSIS ORIGINATING IN A SITE OF PULMONARY TUBERCULOSIS SEQUELAE

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Introduction: Owing to its inclusion in the most recent classification consensus of interstitial lung disease as a rare form of idiopathic interstitial pneumonia, pleuroparenchymal fibroelastosis stands as a controversial nosologic entity. Its aetiology and pathophysiology remain, to an appreciable extent, obscure. Recently, a relation between pleuroparenchymal fibroelastosis and recurrent infectious stimuli has been put forward.
Case report: A 62-year-old female patient with a known history of osteoarthritis and pulmonary tuberculosis with sequelae treated successfully 15 years prior was studied in outpatient setting for complaints of anorexia and involuntary weight loss of over 10% of her usual weight in a 2-month period. She further exhibited a history of asthenia, progressive exertional fatigue and sporadic nonproductive cough. Lung auscultation revealed inspiratory crackles in the right apex. The remainder physical examination was inconspicuous. The blood work-up showed no significant alterations and the arterial blood gas sampling in ambient air was normal. In the chest radiograph a juxtapleural heterogenous opacity could be observed in the apicoposterior segment of the right upper lobe, with roughly nodular and with spiculated contours. The chest CT, already obtained by the pa-

tient, corroborated the suspicion of neoplasm, describing in that location an irregular 36 mm mass. The patient was admitted for evaluation of these findings, based on the suspicion of primary lung neoplasm originating in cicatricial sequelae of tuberculosis. The study of the airway by bronchoscopy showed no endobronchial lesions. Bronchial aspirate and bronchoalveolar lavage fluid, the latter of RB1, was sent for bacteriology and mycobacteriology testing, both yielding negative results. No neoplastic cells were found in the cytologic examination of either sample. The diagnostic investigation was further complemented with obtainment of a 18F-FDG PET/CT, which pointed to the presence of two additional nodules in the left lung's lower lobe, uncharacterizable on account of their low dimensions, besides the mild uptake of isotope by the already known mass suspected of being the primary. Lastly, a CT-guided core biopsy of the mass was attained. The biopsy's histology surprisingly was deemed compatible with pleuroparenchymal fibroelastosis, consisting of a lung fragment 9 mm in diameter characterized by a fibroelastic matrix with anthracosis, surrounding macrophage-containing airspaces, also discolored by anthracosis.
Discussion: We report a case of pleuroparenchymal fibroelastosis with a clinical and radiological presentation suggestive of a lung neoplasm or reactivation of pulmonary tuberculosis. In this case, the prior infection by Mycobacterium tuberculosis consists of a widely accepted risk factor for malignization but a less commonly equated factor favorable to the diagnosis of pleuroparenchymal fibroelastosis. It is expected that, with the increasing recognition of pleuroparenchymal fibroelastosis as a distinct pathologic entity in its own merit, prospective studies will arise in the tuberculosis-ridden population, thus providing a more accurate understanding of this infection's role as a risk factor for this pleuroparenchymal fibroelastosis. This case emphasizes the need for a long term follow-up of the patients successfully treated for lung tuberculosis in virtue of their accrued lifelong risk for respiratory illness of various nature, namely neoplastic or interstitial.

Keywords: *Pleuroparenchymal fibroelastosis. Pulmonary tuberculosis.*

PC 023. HYPERSENSITIVITY PNEUMONITIS. CASE SERIES

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Introduction: Hypersensitivity Pneumonitis (HP) is a heterogeneous interstitial lung disease (ILD) both in its clinical and radiological presentation and also in its geographical distribution, since it depends on weather conditions, socio-cultural habits, work activity and others. For this reason, its prevalence is thought to be underestimated as well as its real clinical impact, which underlines the relevance of case series such as the one we present.
Objectives: To characterize the population of patients with HP from ILD consultation in the Local Health Unit of Guarda.
Methods: Retrospective analysis of patients' clinical records followed at the ILD consultation between January 2015 and July 2019, being included patients with the diagnosis of HP. Data of demographics, environmental and smoking exposures, laboratory results, histology, functional respiratory tests, therapy and follow-up were collected.
Results: From a total of 255 patients followed during the study period, HP was the second most prevalent diagnosis in this consultation with 26 patients (10.2%), mostly presenting the chronic form of the disease (84.6%). Patients were predominantly female (57.7%), mean age of 67.7 ± 8.1 years and non-smokers (61.5%). Suspected exposure to environmental agents was identified in 88.5%, most often to avian proteins (73.1%), and was documented with serum specific IgGs in 50.0% of patients. Of the respiratory functional study, 57.7% had a restrictive pattern. Imagologically, 19.2% had a typical usual interstitial pneumonia (UIP) or probable UIP pattern; histology was obtained in 46.2%. Half of the patients were discussed in multidisciplinary meeting and diagnosis of HP was definite in 30.8%, 3.8% confident clinical diagnosis of HP, 38.5% probable and 26.9% possible. Systemic corticotherapy was undertaken in 76.9%, with an association of another immunosuppressant in 23.1%. Currently 65.4% of the patients are still being followed, with a mean time of 36.1 months, and there were 6 deaths (23.1%).
Conclusions: From our experience, HP is a more frequent diagnosis than published in international series, although in line with data presented by other national centers. It is a heterogeneous disease in its presentation and evolution, and the prevalence of progressive disease culminating in death is not negligible.

Keywords: *Hypersensitivity pneumonitis. Interstitial lung disease.*

PC 024. CHRONIC HYPERSENSITIVITY PNEUMONITIS: ASSESSMENT OF THE CORRELATION BETWEEN BRONCHOALVEOLAR LAVAGE FINDINGS AND RADIOLOGICAL PATTERN

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Introduction: Chronic Hypersensitivity Pneumonitis (HP) is one of the main challenges in the context of the diagnosis of interstitial lung diseases, particularly given the overlap of imaging changes with fibrosing chronic pneumonia. The presence of lymphocytosis above 30% in the bronchoalveolar lavage (BAL) a hallmark of cHP, above 30%, is a good marker of differentiation. However, there is a significant number of cases, never properly quantified, in which BAL has the same characteristics as chronic fibrosing pneumonia, with no lymphocytosis or mild lymphocytosis.
Objectives: To evaluate the presence and degree of lymphocytosis in chronic HP and evaluate its correlation with the usual imaging patterns.
Methods: Retrospective analysis of a group of patients diagnosed with chronic HP followed by consultation of pulmonary interstitial diseases.
Results: From the 69 patients included, 43 (62.3%) were female, with a mean age of 60.8 ± 11.2 years. The most frequently implicated environmental exposure was avian antigens (63.8%, n = 44) and fungi (11.6%, n = 8). Only 51% (n = 35) of the cases presented BAL lymphocytosis, being mild/moderate in 7.2% and intense in 42%. Regarding the imaging pattern, 33% (n = 23) had features suggestive of chronic PH, namely the combination of ground glass opacities, mosaic attenuation pattern and peripheral cross-linking; In 38% (n = 26), the imaging alterations showed a greater overlap with the fibrosing chronic pneumonia, namely by the presence of cross-linking and honeycomb, forming a pattern commonly called UIP-like. Of the 26 patients with UIP-like imaging, only 9 (34.6%) had lymphocytosis, 6 (23%) severe, and 3 (11.5%) mild/moderate. In the group of 23 patients with predominantly ground-glass alternating mosaic and crosslinking pattern, all had lymphocytosis, being severe in 21 (91.3%) and mild in 2 (8.69%). The existence of a UIP-like imaging pattern was significantly associated with the absence of BAL lymphocytosis (p = 0.011).
Conclusions: BAL lymphocytosis is globally a relevant component in the differential diagnosis of HP, even in chronic forms, according to the analysis of this cohort of patients. However, in those with greater imaging overlap with fibrosing chronic pneumonia, intense lymphocytosis was present in only about ¼ of the patients, thus proving its scant influence on the differential diagnosis of this subgroup of patients with chronic HP.

Keywords: *Hypersensitivity pneumonitis. Lymphocytosis. UIP-like.*

PC 025. CHRONIC THROMBOEMBOLIC DISEASE, AN ENTITY TO KNOW

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Introduction: Chronic Thromboembolic Disease (CTED) results from incomplete resolution of pulmonary thromboemboli. The thromboembolic material undergoes organization into fibrous tissue resulting in similar symptoms and perfusion defects of Chronic Thromboembolic Pulmonary Hypertension, but without pulmonary hypertension (PH) at rest. Selected patients with CTED benefit from pulmonary endarterectomy (PEA). Balloon pulmonary angioplasty (BPA) may also be considered a treatment option for patients with inoperable CTED.
Case report: The current case discusses a 68-year-old man, referred to our pulmonary hypertension unit in October 2016 for investigation of fadiga and exercise dyspnea (functional class WHO – II). He was clinically stable until 2013, when he was diagnosed with an unprovoked pulmonary embolism, he was submitted to fibrinolysis at the time, being discharged with anticoagulation therapy. In 2015 warfarin was stopped. The NT-ProBNP was 113 pg/mL, paO2 (FiO2 21%) was 82.7 mmHg and the ECG showed sinus rhythm, without right axis deviation. The transthoracic echocardiogram showed very mild tricuspid regurgitation (RV/RA gradient 9 mmHg, TAPSE: 19 mm). The stress echocardiogram revealed mild tricuspid regurgitation (RA/RA gradient 66 mmHg, TAPSE 26 mm, estimated PASP 70 mmHg). V/Q scan showed multiple and bilateral segmentar and subsegmentar perfusion defects, even after 3 months of anticoagulation. Pulmonary angiography CT presented minimal caliber irregularities of lobar and segmental branches, membrane like images involving apical segmental branch of right upper lobe, right inferior lobar artery and posterior basal segmental branch of left inferior lobe, and periphery oligaemia of all lung lobes. Coronary angiogram didn't show coronary lesions. Cardiopulmonary exercise test (CPET) revealed VO2max 29.9 mL/min/kg (99%), PETCO2: 30 mmHg at rest and 37 mmHg at peak exercise. Ventilatory class II, VE/VCO2 slope 35, no desaturation during exercise. Right heart catheterization at rest revealed mean PAP 17 mmHg, mean PAWP: 10 mmHg, cardiac index of 2.13 L/min/m^2 and pulmonary vascular resistance of 4.1 UWood. We assumed the diagnosis of CTED. The patient was accepted for PEA, but he refused. He was included in a BPA program and submitted to a total of 5 sessions, technically complicated for the existence of proximal disease. In functional revaluation, the patient was in functional class I, with good criteria to exercise in CPET. The echocardiogram kept signs of PH at exercise (estimated PASP 61 mmHg), without improvement of global systolic function of right ventricle.
Discussion: This case highlights CTED as a recently described entity, with a challenging recognition, whose natural history and treatment approach aren't known yet. BPA may emerge as a treatment option, however in patients without indication for PEA and with distal disease.

***Keywords**: Chronic thromboembolic disease. Ballon pulmonary angioplasty.*

PC 026. CHRONICLE OF AN ANNOUNCED DIAGNOSIS

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Case report: 69-year-old man, ex-smoker (80 pack-year-unit) with COPD GOLD 2, group B (FEV1 post-bronchodilaton-65.3%, DLCO/VA60.2%) and Obstructive Sleep Apnea under ventilatotherapy with automatic positive airway pressure (APAP). He had partial chronic respiratory failure under long-term oxygen therapy (at rest and nocturnal - 4 L/min). On exertion he showed a significantly deterioration with peripheral dessaturation of 80% in 6-minute walk test with supplemental oxygen at 8 L/min. Transthoracic echocardiography showed low probability of pulmonary hypertension and a normal left ventricle function. He was referred to our Pulmonary Hypertension Reference Center for evaluation. The Ventilation/Perfusion Scintigraphy showed low probability of pulmonary embolism, angioCT scan revealed an enlarged pulmonary artery trunk (transverse diameter 41 mm), repeated transthoracic echocardiography confirmed previous results. Due to the unjustified severe respiratory failure, the patient underwent Right Heart Catheterization that revealed a mean pulmonary arterial pressure (mPAP) of 49 mmHg, pulmonary artery wedge pressure (PAWP) 19 mmHg, pulmonary vascular resistance (PVR) 6.27 Wood Units, transpulmonary pressure gradient (TPG) 30 mmHg, Cardiac Index (CI) 2.26 L/min/m^2 and a right atrium pressure (RAP) of 12 mmHg. Despite the PAWP > 15 mmHg, TPG was elevated and the patient's congestive status justified this value. He was treated with sildenafil and bosentan assuming precapillary PH was predominant, with clinical improvement of exertional dyspnoea. Currently, he is awaiting reevaluation catheterization at 3 months of dual therapy.
Discussion: The authors report this case to highlight the importance of a high level of suspicion of pulmonary hypertension in patients with other pathologies. Delay in diagnosis worsens prognosis.

***Keywords**: Pulmonary hypertension. Chronic lung disease.*

PC 027. OMALIZUMAB AND RESPIRATORY FUNCTION STUDY IN SEVERE ASTHMA PATIENTS

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Introduction: Few studies had evaluated Omalizumab efficacy on respiratory function for a long follow-up period.
Objectives: Evaluate respiratory function evolution in patients medicated with Omalizumab, at baseline and after 1 and 4 years of therapy.
Methods: Retrospective analysis of clinical data from 10 adult patients, medicated with Omalizumab, followed in a severe asthma clinic, in relation to forced expiratory volume on the first second (FEV1), forced vital capacity (FVC), residual volume (RV), total lung capacity (TLC) and resistance (Raw), statistically comparing baseline with results after 1 and 4 years of Omalizumab therapy. We performed a correlation between spirometry and plethysmography data and oscillometry at 4 years of treatment, evaluating total resistance (R5) and peripheral capacitance (X5).
Results: In 10 patients, 80% were female, mean age 48 years old (minimal 31, maximal 78). All had initially an obstructive respiratory syndrome. Between baseline and 1 year of treatment, there was a significant improvement (p 0.007) on mean FEV1 (56% to 77%). At 4 years of treatment, there was also a significant improvement (p 0.036) comparing to baseline (56% to 66%) and a non significant decrease (p 0.6) in relation to 1 year of treatment (77% to 66%). Mean FVC had a significant improvement between baseline and 1 year (86% to 112%, p 0.018) and 4 years of therapy (86% to 108%, p 0.018). The decrease on FVC at 4 years of treatment in relation to 1 year was not significant (p 0.394). Mean RV had a significant reduction between baseline and 4 years (p 0.034) and a non significant decrease between baseline and 1 year (p 0.063) and between 1 year and 4 years (p 0.867). Mean TLC had a non significant decrease between baseline and 1 year (p 0.446), baseline and 4 years (p 0.176) and between 1 year and 4 years (p 0.553). Mean Raw variation was not significant, decreasing between baseline and 1 year (p 0.063) and between baseline and 4 years (p 0.091), with an improvement between 1 year and 4 years (p 0.866). Oscillometry at 4 years showed a strong positive correlation between FEV1 and X5 (Co 0.745, p 0.010), strong negative correlation between FEV1 and R5 (Co -0.613, p 0.03), moderate positive correlation between Raw and R5 (Co 0.547, p 0.04), moderate negative correlation between Raw and X5 (Co -0.514, p 0.04) and strong negative correlation between RV and X5 (Co -0.674, p 0.01).

Conclusions: The results show a significant improvement in mean FEV1 and FVC in relation to baseline. This improvement holds up at 4 years (although there is a non significant decrease) on Omalizumab therapy. Data from comparison between oscillometry and spirometry/plethysmography at 4 years need more validation.

Keywords: *Asthma. Respiratory function. Omalizumab.*

PC 028. EXPLORING THE POTENTIAL OF A MEPS/ UHPLC-BASED METHODOLOGY ON THE ANALYSIS OF LIPID PEROXIDATION BIOMARKERS RELATED TO ASTHMA

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Asthma is a heterogeneous disease characterized by chronic inflammation and long term irreversible remodeling of the airways. The enzymatic peroxidation of the arachidonic acid is part of the pathophysiology of this disease and leads to the formation of powerful inflammatory mediators, characteristic of asthma. The present work aimed to develop an easy-to-use ultra-high pressure liquid chromatography (UHPLC)-based strategy in order to characterize lipid peroxidation biomarkers: leukotrienes E4 (LTE4) and B4 (LTB4) and 11β-prostaglandin F2α (11βPGF2α), eicosanoids present in the urine of asthmatic patients and healthy individuals (control group). A semi-automatic eVol®-microextraction by packed sorbent (MEPS) format was developed in order to isolate the target analytes. The method was fully validated under optimal extraction (R-AX sorbent, 3 conditioning-equilibration cycles with 250 µL of ACN-H2O at 0.1% FA, 10 extract-discard cycles of 250 µL of sample at a pH of 5.1, elution with 2 times 50 µL of MeOH and concentration of the eluate until half of its volume) and chromatographic conditions (14-min analysis at a flow rate of 300 µL min-1 in an UHPLC-PDA equipped with a BEH C18 column). Our results indicated good recoveries (> 95%) in addition to excellent extraction efficiency (> 95%) at three concentration levels (low, mid and high) with precision (RSDs) less than 11%. The lack-of-fit, goodness-of-fit and Mandel's fitting tests, revealed good linearity within the concentration range. Good selectivity and sensitivity were achieved with limits of detection ranging from 0.04 ng mL-1 for LTB4 to 1.12 ng mL-1 for 11βPGF2α, and limits of quantification from 0.10 ng mL-1 for the LTB4 to 2.11 ng mL-1 for 11βPGF2α. The developed method was successfully applied to the urine of asthmatic patients and healthy individuals. On average, the urine of asthmatic patients present significantly higher concentrations of 11βPGF2α (112.96 ng mL-1 vs 62.56 ng mL-1 in control group), LTE4 (1.27 ng mL-1 vs 0.89 ng mL-1 in control group) and LTB4 (1.39 ng mL-1 vs 0.76 ng mL-1 in control group). These results suggest the potential of the target eicosanoids and the developed method on asthma diagnosis and on the follow-up of the therapeutic response.

Keywords: *Asthma. Biomarkers. Eicosanoids. MEPS. UHPLC.*

PC 029. CLINICAL FEATURES OF ASTHMA IN ANGOLANS ADULTS

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Introduction: Asthma is one of the most common chronic diseases and affects all ages. It is also one of the most frequent causes of visits to emergency services. Epidemiological studies on asthma in adults in Africa are scarce and, in Angola, there is none. Thus, the objective of this study was to evaluate the clinical features of asthma in adults followed up at pulmonology outpatient clinics in Luanda.
Methods: Cross-sectional study, performed at Military Hospital, from April 2018 to March 2019, with ≥ 18 year-old patients, followed up at pulmonology outpatient clinics for asthma. Asthma was assessed in accordance with GINA (Global Initiative for Asthma) criteria, lung function (spirometry) was performed and analysed in accordance with ATS/ERS criteria, and sensitisation to aeroallergens was determined by skin prick test (SPT) positivity. Asthmatic patients with previous pulmonary tuberculosis or Chronic Obstructive Pulmonary Disease (COPD) were excluded. Data were analysed using SPSS Statistics v25.0. Descriptive analysis was used for sample characterization and univariate and multivariate analysis were made. A p-value < 0.05 was used to characterise statistically significant results.
Results: The sample consisted of 305 asthmatic patients [mean age 41.3, median 41.0 (18 to 86) years], 56.1% female. Of these 6.9% had intermittent asthma, 62.0% mild persistent, 26.9% moderate and 4.3% severe asthma, without significant differences between sexes and Body Mass Index (BMI); However, the moderate and severe asthma was significantly more frequent in patients older than 50 years old. In 56.1% of patients asthma was associated with allergic rhinitis. Regarding asthma control, 28.2% had controlled asthma, 36.4% partially controlled and 35.4% uncontrolled, without significant differences between sexes, age and BMI. Only 39.0% of patients used controller medication but irregularly and 53.1% only used rescue medication. The inhaler technique showed major errors in pressurized inhalers (65.7% of cases) and in dry powder inhalers (54.4% of cases). About 30% of patients had more than five exacerbations in the previous year and 44.6% had taken oral corticosteroids. Spirometry was normal in 21.6% of patients, showed mild obstruction in 47.9% and moderate to very severe obstruction in 30.5% of patients. About 67% were sensitised to aeroallergens, most frequently dust mites (D. pteronyssinus, D. farinae, B. tropicalis), cat and dog epithelia and fungi (C. herbarum, M. mucedo, A. alternata, A. fumigatus), without significant differences between sexes, age and BMI. Either gravity or the poor asthma control, were related to the irregular use of inhaled controller medication, frequent use of short action beta 2 agonist (SABA), oral corticosteroids and incorrect inhaler technique.
Conclusions: Most asthmatics Angolans living in Luanda have your asthma partially controlled or uncontrolled, and are not on or irregularly use inhaler controller medication. Monitoring measures of these patients will be needed.

Keywords: *Clinical features. Asthma. Angola.*

PC 030. OMALIZUMAB IN PREGNANCY

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Introduction: Asthma is one of the most common chronic conditions that occur during pregnancy. Poor asthma control has adverse effects upon maternal and fetal outcomes. In severe illness, there is a greater likelihood of exacerbations. Generally, treatment is similar in pregnant and non-pregnant women.
Case report: Woman, 40-years-old, non-smoking with asthma symptoms since the age of 5 and crises that motivated going to the emergency department (ED). In addition to pharmacological therapy, she was given mite-specific immunotherapy for 4 years with disappearance of symptoms. At the age of 14, at the time of menarche, there was a worsening of the symptoms, when she

started being followed in Pulmonology consultation. Skin sensitivity tests were positive for mites, respiratory function tests showed moderate obstruction and she was considered to have moderate persistent allergic asthma. She was treated with inhaled corticosteroids and bronchodilators. Despite therapy, she maintained a difficult-to-treat asthma. From 14 to 24 years old, she had an irregular medical follow-up, therapeutic non-compliance and exacerbations of the disease, with several visits to the ED. She had two pregnancies, at 24 and 26 years. After the first pregnancy, at 25, she started oral corticosteroid therapy with variable doses for uncontrolled asthma. During the first pregnancy there was a need to increase bronchodilator therapy and during the second to increment the oral corticosteroid dose. The deliveries were eutocic and full term and were uneventful from the respiratory point of view. Up to 31 years of age, she had grade 5 poorly controlled asthma with frequent exacerbations and several visits to the ED. Tests of respiratory function revealed progressive worsening of pulmonary function with severe obstruction and pulmonary insufflation, and IgE of 1778 IU/mL. Therapy with anti-IgE monoclonal antibody was then initiated with clinical improvement and decreased severity of exacerbations but no prednisolone dose decrease. At the age of 36, she became pregnant for the third time, five years after starting omalizumab. She was also taking prednisolone, salmeterol/fluticasone propionate, ipatropium bromide, montelukast and aminophylline and decided to keep anti IgE given the severity of the clinical condition. Noting that there was a diagnosis of gestational diabetes, and a respiratory infection during pregnancy treated with antibiotics and increased oral corticosteroid therapy. She had an uneventful eutocic delivery at 38 weeks of a healthy newborn (weight 3.1 kg). The three children were breastfed during the first year of life. The two oldest, currently 14 and 16, have been diagnosed with asthma. The youngest, 4 years old, has no symptoms of allergic pathology to date.

Discussion: The decision to continue or discontinue anti-IgE treatment should be made on a case-by-case basis, taking into account the balance between benefits and potential risks. To date, reported cases of pregnant asthmatics receiving omalizumab have shown favourable results.

Keywords: *Asthma. Pregnancy. Omalizumab.*

PC 031. THE POWER OF IMAGING IN THE ASSESSMENT OF INFLAMMATION IN ASTHMA. FIRST STEPS

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Introduction: Air trapping is common in obstructive pulmonary diseases with small airway involvement, such as in asthma. High resolution computed tomography (HRCT) is important for identification and characterization of these alterations. However, being known the dynamic effects of obesity on respiratory function, namely the reduction of lung compliance, with consequent reduction of airway caliber, predisposing to air trapping and dynamic hyperinflation, obesity may be a confounding factor.

Objectives: To evaluate the relevance of airway trapping identified by HRCT as a biomarker of disease in asthmatic individuals.

Methods: Retrospective study, which included patients with body mass index (BMI) ≥ 25 Kg/m^2 followed at the Severe Asthma/Difficult Control consultation (2014-2019), with available chest HRCT. These were grouped in two radiological patterns: with and without air trapping. Results from pulmonary function tests (PFT), radiological findings, peripheral eosinophilia, symptom questionnaire, comorbidities and therapy were collected. COPD patients were excluded. Statistical analysis was performed through IBM-SPSS (significance level 0.05).

Results: Thirty-seven patients were included, with a mean age of 57.8 ± 14.3 years and female predominance (n = 26, 70.3%). Air trapping was found in 17 (45.9%) patients, with no statistically significant difference in BMI when compared to patients without air trapping (p = 0.117). Patients without air trapping had a higher peripheral eosinophilia value (p = 0.009) when compared to patients with air trapping. This finding was maintained when peripheral eosinophilia cut-offs were established: ≥ 150 and ≥ 300 cells/µL, p = 0.022 and p = 0.020, respectively. Regarding to PFT, patients with air trapping had greater small airway obstruction (MMEF75/25, %), p = 0.05. No statistically significant differences were observed on comorbidities (rhinosinusitis and nasal polyps), radiological changes (bronchiectasis and bronchial thickening), atopy, FeNO, symptoms questionnaire (CARAT and ACT), inhaled corticosteroid dose or biological therapy.

Conclusions: In this study, we found that air trapping is common in obese and overweight asthmatic patients. Patients with air trapping on HRCT showed lower peripheral eosinophil values. Knowing that different types of airway inflammation may be related to different patterns of response to therapy, that the eosinophilic pattern is associated with better response to inhaled corticosteroids and that neutrophilic airway inflammation is related to higher corticorresistence, there may be a neutrophilic predominance in asthmatics with air trapping. As noted by Busacker et al. this factor, being associated to a reduced therapeutic response, may lead to a lower reversibility of small airway obstruction. Thus, additional studies will be needed, designed to evaluate the relationship between air trapping and inflammatory profiles, which may be a new disease biomarker.

Keywords: *Asthma. Air trapping. HRCT.*

PC 032. CLINICAL PROFILE OF LATE ONSET ASTHMA PATIENTS

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Introduction: Adult-onset or Late-onset asthma (LOA) is a specific asthma phenotype that requires particular attention - its prevalence is increasing as the population ages and it shows more adverse outcomes, comparatively to early-onset asthma. Particularly, individuals with onset of asthma symptoms at or after the 60 years-old frequently show delayed diagnosis and remain a clinical challenge.

Objectives: To describe the clinical profile of patients with LOA, followed at a tertiary hospital asthma clinics.

Methods: We retrospectively collected clinical, functional and laboratorial data from clinical files of adult asthmatic patients under follow-up at a specialized asthma clinics between June and September 2016. As we were interested in LOA, we excluded from our analysis patients with onset of asthma symptoms prior to 18 years old. Pregnant women, as well as patients diagnosed with asthma/COPD overlap, granulomatosis with poliangeiitis, ABPA and those under diagnostic work-up were also excluded. We finally obtained a sample of 122 patients. The precise age of symptoms onset was not recorded for 35 patients (28.7%). IBM SPSS v.25 software was used to analyse the data and to perform the adequate statistical tests.

Results: Our sample showed a mean age of symptoms onset of 38.63 ± 13.25 years, with a female predominance (n = 108 (88.5%)). Confirmed atopy was present in half of patients. The most common co-morbidity was rhinosinusitis (30.3%), followed by obesity (22.1%). Smoking history was common (22.1%). Airtrapping was observed in 24.6% of patients, while mean FEV1, FVC and TLC were relatively preserved. A positive bronchodilator response was observed in 37.7% of patients and 43.8% showed FeNO > 25 ppb. Elevated eosinophil count in peripheral blood was common (69.7%). More than half of

patients were classified as suffering from severe asthma (60.7%). We further analysed our LOA patients in two subsets: the subset with early-adult onset of asthma symptoms (≤ 59 years) and elderly onset (> 59 years). We observed elderly onset asthma (> 59y) had a significantly lower predominance of female gender (p < 0.001). We also show a trend towards a lower FEV1 for elderly onset (MD FEV1 1.44 L (0.91-2.1) vs 2.11 (1.64-2.52)), a higher residual volume (MD RV 2.61L (2.28-2.96) vs 2.05 (1.77-2.51)) and fewer patients with blood eosinophilia (n Eo > 150 = 3 (42.9%) vs 59 (73.8%)).
Conclusions: For our sample, the predominance of female gender for LOA fades when we consider only patients with symptoms onset after 59y. The remaining of our results are aligned with previous literature. Although we show a relatively preserved lung function in both subsets of LOA, there is a trend towards poorer function and less eosinophilic inflammation for patients with elderly onset of asthma.

Keywords: *Late onset asthma. Asthma phenotypes. Clinical features.*

PC 033. A RARE CASE OF EOSINOPHILIC GRANULOMATOSIS WITH POLYANGEITIS ASSOCIATED WITH INVASIVE PULMONARY ASPERGILLOSIS AND ALLERGIC BRONCHOPULMONARY ASPERGILLOSIS

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Introduction: Eosinophilic granulomatosis with polyangiitis (EGPA) is a necrotizing systemic vasculitis that affects small and medium vessels and is associated with extravascular eosinophilic granulomas, peripheral eosinophilia, rhinosinusitis, and asthma.
Case report: Male patient, 27 years old, Indian, resident in Portugal since 2017, with history of chronic rhinosinusitis and asthma since childhood. In April 2019, the patient developed dyspnea, nonproductive cough, and sudden progressively worsening right sternal chest pain. During the initial evaluation, cardiovascular pathology was excluded and the simple chest X-ray revealed the presence of right parahilar condensation area. Analytically, he had leucocytosis 13.1G/L and CRP 9.4 mg/dL. During hospitalization, the patient developed fever and progressive worsening of the general condition, so started empirical antibiotic therapy with Piperacillin-Tazobactan. Aspergillus niger was isolate in the expecotration culture. Considering his poor clinical and analytical response to antibiotic therapy and the suspicion of invasive pulmonary aspergillosis, antifungal therapy with Voriconazole 300 mg 2id was started and, due to hepatotoxicity, was later changed to Itraconozaol 200 mg 2id. In D7 of hospitalization, bronchial fibroscopy was performed, which revealed the presence of Charcot-Leyden crystals in the bronchial aspirate. The culture of tracheobronchial aspirate, bronchoalveolar lavage and bronchial biopsy were positive for Aspergillus niger. Considering the complementary study, we highlight positive skin prick test for Aspergillus fumigatus, total IgE = 7,252 g/L, specific Aspergillus fumigatus IgE = 9.16 KU/L, peripheral eosinophilia = 1,570 cells/µl, anti-Myeloperoxidase and anti P-ANCA antibodies positives, pulmonary HRCT with diffuse lobar and hilar opacities, cavities with multiple hypodense loci, and cylindrical bronchiectasis with mucoid impaction of the airways. The hypothesis of EGPA and allergic bronchopulmonary aspergillosis was hypothesized, so it was decided to initiate corticosteroid therapy with prednisolone 1 mg/kg/day on D30. Progressive improvement was observed with sustained apyrexia and resolution of respiratory symptoms associated with improvement of inflammatory parameters. Patient discharge on D51 under itraconazole 200 mg 2id and corticosteroid therapy 1 mg/Lg/day which has been maintained for 6 weeks until the date, with progressive reduction and no relapse. Subsequent study in consultation showed imaging confirmed rhinosinusitis and spirometry with obstructive pattern.
Discussion: The relationship between EGPA and invasive pulmonary aspergillosis and allergic bronchopulmonary aspergillosis is still controversial, however some rare reports describe its temporal association, although without causal clarification.

Keywords: *Eosinophilic granulomatosis with polyangiitis. Asthma. Rhinosinusitis. Invasive pulmonary aspergillosis. Allergic bronchopulmonary aspergillosis.*

PC 034. OSAS AND SEVERE ASTHMA: CASUALITY OR COMORBIDITY?

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Introduction: It has been observed that symptoms of sleep-disordered breathing, especially obstructive sleep apnea syndrome (OSAS), are common in asthmatics. In addition, they are associated with the severity of asthma. Investigation of OSAS in patients with asthma should be performed whenever there is no adequate control of nocturnal asthma symptoms with the recommended treatment.
Methods: Prospective study based on a convenience sample containing patients diagnosed with severe asthma (according to GINA guidelines), followed at the Pulmonology Department of the Centro Hospitalar e Universitário de Coimbra – Hospital Geral. Collected socio-demographic and clinical data, completed questionnaires (Pittsburgh, EQ-5D, Epworth, STOP-BANG, ACT and CARAT) and performed level 3 polysomnography.
Results: A sample of 30 individuals, 36.7% male, mean age 53.2 (± 14.5) years, with an average FEV1 of 66.2% (± 16.7). Of the total, 43.3% with rhino-sinusitis, 13.3% with nasal polyposis, 23.3% with diabetes, 16.7% with cardiovascular disease, 10.0% with thyroid disease and 3.3% with obesity. 70.0% were or had been on biological therapy. OSAS was identified in 30.0% of patients (3 severe) with a mean AHI of 9.5 events/h (± 11.9) and in supine position of 26.7 events/h (± 26.9), mean SpO2 values of 93.2% and minimum SpO2 82.6%. A total questionnaire completion rate of 40% was obtained (at the time of submission, the remaining patients in consultation still need to be evaluated, which justifies the response rate to the questionnaires. Final data will be available at the congress). From the available data, the average Epworth questionnaire score was 8.4 (± 6.1), with 50.0% of patients with excessive daytime sleepiness. With regard to STOP-Bang, 41.7% of patients were at high risk for OSAS. As for asthma control, a mean total ACT of 20.3 (± 2.5) was obtained, with 63.6% of controlled patients and a mean total CARAT of 19.8 (± 7.4) with 33.3% of controlled patients. The average upper airway CARAT was 6.8 (± 4.1) and the lower 13.0 (± 4.0), with 41.7% with controlled nasal complaints and 33.3% with controlled bronchial complaints. The presence of OSAS correlates with gender (45.5% of severe asthmatic men with OSAS vs 21.1% of women) and the presence of CV pathology but not with asthma control (either ACT or CARAT), neither with excessive daytime sleepiness. Age correlates with AHI (moderate positive correlation, p < 0.005, rs 0.626).
Conclusions: In our sample, the prevalence of OSAS is much higher than that described in the general population and does not appear to be related to asthma control and may suggest that it is more of a coincidence than a comorbidity, however, due to the size of the sample, drawing conclusions of this kind is daring. In this population, STOP-Bang did not appear to be a good tool to predict the presence or absence of OSAS neither excessive daytime sleepiness.

Keywords: *Severe asthma. Obstructive sleep apnea.*

PC 035. THERAPEUTIC RESPONSE ASSESSMENT AT 12 MONTHS OF MEPOLIZUMAB - THE REALITY OF A PORTUGUESE HOSPITAL CENTER

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Introduction: The severe eosinophilic asthma phenotype is characterized by eosinophilic airway inflammation. Mepolizumab, an anti-IL5 monoclonal antibody, is effective in symptomatic control of these patients.
Objectives: Evaluate the clinical, analytical and functional response of patients with severe eosinophilic asthma at 12 months of treatment with mepolizumab.
Methods: Retrospective study including patients followed in CHUC with severe eosinophilic asthma under mepolizumab for at least 12 months. Symptom questionnaires, exacerbations, respiratory functional tests and eosinophilia were analysed. Statistical analysis was performed through IBM-SPSS (significance level 0.05).
Results: In a total of 16 patients under mepolizumab, 10 were under this treatment for over 12 months. Mean age 54.1 (± 16) years and female predominance (90%; n = 9). In 50% (n = 5) the diagnosis was obtained over 40 years of age. It is also noteworthy that 50% (n = 5) had nasal polyposis, 70% (n = 7) overweight/obesity (mean BMI = 27.8 kg/m^2) and 1 smoking habits in the past. Three patients had positive skin allergy tests, 1 with clinical correlation; 8 patients had negative IgE values. Regarding radiological findings, 60% (n = 6) had bronchial thickening and 40% (n = 4) air trapping. All patients were on STEP 5 (GINA 2019), 3 under systemic corticosteroid therapy (average 16 mg). At 12 months it was possible to reduce the daily dose, to an average of 7 mg, with a statistically significant difference (p = 0.035). In the 12 months prior to treatment, on average, patients had 4.5 (± 2.9) exacerbations and 1.1 (± 1.4) hospitalizations. After 12 months of treatment, in the same group, there were 1.3 (± 2.5) exacerbations and 0.1 (± 0.3) hospitalizations. The difference found was statistically significant for both variables (p = 0.023; p = 0.032). Regarding the CARAT questionnaire, in the evaluation prior to treatment, the mean value for the upper airways (UA) was 6.25 (± 2.4) and for the lower airways (LA) 4 (± 2.7). In the assessment performed at 12 months, the average obtained in this questionnaire was 8.25 (± 2.6) and 11.1 (± 5.9), respectively, showing statistically significant difference for LA (p = 0.002). Concerning peripheral eosinophilia, the mean pre-treatment value was 623.3 (± 234.3) cel/µL and at the annual assessment was 83.3 (± 40.6) cel/µL; this parameter differed significantly (p = 0.000). Regarding pulmonary function, the FEV1 value, in liters and percentage, pre-treatment, was 1.54 (± 0.69) and 74.4 (± 30.8%), respectively. After 12 months, the same group had FEV1 of 1.86 (± 0.78) and 86.3 (± 30.9%), respectively. For both parameters, the difference found was statistically significant (p = 0.001; p = 0.026). For FEV1/FVC, the previous value was 64.6 (± 6.7) and at 12 months 72.6 (± 10.2). Once again, the difference found, had statistical significance (p = 0.002). RV, RV/TLC, DLCO and FeNO, before and after treatment, did not differ significantly (p > 0.05).
Conclusions: We can conclude that there was a clear improvement at 12 months of treatment with mepolizumab, in reported bronchial symptoms and exacerbations, with reduction in systemic corticosteroid therapy. It is also noted that the significant decrease in eosinophilia accompanied the functional improvement in terms of FEV1 and FEV1/FVC.

Keywords: *Asthma. Mepolizumab. Anti-IL5 monoclonal antibody.*

PC 036. MISFORTUNES NEVER COME SINGLY!

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Case report: Woman, 50 years old, biologist (on medical leave), divorced, Brazilian (in Portugal for 15 years), non-smoker. Followed by severe asthma. Past medical history: bronchiolitis in the childhood (< 2 years old), persistent moderate to severe rhinitis, chronic sinusitis, penicillin/NSAIDs hypersensitivity, grass pollen allergy, GERD (conditioning laryngospasm), vocal cord dysfunction, suspected gluten/lactose intolerance, depressive syndrome, dyslipidaemia, obesity, DM, Cushing and cataract secondary to systemic corticosteroid therapy. The asthma was diagnosed in childhood, asymptomatic in adolescence and recurrence in adulthood, with multiple hospitalizations, 4 of them requiring intubation and invasive mechanical ventilation. Medicated in step 5 (GINA 2019), including all available add-ons and high dose of corticosteroid (deflazacort 60-90 mg id) with complete therapeutic adherence, adequate inhalation technique and appropriate comorbidities management, although not achieving complete control of the laryngospasm and rhinitis. Investigations: history of eosinophils 300 cells/µL; Skin allergy tests (SATs) positives to grass pollens; Pulmonary function test: spirometric curve with normal spirometric values, not completed due to marked hyperreactivity; arterial blood gases (FiO2 2 L/min, at rest) pH 7.40, pO2 96 mmHg, pCO2 38 mmHg; 6 minute walking test (for oxygen calibration) suspended by low peripheral oxygen saturation (89%) and tachycardia 125 bpm (walking distance 25 meters); Thorax-CT with thickening of bronchial walls and air trapping, excluding tracheomalacia; PNS-CT with ethmoidal sinusitis; V/Q scintigraphy with small peripheral perfusion defects, preserved ventilation; Bronchofibroscopy without any changes; endobronchial biopsy with inflammatory polymorphic infiltrate of lamina propria and basal cell hyperplasia. Results and treatment: Initially medicated with anti-IgE biological treatment (omalizumab 300 mg bimonthly), suspended at 16 weeks due to lack of efficacy and clinical decline. Subsequently medicated with mycophenolate mofetil 1G, bid, as a corticosteroid-sparing agent, but with only partial response that suspended after 8 weeks. Then started mepolizumab, 100 mg monthly, suspended at 2nd month for suspected drug hypersensitivity, manifested by worsening of dyspnoea and cough. SATs were performed with positive pricks to mepolizumab, polysorbate and omalizumab, and negative control in 4 patients. Immunosuppressant (azathioprine) trial not tolerated by gastrointestinal complaints. The benralizumab option was excluded because of the polysurbate. In September 2018, although not meeting the eosinophil count criteria, initiated, in an early access program, the anti-IL5 reslizumab (250 mg monthly) with symptomatic improvement since the 3rd dose.
Discussion: With this exposure, the authors intend to highlight the clinical case of a patient with severe asthma, with multiple comorbidities that are difficult to control and indicated for treatment with biological therapy. Nevertheless, other conditions beside the treatable traits may contraindicate the use of these therapies, such as excipient hypersensitivity, making essential the existence of alternatives among biological agents.

Keywords: *Asthma. Hypersensitivity. Biological treatment.*

PC 037. OMALIZUMAB IN THE INTENSIVE CARE UNIT: A CLINICAL CASE

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Introduction: Asthma is a chronic and heterogeneous disease affecting 5-10% of the population and corticosteroids are a fundamental therapy for these patients. In rare cases of corticosteroid allergy, treating asthma can be challenging. Omalizumab has clinical efficacy in patients with allergic asthma. It acts by binding to the free serum IgE, preventing its binding to the high affinity receptors (FcεRI) and a subsequent decrease in their expression in mast cells and basophils and thus reducing the allergic inflammation.
Case report: Female patient, 37 years old, non-smoker, with a history of mechanical valvuloplasty in 2001 and 2015 due to congenital

heart disease with aortic stenosis and ventricular septal defect. She had the diagnosis of asthma and allergic rhinitis since childhood. In 1999, she began with episodes of immediate hypersensitivity to intravenous hydrocortisone and inhaled steroids (fluticasone and beclomethasone), so she discontinued her usual medication. Due to consequent clinical worsening, she was referred to the Immunoallergology Consultation. The allergic study showed allergy to inhaled corticosteroids, tolerating only low dose beclomethasone and to systemic corticosteroids except deflazacort. For this reason, she was proposed for treatment with Omalizumab that she did from 2009 to 2013 and stopped when she was absent from the country. She also stopped beclomethasone, but continued on medication with formoterol, tiotropium bromide, montelukast and aminophylline. In January 2018, she went to the emergency department after a day of productive cough with mucus-purulent sputum, progressive dyspnea and wheezing. On admission, she presented respiratory failure with bronchospasm and respiratory acidemia (pH 7.14, paCO2 70 mmHg, paO2 61.6 mmHg), requiring immediate invasive mechanical ventilation. She had no other laboratory abnormalities and was admitted to the intensive care unit. The patient's ventilatory support was greatly hampered by severe airway resistance, requiring curarization for 5 days, as well as aminophylline infusion and deflazacort treatment. After 10 days of ventilatory support, without improvement, a first dose of Omalizumab was administered and a desensitization protocol for intravenous dexamethasone was performed. The patient presented with progressive improvement of bronchospasm and ventilatory mechanics and was extubated after 9 days of administration. A second dose of Omalizumab was administered in the intensive care unit 15 days after the first. The patient was discharged 10 days after extubation and inhaled beclomethasone was reintroduced with good tolerance. Since discharge, the patient has been receiving monthly treatment with Omalizumab without exacerbations and with adequate symptom control.
Discussion: The authors present the case of a patient with allergic asthma with status asthmaticus and corticosteroid allergy in whom Omalizumab played a key role. Omalizumab may be an important treatment in severe asthmatic patients under invasive mechanical ventilation. To the knowledge of the authors there is no similar case described in the literature.

Keywords: *Omalizumab. Severe asthma. Intensive care.*

PC 038. MEPOLIZUMAB: CLINICAL, FUNCTIONAL AND LUNG AGE ASSESSMENT AFTER ONE YEAR OF TREATMENT

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Introduction: Severe asthma represents 5-10% and is responsible for most asthma morbidity and associated costs. Mepolizumab is a specific monoclonal antibody with high affinity to IL-5, that prevents its binding to IL5 receptor in eosinophils, approved for the treatment of severe asthma. Lung age is a tool developed by Morris and Temple, useful for monitoring patients.
Objectives: To evaluate clinical, lung function, lung age and quality of life responses to mepolizumab. To assess whether lung function response can predict a clinical response in the short-term.
Methods: Patients within the first year of mepolizumab treatment were included. All had severe asthma with high blood eosinophil count, treated with high dose ICS+LABA. Demographic, clinical data, lung function test, number of exacerbations and systemic steroid use in the years before and after treatment were assessed. Patents answered the recently validated Severe Asthma questionnaire (SAQ). Based on lung function tests and the patients' age and height, lung age and lung age deficit were calculated according to Morris and Temple formula.
Results: A total of six patients were evaluated, treated with mepolizumab 100 mg, every 30 days for a mean time of 14.5 ± 3.2 months. The majority of patients were female (5/6) with mean age 56.6 years. Mean initial oral eosinophil count of 576.7 cels/µL and eosinophil percentage 6.5%. Within 4 months of treatment, there was an eosinophil decrease in all patients, with a mean count of 86.6 cells/µL and 5.7%. Five out of six patients had an improvement in lung function in the first year after treatment. Mean initial FEV1% of 75% increased to 95.5%. SAQ score, after treatment, based on the average of the 16 questions was 5.1 and global SAQ score of 60. The number of exacerbations/year treated with oral corticoid decreased from 2.7 to 0.3.4 patients had 1 exacerbation leading to hospital stay in the previous year, 1 had 2 and 1 none. After treatment, no patient needed a new hospital stay for respiratory problems. Mean initial was Lung Age 80.5 years (IQR 50.7), mean lung age deficit of 28.8 years (IQR 77). After treatment, mean lung age reduced to 57.4 and lung age deficit to 2.1 years. One of the patients, despite lung function improvement, had clinical deterioration with increased necessity of rescue bronchodilators, and mepolizumab was stopped after 7 months.
Conclusions: Most patients improved asthma symptoms, clinical stability, less exacerbations and need for systemic corticoids, with a related improvement in quality of life. There was a decrease in eosinophils number in peripheral blood, which relates to literature, as eosinophils seem to correlate to clinical response. It is still necessary to establish whether functional response can predict clinical response to treatment and whether it is long-term and sustained. The benefits reported in lung age and lung age deficit can be useful tools in motivating and improving treatment adherence.

Keywords: *Severe asthma. Mepolizumab. Eosinophil. Lung function. Lung age.*

PC 039. TREATMENT WITH MEPOLIZUMAB IN SEVERE EOSINOPHILIC ASTHMA PATIENTS WITH NASAL POLYPS

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Introduction: Nasals polyps are a frequent comorbidity in patients with severe asthma and it's associated with less symptom control and worse quality of life. In the literature, the use of mepolizumab in patients with severe eosinophilic asthma and nasal polyps has revealed a reduction in exacerbation and an improvement in quality of life.
Objectives: To assess the impact of mepolizumab treatment in severe eosinophilic asthma patients with nasal polyposis.
Methods: Retrospective multicentric study including severe eosinophilic asthmatic patients treated with mepolizumab and followed over 6 months period. The study population was divided into two groups: presence or absence of nasal polyps (presence of clinical and radiological criteria). The corticosteroids dosage, corticosteroid cycles, lung function, eosinophils and Asthma Control Test (ACT) were compared using SPSS software (descriptive and comparative analysis).
Results: We included 16 patients (9 non-NP/7 NP), mainly female (12-75.0%) with a mean age of 55.5 ± 10.2 years. Descriptive and comparative analysis before mepolizumab revealed no differences between the groups. The analysis of each group after 6 months of treatment showed that NP patients had a statistically significant improvement in the number of corticosteroids cycles (3.0 ± 3.5/0.6 ± 0.8; p = 0.039), exacerbations (2.7 ± 1.4/0.9 ± 1.1; p = 0.016) and eosinophils (957.1 ± 846.1/81.7 ± 81.6; p = 0.027); while the non-NP group had a statistically significant reduction in the number of corticosteroids cycles (3.6 ± 1.6/1.8 ± 1.3; p = 0.036), eosinophils (815.6 ± 414.8/72.9 ± 38.6; p = 0.017) and ACT (8.0 ± 2.2/18.6 ±

3.2; p = 0.018). After 6 months of therapy, the comparative analysis demonstrated that the non-NP group needed more CCT cycles (1.8 ± 1.3/0.6 ± 0.8; p = 0.047).
Conclusions: There are a few studies in the literature that evaluate the impact of nasal polyps in the treatment with mepolizumab for severe eosinophilic asthma. Despite being a small sample, in patients with or without nasal polyps, we verified an improvement in the number of corticosteroids cycles and eosinophils with mepolizumab. Moreover, the non-NP group seems to need more CCT cycles during the first 6 months of treatment. More studies are needed to corroborate these findings.

Keywords: *Severe asthma. Mepolizumab. Nasal polyps.*

PC 040. THORACIC COMPUTED TOMOGRAPHY IN ASTHMA

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Introduction: Asthma is a relatively common disease, leading to heterogeneous and variable obstruction of airways. For monitoring the disease doctors use mostly clinical history, physical exam and lung functions tests. Although chest radiography was the most commonly used imaging method in the evaluation of these patients, chest computed tomography (CT) has gained an increasingly important role in this regard.
Objectives: To evaluate the reasons that lead to request thoracic CT scan in patients with asthma from General Pulmonology and Severe Asthma appointments and the obtained information from those requests.
Methods: We conducted an analytic retrospective study. We studied a period of 12 months (year of 2018), selecting the clinical processes of patients as described above, who had one thoracic CT scan request with "asthma" at the patient information. We evaluated demographic data, expiration and inspiration imaging acquisitions, the presence of air-trapping, other imaging alterations and presence of excessive dynamic airway collapse.
Results: We analyzed 75 clinical processes, the majority of which of female patients (84%), with a medium age of 61.8 years. 45% of the patients were followed in Severe Asthma appointments and 55% in General Pulmonology appointments. Exams were initially requested by the following reasons: in 50.7% of cases for the follow up of imaging alterations already documented previously in chest radiography or CT scan (as solid and ground glass nodules, etc.); in 13.3% for screening the existence of new imaging changes (emphysema – 4%, diffuse interstitial diseases – 2.7%, Allergic bronchopulmonary aspergillosis – 1.3%, etc.) In 10.7% of cases, the exam was requested for bronchiectasis screening due to recurrent infections, in 6.7% for evaluating asthma that was difficult to treat and in 5.3% for severe asthma. In 12% there was no information concerning the reason for requesting the exam. In 69.3%, CT scan images were acquired in both inspiratory and expiratory times, while in 30.7% of the cases CT scan was performed only in inspiratory time. In 17% of the exams executed in both respiratory excursions, it was possible to detect air-trapping, but this finding was already detectable at inspiratory acquisitions (thus expiratory images were unessential). It was possible to distinguish bronchiectasis and bronchial wall thickening in 35% of the exams. Centrilobular nodules and excessive airway collapse were a rare finding, both occurring only in one patient. In six patients there was no observable imaging alterations.
Conclusions: CT scan availability aloud its usage in diseases where traditionally it was not performed. This work highlights that the reason for CT scan requests in this reversible obstructive disease is mainly for screening for other radiological changes (emphysema, bronchiectasis, follow-up of nodules, etc.) rather than evaluation of the disease itself. Expiration imaging does not appear to be beneficial in detecting air-trapping, which is already noted in inspiration acquisitions in the vast majority of patients.

Keywords: *Asthma. Bronchiectasis. CT scan. Air-trapping.*

PC 041. CHARACTERIZATION OF LUNG CANCER PATIENTS UNDERGOING SURGICAL APPROACH IN A DISTRICT HOSPITAL

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Introduction: Lung cancer is the fourth most common cancer and the first cause of cancer-related death and its incidence continues to rise. Surgical approach remains the gold standard at an early stage and can be used in patients with advanced stage disease selected after discussion in a multidisciplinary board.
Objectives: The aim of this study is to characterize the outcomes of patients with lung cancer diagnosis and surgical indication in a district hospital, comparing them with those described in the literature.
Methods: Retrospective descriptive study of patients diagnosed with lung cancer between March 2012 and June 2019 at Hospital Beatriz Ângelo, who underwent surgical treatment. Data was collected and analyzed using MS Excel. Patients operated for diagnostic or staging purposes were excluded.
Results: Out of 573 patients diagnosed with lung cancer, 96 patients were operated (16.8%). Mean age was 63.6 (± 9.7) and 65.6% were male. Smoking habits were present in 78.1% of patients. The most prevalent comorbidities were: COPD in 34.4%, emphysema in 15.6%, diabetes in 12.5% and previous history of cancer in 9.4%. Adenocarcinoma was the most frequent histological subtype, present in 68.5% of patients. Concerning stage, 38.5% of patients were stage cIA (pIA in 40.6%), 18.8% were cIB (pIB in 15.6%), 8.3% were cIIA (pIIA in 9.4%), 6.3% were cIIB (pIIB in 7.3%) and 21.9% were cIIIA (pIIIA in 17.7%). 22.9% were operated after neoadjuvant treatment. The most common surgical procedures were: lobectomy (72.9%) and wedge resection (15.6%). 45.8% of cases were approached using VATS techniques. Adjuvant therapy was used in 44.8% of patients, including chemotherapy in 34.4%, radiotherapy in 2.1% and chemotherapy plus radiotherapy in 8.3% of cases. Perioperative mortality was 1% (n = 1) and 22.9% had postoperative complications, such as pneumonia (n = 10), prolonged air leak (n = 1) and suture dehiscence (n = 1). Mean length of stay time was 9.6 days (± 6.6). Overall survival at 24 months was 80.9%.
Conclusions: These outcomes are comparable with those reported in the literature, demonstrating an increasing use of minimally invasive techniques (VATS), a low perioperative mortality and a reduced number of postoperative complications. These factors, coupled with the high survival of patients eligible for surgical therapy, demonstrate the relevance of a multidisciplinary approach and investment in early diagnostic strategies to improve the outcomes of lung cancer patients.

Keywords: *Lung cancer. Outcomes. Surgical approach.*

PC 042. DRUG REACTION WITH EOSINOPHILIA AND SYSTEMIC SYMPTOMS SYNDROME ASSOCIATED TO OSIMERTINIB. A CASE REPORT

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Introduction: Drug reaction with eosinophilia and systemic symptoms (DRESS) syndrome is a rare and severe adverse drug reaction, occurring generally about two to six weeks after the introduction

of a causative drug. Cutaneous phenotype is diverse, usually without mucosal involvement and can be accompanied by different systemic symptoms including fever, haematological abnormalities or visceral involvement (kidney and liver). DRESS syndrome can be a life-threatening situation, with an associated mortality up to 10% caused by organ failure.
Case report: A sixty-year-old woman was initially admitted to the hospital with seizures. Brain scan showed intracranial space-occupying lesions. She started levetiracetam on December, 28 2018 and carbamazepine on January, 25 2019. The investigation revealed a stage IV EGFR mutated (deletion on exon 19) lung adenocarcinoma with involvement of central nervous system. She was submitted to radiosurgery on February, 28 2019 and she started systemic therapy with osimertinib (80 mg daily), on March, 6 2019. After eight days, on March, 14 2019, she was admitted at the hospital with a painful and itchy generalized skin rash on face, neck, trunk and lower limbs, with preserved skin integrity and with no systemic symptoms. Osimertinib induced skin toxicity was assumed and the drug was stopped. She was discharged from the hospital with topic steroid therapy. But, twenty-two days after osimertinib suspension, on April, 4 2019, she was readmitted to the hospital with a widespread erythema and skin integrity impairment, without mucosal affectation, accompanied by fever. Blood tests revealed eosinophilia with no leukocytosis, acute kidney failure (AKIN II) with ionic changes and elevation of alkaline phosphatase and lactate dehydrogenase, suggesting DRESS syndrome. She started systemic corticoid therapy (methylprednisolone 1 mg/kg day), teicoplanin and fluid therapy, with clinical improvement. As toxicoderma had worsen after osimertinib suspension, it was thought it could be related with carbamazepine, which was permanently suspended. Thus, after clinical improvement, and under systemic corticoid de-escalation, osimertinib was reintroduced on April, 18 2019, with no evident adverse reaction. The patient stayed hospitalized for two weeks for surveillance. But, eighteen days after osimertinib reintroduction, on May, 6 2019, she was readmitted to the hospital with a severe generalized rash all over the body with epidermal detachment and erosions greater than 30% of body surface area and no mucosal involvement. At that time, her blood tests revealed again a slight eosinophilia with no leukocytosis and acute kidney failure (AKIN II). Osimertinib was stopped again and systemic corticoid was escalated until prednisolone 40 mg days. Skin biopsy was compatible with DRESS syndrome. Three months after, she is de-escalating systemic corticoid, with resolution of skin lesions and normalized kidney function. Multidisciplinary board decided to definitely stop osimertinib.
Discussion: In phase III trials, third-generation EGFR-TKI Osimertinib showed better efficacy and lower adverse event rate than standard EGFR-TKIs, namely with less skin toxicity. To the best of our knowledge, this is the first case of Dress syndrome induced by osimertinib described in literature till now.

Keywords: *Osimertinib. Dress syndrome. Skin toxicity. TKI toxicity. Lung cancer.*

PC 043. LUSH BILATERAL LUNG MASSES. THE SAME PROTAGONIST?

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Introduction: Multiple primitive neoplasms occur in the same individual and involve one or more organs. They are classified as synchronous or metachronic. The differentiation between synchronous primary lung neoplasms and intrapulmonary metastases is fundamental from both the therapeutic and prognostic points of view.
Case report: Female, 62 years old, smoker (75 UMA), performance status (PS) 0, without relevant personal history. She resorted to the emergency department due to effort dyspnea and productive cough (purulent sputum) with 4 weeks of evolution without consumption syndrome. The key findings at examination were: reduction of vesicular murmur and upper half snores on both hemithoraces. Chest radiography showed upper third hypotransparency of both hemithoraces. Thoracic CT scan: left upper lobe bronchial amputation without bronchogram, left upper lobe consolidation and atelectasis, identifying an area of captive walls with hydroaerial level (in relation to the ablated focus) and a mass of 64 × 39 mm; right upper lobe with, heterogeneous and suspected parenchymal uptake, which is equally atelectatic, without air bronchogram and has a mass of 55 × 53 mm. Multiple mediastinal and hilar adenopathies; suspected rounded nodular image (8 mm) in the lingula. In this context she was admitted to the Pulmonology Service for investigation and treatment. From the complementary diagnostic exams, were highlighted: bronchofibroscopy - right upper lobar bronchus complete occlusion due to neoformable lesion that conditioned reduction of the right main bronchus caliber and neoformative lesion occluding the left superior lobar bronchus (cytology and bronchial biopsies: without neoplastic cells); CT-guided transthoracic aspiration biopsy - inconclusive; Rigid bronchoscopy with bilateral biopsies: epithelial cell morphology, poor differentiation, p40 positive and TTF1 negative compatible with pavement-cell carcinoma; TC-CE - two small secondary deposits. Integrating imaging and anatomopathological findings, a bilateral pavement-cell carcinoma (T3N3M1c) - stage IVB was assumed. The patient started systemic chemotherapy (platinum and vinorelbine) and chose not to wait for the results of the mutational study. It was also decided in the multidisciplinary meeting to start holocranial radiotherapy. Afterwards, PDL1 expression study revealed positivity in 20% and 90% of the sample in right and the left, respectively; KRAS positive and ROS, ALK, BRAF, EGFR negative.
Discussion: The concomitant presence of bilateral lung masses is a real diagnostic challenge. Their etiological investigation is often dependent on multiple invasive examinations until a definitive histological diagnosis is obtained. Histological diagnosis of the bilateral masses and detailed analysis of the immunohistochemical characteristics of each one are perentory to distinguish a primary tumor with contralateral metastasis from two distinct tumors. Thus, achieving a diagnosis becomes even more challenging and has clear implications for treatment and prognosis. In this case, we highlight the discrepancy of the PDL-1 values obtained in the two masses, which clearly affect important therapeutic implications. In short, this is a case with silent clinical evolution until the moment of presentation (PS 0), when it appears as a lush, systemic disease, advanced stage and with large lung masses.

Keywords: *Bilateral lung masses. Silent. Exuberant. Pavement-cell carcinoma.*

PC 044. SURVIVAL OF PT1N0 STAGE LUNG CANCER IN PATIENTS UNDERGOING SURGICAL TREATMENT

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Introduction: Lung cancer has a high mortality rate, with an overall survival of 17% at 5 years. Its treatment in early stages can be curative, and surgical anatomical resection with mediastinal ganglion dissection is the standard therapeutic approach in these stages.
Objectives: To analyze the survival of patients with lung cancer staging pT1a-c who underwent curative surgery.
Methods: We conducted a retrospective study of patients undergoing thoracic surgery at our center over a period of 8 years (between 2010 and 2017). Patients with pT1a-c staging and N0 ganglionic staging were included. Survival was calculated using the Kaplan-Meier test using the SPSS® software, version 24.

Results: We included 110 patients with a mean age of 64.1 ± 11 years and male predominance (57.3%, n = 63). The most common histological diagnosis was adenocarcinoma (62.7%, n = 69). Regarding the surgical technique, there was a slight predominance of thoracotomies (59.1%, n = 65) versus thoracoscopy. Of the 11 deaths (10%), disease progression occurred in 7 (63.6%) patients, but only in 3 (42.9%) the cause of death was directly attributed to neoplastic disease. The overall survival at 5 years was 87%. In the comparative analysis of 5-year survival between thoracoscopy and thoracotomy, no statistically significant difference was found (80.4% vs 86.2%, p > 0.005).
Conclusions: With this study, we were able to demonstrate a high 5-year survival rate in patients with surgically treated early-stage lung cancer. Overall these patients represent a small proportion of the reality of patients with lung cancer. In this sense, these data should motivate the development of screening programs to increase the proportion of patients diagnosed at this stage of disease.

Keywords: *Lung cancer. Early stages. Surgery. Survival.*

PC 045. CHEMORADIOTHERAPY IN STAGE III LUNG CANCER. 6 YEARS REVIEW

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Introduction: The therapeutic decision in patients with locally-advanced non-small cell lung cancer (IIIA and IIIB NSCLC) should be made in a multidisciplinary manner and depends on several factors. Currently, standard treatment for patients with inoperable stage III is chemoradiotherapy (CRT), which can be performed concomitantly and sequentially. Concomitant CRT treatment showed improved survival compared with sequential treatment, although it carries a higher rate of acute toxicities.
Objectives: Characterize patients with locally-advanced NSCLC (stage IIIA and IIIB) and to determine the efficacy and toxicities of concomitant CRT compared with sequential.
Methods: A retrospective analysis of patients with stage III NSCLC between 2012 and 2018 who performed treatment with CRT. Clinical data, treatment, overall survival (OS), progression-free survival (PFS), and treatment-related toxicities were analyzed. Survival was estimated by the Kaplan-Meier method and the curves were compared using the log-rank test.
Results: We identified 42 patients with stage III NSCLC (64% stage IIIB and 36% stage IIIA), 88% of whom were male and 90% were smokers or former smokers. The average age at diagnosis was 64 ± 10 years. Most of the patients were classified as ECOG 0 or 1 (97.6%). Of the total patients, 24 (57%) received concomitant CRT treatment and 18 (43%) underwent sequential CRT. The most commonly used chemotherapy regimen was carboplatin and vinorelbine (38%). More than half of the patients (57%) had some treatment-related toxicity. Hematologic toxicity was the most frequent (48%), with no differences between the two groups, followed by dysphagia/esophagitis (24%), which was more frequent in the concomitant CRT group (p = 0.03). Of the 6 patients (14.3%) who complicated with radiation pneumonitis, 5 (83%) had undergone concomitant CRT treatment. The OS of these patients was 59.4 months (95%CI 43.7-75.0). When comparing the two groups, the one submitted to concomitant CRT tended to have a higher SG (64.1 vs 46.0 months), although this value was not statistically significant (p = 0.63). Overall PFS was 45.1 months (95%CI 29.4-60.8), with no significant difference in PFS between the two groups (p > 0.693).
Conclusions: Patients undergoing concomitant CRT treatment tended to have a higher OS and FPS, which was in agreement with literature. Even though concomitant CRT treatment increased survival it also bore a greater risk of acute toxicity, especially through radiation esophagitis. Adverse effects may compromise patient's prognosis and quality of life and generate significant morbidity, which makes it important to properly select candidates for concomitant treatment.

Keywords: *Chemoradiotherapy. Non small cell lung cancer. Stage III.*

PC 046. PULMONARY SPLENOSIS, A CHALLENGING DIAGNOSIS

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Introduction: Splenosis is a benign condition characterized by the presence of ectopic splenic tissue following traumatic rupture of the spleen or splenectomy. The most frequent locations are the abdominal and pelvic cavities, and thoracic splenosis is much rarer. In thoracic splenosis, the nodules are found almost exclusively in the left hemithorax, commonly accompanied by abdominal splenosis. It is usually asymptomatic, and in most cases, it is an incidental finding. The average time between initial trauma and diagnosis is about 20 years, which makes splenosis a challenging diagnosis.
Case report: A 66-year-old male, former smoker, emigrant in France, with a history of dyslipidemia and hypertension underwent splenectomy after a car accident at age 20. About a year ago, he performed respiratory tests, which showed a moderate obstructive ventilatory syndrome and a chest x-ray with ovoid and peripheral opacities in the left hemithorax. Chest CT revealed several nodules located in the pleura adjacent to the left upper and lower lobes, in the lower extremity of the left lung fissure, adjacent to the mediastinal pleura in the right lower lobe, and adjacent to the costal arches of the left posterior chest wall, underlying the muscles. At the former splenic site, two small hyperdense nodular formations of irregular contours were visualized. These imaging findings, along with the patient's clinical history, raised the suspicion of splenosis. After research, complementary exams performed 20 years earlier already showed the presence of the previously described nodules. A 99mTc-labeled red blood cell scintigraphy was performed to confirm the diagnosis of thoracic splenosis. Given the persistent asymptomatic state, we adopted a conservative approach with vigilance.
Discussion: Despite being a benign pathology, thoracic splenosis can radiologically mimic several pathological entities, namely neoplasms. Therefore, while investigating pulmonary nodules in patients with a history of splenic trauma or splenectomy, it is important to include splenosis in the differential diagnosis. The importance of a detailed anamnesis, as well as knowledge about this entity should be noted, which in this case led to an early diagnosis and avoided the performance of more invasive diagnostic tests and treatments, which would not bring additional benefit.

Keywords: *Pulmonary nodules. Splenosis.*

PC 047. DIFFUSE IDIOPATHIC PULMONARY NEUROENDOCRINE CELL HYPERPLASIA (DIPNECH). AN ENTITY WITH CARCINOGENIC POTENTIAL NOT TO BE FORGOTTEN

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Introduction: Diffuse idiopathic pulmonary neuroendocrine cell hyperplasia (DIPNECH) is a widespread proliferation of pulmonary neuroendocrine cells that may be confined to the airway mucosa, locally invade - tumourlets, or form invasive neuroendocrine tumors (carcinoids). Tumourlets are foci of hyperplasia < 5 mm without involvement of the basement membrane and carcinoid tumors are > 5mm in size and invade the basement membrane. Due to the frequent presence of neuroendocrine tumourlets and hyperplasia in

the periphery of typical carcinoid tumors, DIPNECH is considered by WHO as a precursor of pulmonary neuroendocrine tumors. The percentage of patients with DIPNECH who will eventually develop a carcinoid tumor is unknown. Most patients with DIPNECH are middle-aged, non-smoking women with longstanding respiratory symptoms, airway obstruction, air trapping, and histological evidence of bonchiolitis obliterans.
Case reports: We describe two clinical cases: the first of a 35-year-old woman without smoking habits, with sputum cough and exertional dyspnea with 3 years of evolution. Pulmonary function tests revealed a decrease in forced expiratory flow at 75%. Chest CT scan initially revealed no changes. About 4 years later the patient reported a 10 kg loss in 8 months and dry cough. Chest CT scan revealed two solid nodules in the right lower lobe of 5 and 2 mm and in the left lower lobe an 18 mm solid nodule with well-defined contours. Bronchofibroscopy revealed no changes. After a multidisciplinary meeting, it was decided to perform a 68Ga-DOTANOC PET that showed a slight fixation in the lesion of the left lower lobe (carcinoid tumor with low expression of the somatostatin receptors 2.3 or 5). The patient underwent left lower lobectomy (2013) and histology revealed the presence of a typical carcinoid tumor with multiple foci of endocrine cell hyperplasia and tumourlets. Surveillance was maintained with 6/6 months chest CT. The nodules remained stable until 2015 when one of the nodules grew. PET 68Ga-DOTANOC was performed - without metabolic evidence of malignancy. The nodule maintained an indolent growth (0.97 cm) and despite negative 68Ga-DOTANOC and 18F-FDG PET, atypical resection was performed in August 2019, awaiting anatomopathological results. The second case is a 74-year-old woman without smoking habits, with an important family history of cancer. Chest CT scan revealed incidental multiple nodules in both lung fields. Bronchofibroscopy had no changes. The nodules remained stable in 6 months. However, given family history, it was decided to perform nodules biopsy in the right inferior lobe and middle lobe by thoracoscopy (2012). The pathological diagnosis was of tumourlets and typical carcinoid. The patient maintained vigilance in Oncology Pulmonology consultation for 6 years.
Discussion: There are few cases described in the literature regarding the etiology, treatment and follow-up of these patients. Most series report a 5-year survival rate of 80-90%. However, given the potential for malignant transformation, questions arise regarding the monitoring and treatment of these patients.

Keywords: *DIPNECH. Tumourlets. Carcinoids. Neuroendocrine cells.*

PC 048. STAGE IV LUNG CANCER. IS THE CURE POSSIBLE?

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Introduction: Therapies used in patients with advanced non-small cell lung cancer (NSCLC) are considered palliative. The goals are to preserve quality of life and prolong survival with minimal side effects. Immunological checkpoint inhibitors that target programmed cell death protein 1 (PD-1) or programmed cell death ligand 1 (PD-L1) have been considered in the therapeutic approach of lung cancer. Nivolumab is an immunoglobulin G4 (IgG4) monoclonal antagonist antibody to programmed cell death protein 1 (PD-1). It is not yet used as a first line but is approved for use in progression after chemotherapy.
Objectives: To evaluate patients with complete response and no evidence of disease treated with Nivolumab at a central hospital in the Oncology Pulmonology consultation.
Methods: Review of the clinical records of patients with complete response to Nivolumab followed at Egas Moniz Hospital until July 2019. Collection of data on smoking habits, tumor histological type, stage at time of diagnosis, metastatic sites, previous therapies, presence of adverse effects, duration of therapy, reasons for discontinuation, and disease-free time since discontinuation of the drug.
Results: Five patients with complete response to Nivolumab therapy were identified: 4 with no current evidence of disease and 1 of them had very doubtful mediastinal adenopathy and no evidence of active disease in another location. All patients were male, mean age 64 years old, smokers (mean smoking rate of 63 pack years), 4 with adenocarcinoma and 1 with squamous cell carcinoma, 4 in stage IV and 1 in stage III-a who progressed to stage IV, with the following metastatic sites: cervical adenophaties (n = 2), peritoneal adenopathies (n = 1), bone (n = 1) and pericardial fluid (n = 1). All patients had previously received conventional chemotherapy and 1 of the patients had surgery initially. Three discontinued treatment due to side effects (severe skin reaction, autoimmune encephalitis and severe asthenia). The patient with autoimmune encephalitis has completed 7 months of therapy and has been on surveillance for 32 months with no evidence of relapse; the patient with toxidermia discontinued treatment 4 months ago and has no evidence of active disease (has received 8 months of therapy) and the patient with severe asthenia has been without therapy for 15 months and has no evidence of disease (completed 18 months). One patient has been on therapy for 12 months with no active disease and no side effects and the patient with dubious mediastinal adenopathy has been on Nivolumab for 6 months.
Conclusions: Recent data from clinical trials show increased survival with Nivolumab therapy in patients with advanced NSCLC - about 58% of patients alive after 4 years of diagnosis (previously 5% at 5 years). We have witnessed in recent years a change in the paradigm of this cancer disease with the emergence of new therapeutic lines that make a priori deadly disease potentially chronic and perhaps curable even in advanced stages.

Keywords: *Cancer. Nivolumab. Stage IV.*

PC 049. PEMBROLIZUMAB THERAPY IN NON-SMALL CELL LUNG CANCER. CENTRAL HOSPITAL EXPERIENCE

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Introduction: Pembrolizumab is a highly selective immunoglobulin G4 (IgG4) antibody of programmed cell death protein 1 (PD-1), blocking ligands PD-L1 and PD-L2. When used in first-line it is associated with longer overall survival and progression-free survival than conventional chemotherapy in patients with non-small cell lung cancer (NSCLC) with PD-L1 expression ≥ 50%.
Objectives: To characterize the patient population and the experience of using Pembrolizumab in an Oncology Pulmonology consultation of a central hospital.
Methods: Retrospective analysis performed by consulting the clinical files of pembrolizumab-treated NSCLC patients from March 2017 at Egas Moniz Hospital until July 2019. Data were collected about demographic characteristics, smoking habits, tumor histological type, initial stage, metastization sites, age at initiation of pembrolizumab therapy, drug line therapy, presence of adverse effects, response to therapy and reasons for discontinuation. Descriptive data analysis was performed using Microsoft Excel 2013 and IBM SPSS Statistics v.23.
Results: The sample consisted of 24 patients, mostly male (54.2%), mean age 66.3 years (age of onset of Pembrolizumab). There was a high rate of smoking (83.3%) with the following distribution: 50% former smokers and 33.3% smokers. Histologically the majority corresponded to adenocarcinomas (n = 21), with 2 cases of squamous cell carcinoma and 1 case of mixed tumor (adenocarcinoma and large cell carcinoma). At the time of diagnosis, regarding staging, the sample was distributed as follows: 17 in stage IV, 1 in

stage IIIc, 2 in stage IIIb, 2 in stage IIIa, 1 in stage IIa and 1 in stage Ia. The most frequent metastatic sites were bone (41%), pleura (41%), adrenal glands (23.5%) and lung (23.5%). Nine patients have done Pembrolizumab in 1st line of treatment, ten in 2nd line and 5 in 3rd line. Of those who performed in the first line, one corresponded to squamous cell carcinoma and eight to adenocarcinoma, mean age 71.4 years. In 2 of these cases there was a partial response and in 2 other cases progression. Remaining without evaluation at study date. Adverse effects were reported in 54.1% of the cases and asthenia was the most common. Regarding response, progression occurred in 12.5% of patients at 8 months on average and partial response in 29.2% at 17 months on average. 58.3% of patients had no evaluation at the time of the study. Six patients discontinued the drug: 3 due to side effects (2 due to severe skin reaction and 1 due to the development of diabetes mellitus), 2 due to disease progression and 1 due to general state degradation.
Conclusions: Pembrolizumab was recently introduced in our hospital which is reflected in a limited experience. When associated with serious adverse effects may lead to its permanent or temporary discontinuation. Identification of other biomarkers that can accurately predict tumor immune response may in the future improve therapeutic outcomes.

Keywords: *Cancer. Pembrolizumab.*

PC 050. PULMONARY NODULES. FOLLOW-UP PROTOCOL: MAKES SENSE IN ALL PATIENTS?

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Introduction: Pulmonary nodules are defined as focal, round or oval areas in the lung parenchyma with a diameter of less than 30 mm. They are frequently detected accidentally on chest radiography or computed tomography (CT), and although most are benign, sequential temporal surveillance is required.
Objectives: To characterize the population of patients with pulmonary nodule (s) and to evaluate the diagnostic profitability of the screening protocol proposed by the National Comprehensive Cancer Network (NCCN).
Methods: Retrospective analysis of demographic and clinical data a convenience sample of patients followed in consultation pneumology by single or multiple pulmonary nodules since its detection, evaluating its morpho-dimensional evolution.
Results: Including 53 patients, 71.7% males, with mean age 62.3 years (maximum: 80; minimum: 40). Of the total, 66% were smokers or former smokers, and 67.9% had occupational inhalation exposure at risk. Regarding the comorbidities presented, 13.2% had chronic obstructive pulmonary disease (COPD) and 11.3% had previous history of extrapulmonary neoplasia. In terms of classification, the majority (86.8%) had solid nodule characteristics, 50.9% had multiple nodules and 75% had no associated adenopathies in the first CT-thorax performed. As to morphology, 77.4% of the nodules presented benign characteristics, the majority (38.2%) of diameter less than 6 mm, 25.5% greater than 8 mm, of which 3 were above 15 mm. The preferred location was the right lung (67.5%) and the upper lobe (28.9%). After the first computed tomography scan, 22.6% of the patients were submitted to positron emission tomography - Fluorodeoxyglucose 18 (PET-CT-FDG18), and only 3 with discrete metabolic acceptance. After the first CT-thorax control, 88.7% of the nodules maintained the stability of their characteristics, 14 patients ceased the follow-up and 2 where submitted to biopsy chirurgical (benign tumor). Of the patients submitted to the second CT-thorax, 79.5% of the nodules remained stable, only 2 presented growth and 1 in the transthoracic lung biopsy presenting an adenocarcinoma. Of the 22 patients who remained on follow-up, all nodules remained stable or reduced your size. On average, each patient performed 3.9 TC-thorax and maintained an average follow-up of 23.5 months.
Conclusions: We conclude that in our sample, the majority of patients are male, have exposure to tobacco smoke and/or other inhaled risk factors and have millimetric nodules. Most have maintained morpho-dimensional stability in the serial evaluation, so the diagnostic viability of this approach is questioned considering the risk/benefit of radiation exposure, since the national availability of low dose CT scans is reduced. Of no less importance adds the unnecessary anxiety instilled to the users.

Keywords: *Nodules. Lung. Cancer. Diagnosis.*

PC 051. SMALL CELL TRANSFORMATION AS A MECHANISM OF RESISTANCE IN EGFR-MUTATED NON-SMALL CELL LUNG CANCER TREATED WITH TYROSINE KINASE INHIBITORS: TWO CASES REPORTS

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Introduction: Advanced non-small cell lung cancer (NSCLC) with epidermal growth factor receptor (EGFR) mutations are highly sensitive to tyrosine kinase inhibitors (TKIs). After disease progression, it is essential to understand the mechanism of resistance involved to guide further treatments. Small cell (SCLC) transformation, identifiable by tissue biopsy, although rare, has been associated with TKI therapy resistance. The authors describe two clinical cases.
Case reports: Case report 1: A 47-year-old woman, non-smoker, previous history of tuberculosis, with stage IV lung adenocarcinoma (bone and adrenal metastasis) and EGFR exon 19 deletion was treated with gefitinib and bone radiotherapy (RT). After 13 months, the patient presented oligoprogression with brain metastasis and underwent cerebral RT, maintaining gefitinib. At 24 months, presented systemic progression and a re-biopsy revealed SCLC combined with adenocarcinoma. Unfortunately, the patient suffered a rapid neurological deterioration and required hospitalization, dying 29 months after de initial diagnosis. Case report 2: A 35-year-old man, non-smoker, with lung adenocarcinoma (cT2aN0M0, stage IB) was submitted to right upper lobectomy. Pathological staging revealed a stage IIA (pT2aN1R0) adenocarcinoma and the patient completed 4 cycles of adjuvant chemotherapy (carboplatin/navelbine). After 16 months of follow-up the patient experienced relapse with pleural metastasis. Pleural biopsy revealed an EGFR exon 19 deletion. Erlotinib was started with a partial response. After 12 months of treatment, the patient presented asymptomatic pleural progression and maintained erlotinib for more 6 months, when further pleural progression occurred associated with significant pain. A re-biopsy was performed revealing exon 20 T790M mutation. Osimertinib was started and a complete response was observed. After 20 months of osimertinib, the patient presented with brain metastasis (without systemic progression) and underwent cerebral RT. After 4 months, developed thoracic progression and a re-biopsy revealed persistence of exon 20 T790M mutation. The patient began chemotherapy (carboplatin/pemetrexed) but had rapid disease progression. Because of suspected endobronchial involvement underwent a bronchoscopy and bronchial biopsies showed phenotypic transformation to SCLC. A new line of chemotherapy was proposed; however, the patient suffered a rapid deterioration requiring hospitalization and dying, with overall survival of 6.5 years after the initial diagnosis.
Discussion: Tissue re-biopsy, after treatment with TKIs, allowed the identification of SCLC transformation as a resistance mechanism.

This mechanism can be responsible for progression to 1st/2nd generation TKIs, but also, to 3rd generation TKIs, being, as illustrated in these two cases, severe and rapidly progressive.

Keywords: *Non-small cell lung cancer. EGFR mutation. Small cell transformation.*

PC 052. EFFICACY AND RESISTANCE PROFILE OF OSIMERTINIB IN PRETREATED PATIENTS, WITH 1ST/2ND GENERATION TYROSINE KINASE INHIBITORS, WITH EGFR T790M-MUTATED NON-SMALL CELL LUNG CANCER

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Introduction: For non-small cell lung cancer (NSCLC) patients with epidermal growth factor receptor (EGFR) mutations tyrosine kinase inhibitors (TKIs) are the therapy of choice. However, tumors acquire resistance mechanisms, with the T790M exon 20 mutation being the most frequent, occurring in about 50-60% of the cases. Third generation TKIs, such as osimertinib, has shown efficacy in clinical trials; however, real-world data, particularly from the resistance profile, remains limited.
Methods: A retrospective analysis of T790M-mutated NSCLC patients, who initiated osimertinib between August 2016 and April 2019, was done to investigate osimertinib´s efficacy and resistance profile. Statistical analysis was performed with SPSS® v.25.
Results: Twenty-one patients were included, 12 (57.1%) female, mostly non-smokers (n = 18; 85.7%), mean age 65.9 ± 11.9 years. Exon 19 deletion and exon 21 L858R mutations were present in 17 (85%) and 3 (15%) cases, respectively. In all cases the first-line treatment was 1st/2nd generation TKI. Erlotinib was the most common TKI received prior to osimertinib (n = 16; 76.2%), followed by gefitinib (n = 4; 19%) and afatinib (n = 1; 4.8%). In most cases, osimertinib was started in 2nd line (n = 16, 76.2%) and 3rd or more lines in 5 cases (23.8%). In these cases, the 2nd line treatment was chemotherapy (ChT) (n = 4) and another TKI (n = 1). The median duration between 1st line treatment and osimertinib was 27.0 (IQR 28.7) months. An objective response and disease control were observed in 47.7% (9 partial responses; 1 complete response) and 81% (7 with stable disease), respectively. The median duration of osimertinib treatment was 10.9 (IQR 19.8) months. Of the 17 cases showing an objective response/disease control, 7 (43.7%) subsequently progressed, of which 6 underwent re-biopsy. The T790M mutation became undetectable in 3 of these cases (50%). In the T790M-persistent group, there was one case of newly developed exon 20 C797S mutation. Other molecular changes were also found, MET amplification (n = 1), PIK3CA mutation (n = 1) and in one case, histological transformation in small cell carcinoma. After disease progression, osimertinib was continued in three patients, two in association with local treatment. In four cases a new treatment was started: ChT (n = 2) and another TKI (n = 2). Median progression-free survival (PFS), since osimertinib, was 20.3 (95%CI: 12.0-28.5) and median overall survival (OS) was 29.6 months (95%CI: 0.0-60.9). Nine (42.9%) patients died during follow-up. Median OS since diagnosis was 76.5 months (95%CI: 19.6-133.4).
Conclusions: In pre-treated patients with T790M-mutated NSCLC, osimertinib had a good efficacy profile, comparable to the observed in clinical trials. Re-biopsy after the acquisition of resistance to osimertinib is extremely important to understand the mechanism of resistance involved and to direct further treatment strategies and thus contributing to increase patient's survival.

Keywords: *Non-small cell lung cancer. EGFR mutation. Tyrosine kinase inhibitors. Osimertinib.*

PC 053. METASTATIC TYPICAL PULMONARY CARCINOID. A RARE ENTITY

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Introduction: Bronchial carcinoids, well-differentiated neuroendocrine tumors of the lung, are rare neoplasms that are usually characterized by an indolent behavior. Typical carcinoids account for about 2% of primary lung neoplasms and are low-grade malignant neuroendocrine tumors, figuring in the most benign end of the spectrum.
Case report: 66-year-old woman, former smoker, with history of Steinert myotonic dystrophy who conditioned pacemaker implantation due to atrioventricular block. Previously asymptomatic, she describes involuntary weight loss with loss of about 13 kg in one year, associated with increasing asthenia, diurnal hypersolence, epigastric pain and heartburn. She underwent abdominal ultrasonography that showed liver nodular lesions suspected of malignancy. A complementary abdominal CT study showed nodular, solid, hypoechogenic liver and pancreatic lesions suggestive of a neoformative etiology. Thoracic CT identified, in the middle lobe in paramediastinal topography, a dense nodule with irregular contours, suspected of primary neoplasia. A liver biopsy was performed, identifying well-differentiated hepatic parenchyma with infiltration by a neuroendocrine tumor, with no necrosis foci, with less than 2 mitoses/2 mm^2 and positive immunophenotypic study for chromogranin, synaptophysine, CD56 and TTF-1, compatible with hepatic metastasis. typical lung carcinoid. Serum elevation of chromogranin A (420 ng/mL). Negative 5-HIAA in urine assay. She underwent PET Gallium that documented malignant pulmonary neoplasia with moderate-expression of somatostatin receptors, without other foci of somatostatin receptor hyperexpression. She started systemic palliative treatment with lanreotide 120 mg SC every 28 days. Stable disease under treatment with decreased chromogranin A levels.
Discussion: This case, metastasized at the time of the diagnosis, corresponds to a small percentage of typical carcinoids. Typical carcinoids are the neuroendocrine tumors of the lung with the lowest mitotic index, with low rates of metastasis that, when occur, are mostly limited to regional lymph nodes. The most common clinical findings are nonspecific respiratory signs and symptoms; however, most patients are asymptomatic at presentation, and the diagnosis is the result of imaging findings. As mentioned before, cases like this with distant metastasis are rare, and this clinic presentation can be justified by the metastization pattern found. Given the age, smoking burden, clinical presentation and metastasis pattern identified, the most likely differential diagnoses would be epithelial tumors, namely adenocarcinomas, reinforcing the fundamental importance of the anatomopathological evaluation. Although they generally have a good prognosis, in the rare cases of typical lung carcinoids metastasized at diagnosis, the expected survival rate at 5 years is only 27%.

Keywords: *Neuroendocrine tumors. Typical carcinoid. Metastasis.*

PC 054. INTRATHORACIC DESMOID FIBROMATOSIS: A RARE TUMOUR

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Introduction: Desmoid tumours (DTs) are rare mesenchymal neoplasms, accounting for 0.03% of all neoplasms. In general population the estimated incidence is 2-4 cases/million/year. Despite of being locally invasive, the histological findings are bland without meta-

static potential. DTs can rise at any body site and the first line of treatment is the surgical resection. DTs can be sporadic, whose aetiology remains unclear, localized extra-abdominally or in the abdominal wall. On the other hand, the hereditary type occurs in patients with familial adenomatous polyposis (FAP) and causes intra-abdominal DTs. Approximately two-thirds of all DTs are intra-abdominal.
Case report: A 20 years old woman, born in Saint Tome Island, without any medical records, referred to our Hospital with clinical history of tiredness, epigastric pain and iron deficiency anaemia, during the last 4 months. Upper endoscopy was normal. X-ray and Computed Tomography (CT) scan revealed a large, homogeneously expansive mass with 13.3 × 9.2 cm, occupying anterior mediastinum and left hemithorax. The resected tumour mass weighted 1,419 g and measured 17.5 × 10.5 × 10 cm. Microscopically, the tumour was composed by paucicellular spindle cell proliferation in predominant hyaline collagenous stroma, supporting distinctive subtle vascular pattern. The spindle cells expressed vimentin and beta-catenin, were negative for CD34 and MUC4. This histologic and immunohistochemical findings were suitable with desmoid tumour.
Discussion: Intra-thoracic DTs are extremely rare, approximately 40 case reports have been published. We report a case of intrathoracic DTs, presenting as a large unique intrathoracic mass in a young woman. Intra-thoracic DTs are typically clinically silent until they are incidentally discovered or until they begin to compromise mediastinum structures. In our case, the tumour was clinically silent until it grew large enough to begin to compressing the mediastinum, reducing the pulmonary area and pressing neuro-vascular structures.
We thank Professor Jeffrey Myers for his diagnosis complement.

Keywords: *Desmoid tumour. Fibromatosis. Thorax. Mediastinum.*

PC 055. INFLAMMATORY MYOFIBROBLASTIC TUMOUR OF THE LUNG: A CLINICAL CHALLENGE

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Introduction: Inflammatory myofibroblastic tumor (IMT) of the lung (also known as plasma cell granuloma) includes a spectrum of pulmonary lesions and is a rare benign lesion. Such lesions most commonly present as solitary pulmonary nodules, but can also be locally invasive. It is currently unclear whether these lesions represent a primary inflammatory process versus a low-grade malignancy with a prominent inflammatory response.
Case report: A 70-year old woman, non-smoker presented in pulmonology consultation with an 8-month history of progressive exertional breathlessness, asthenia and cough. No major changes at physical examination were observed. Blood analysis showed hypochromic and microcytic anemia; chest radiograph revealed a left lower lobe lung mass with regular shaping. Follow-up chest computed tomography revealed a persistent 47 × 40 mm left lower lobe mass with a PET scan showing a metabolically active lesion and areas of fludeoxyglucose F18 uptake in both pulmonary hila, suggestive of lung cancer with ganglionar metastization. The flexible bronchoscopy revealed an obstructive lesion in the left inferior lobar bronchus. The bronchial biopsies and CT-guided transthoracic biopsy of the lung mass showed an inflammatory lesion. A rigid therapeutic and diagnostic bronchoscopy was performed and the larger biopsy specimen yielded a diagnosis of pulmonary plasmacytoma. In order to obtain a precise and definite diagnosis, the patient was submitted to a surgical biopsy. The histology of the surgical biopsy revealed a mesenchymal neoplasm with mixed inflammatory infiltrate, composed predominantly of lymphocytes and plasma cells. Neoplastic cells were positive for vimentin, CD68 and caldesmon and negative for ALK, CK7, CD34, CK5.6 and pS100. These pathological features were compatible with inflammatory myofibroblastic tumour (IMT). The patient was submitted to an inferior lobectomy and remains asymptomatic with no recurrence or residual disease in follow-up imaging.
Discussion: IMT is a rare disease that represents 1% of lung neoplasms. Due to the heterogeneous population of plasma cells, lymphocytes, eosinophils, histiocytes, and mesenchymal cells, definite diagnosis by needle biopsies is difficult. It was previously considered to be a type of inflammatory pseudotumor but is currently described as a clonal neoplasm with myofibroblastic differentiation and anaplastic lymphoma receptor tyrosine kinase (ALK)-1 overexpression. Surgical resection is the recommended treatment. However in unresectable cases, steroids, radiotherapy, and chemotherapy have been tried, with limited success. Crizotinib, an ALK tyrosine kinase inhibitor, showed good response in unresectable cases with ALK rearrangement.

Keywords: *Inflammatory myofibroblastic tumour. Rigid bronchoscopy. Lobectomy.*

PC 056. AN UNLIKELY DIAGNOSIS IN A YOUNG ADULT

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Case report: An 18 year old male patient, non smoker, with no significant personal or familiar medical history, presented at our Emergency Department with a clinical picture of productive cough with bloody sputum, over a period of 3 days. There were no report of fever, night sweats, wheeze or chest pain. At physical examination the patient was hemodynamically stable and without signs of respiratory distress. Baseline investigations were done, which included a chest X-ray, revealing an intrapulmonary nodular structure behind the heart, suggesting a posterior left lower lobe mass. A Thoracic CT confirmed an endobronchial lesion with origin in the apical segment of the left lower lobe, with slightly irregular contours, and 5.5 cm of largest diameter. The patient was submitted to rigid bronchoscopy, under general anesthesia, with visualization of the bloody mass infiltrating the superior segmental bronchus of the left lower lobe (B6). Directed bronchial biopsies were performed, as well as, laser therapy with reduction of the lesion. The anatomopathological study revealed a malignant biphasic tissue with epithelial and mesenchymal components, with positive immunohistochemistry to cytokeratin AE 1/3 and TTF1 (confirming the epithelial component) and to vimentin and muscle actin (confirming the mesenchymal component), suggesting the diagnosis of high grade pulmonary blastoma. Following the realization of all staging investigations, the clinical TNM group was considered to be cT3N0M0 (Stage IIB) according to the 8th edition TNM Classification for Lung Cancer, and the patient was submitted to left lower lobectomy, sleeve resection of the bronchus, partial pleurectomy and mediastinal lymphadenectomy. The histological type of blastoma was confirmed, and the involvement of pleural tissue with tumor implants was documented. The pathological TNM classification (pT3N0M1a) included the patient into a higher staging group (Stage IVA) than was previously expected. In this context, the patient was proposed to adjuvant chemotherapy with cisplatin and etoposide.
Discussion: Pulmonary blastoma is a rare, aggressive tumor that accounts for 0.25 to 1% of all primary lung tumors. It was named for its microscopic similarity with the fetal lung at 10th-16th week stage of development. Despite its assumed embryonal origin, about 80% of pulmonary blastomas occur in adults, with a peak incidence in fourth decade of life. It can present with symptoms of cough, dyspnea, hemoptysis and/or chest pain. However, nearly half of the cases are asymptomatic, and discovered incidentally. On imaging studies, pulmonary blastomas appear as large, solitary masses with smooth margins, most commonly located at the lung periphery. Invasion of pleura is possible, and endobronchial growth is present in

25% of cases. Microscopically, the classic pulmonary blastoma is biphasic in nature, comprising both primitive epithelial and mesenchymal malignant components. Complete surgical resection is the only known curative therapy although adjuvant chemo and/or radiotherapy may be applied in selected cases. The prognosis is generally poor with an overall 5-year survival around 15-30%.

Keywords: *Endobronchial lesion. Blastoma. Lobectomy.*

PC 057. TRANSFORMATION FROM LUNG ADENOCARCINOMA TO SMALL CELL LUNG CANCER AS A MECHANISM OF RESISTANCE TO TKIS THERAPY: REPORT OF TWO CASES

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Introduction: EGFR-tyrosine kinase inhibitor (TKI) therapy is the mainstay treatment for patients with EGFR mutant non-small cell lung carcinoma (NSCLC) but drug resistance invariably emerges with a median time to disease progression of about 12 months. There are several documented mechanisms of resistance to EGFR TKIs. The most common is the occurrence of T790M mutation, followed by amplification of the MET receptor tyrosine kinase. Transformation to small cell lung carcinoma (SCLC) is considered to be a rare resistance mechanism of EGFR-TKI therapy. The authors report two cases of acquired EGFR-TKI resistance through transformation to small cell lung carcinoma.
Case reports: Case 1: 65-year-old women, with no smoking history, presented with a right pleural effusion. Pleural biopsy revealed lung adenocarcinoma with a predominantly micropapillary pattern and negative PDL1 expression. Genotyping revealed EGFR deletion mutation. Stage IV (T4N2M1c) lung cancer with brain metastasis was detected. First line therapy with Afatinib was started with good initial response. However, after 9 months of treatment, progression was detected and CT guided percutaneous pulmonary biopsy was performed to search for EGFR TKI resistance mutations. The biopsy sample was histologically and immunohistochemically compatible with SCLC leading to therapy change to carboplatin and etoposide with good response. Case 2: 73-year-old women, with no smoking history, presented with hemoptysis. Thorax CT scan identified a lung mass and bronchial biopsy performed by bronchoscopy revealed lung adenocarcinoma with positive PDL1 expression in 5% of the cells. At diagnosis, cancer was at stage IV (T3N3M1c) with bone and liver metastasis. Genotyping revealed EGFR deletion and therefore patient started with first line therapy with Gefitinib with good initial response. After 6 months, progression was detected, and the patient was re-biopsed to search for EGFR TKI resistance mutations. The biopsy sample revealed SCLC and therefore the patient started chemotherapy with carboplatin and etoposide with good response.
Discussion: Among the different pathways of resistance to EGFR-TKIs, the switch to SCLC histotype is described, however, the underlying mechanism remains unclear. Although it is considered rare, Sequist et al. showed a fundamental histology transformation from NSCLC to SCLC at the time of TKI resistance in 5 (14%) of the 37 patients studied. After the histological switch to SCLC, chemotherapy consisting of platinum and etoposide is effective initially, but overall survival is short. Moreover, there are not enough data to determine whether continued EGFR-TKI treatment brings any further clinical benefit. Transformed SCLC may represent a new subgroup with previous NSCLC, an EGFR mutation, no standard treatment and short overall survival compared to classic SCLC. The authors aim to raise awareness of the value of re-biopying the tumor throughout the course of a patient's disease, especially while managing drug resistance to determine the best treatment regimen.

Keywords: *Lung adenocarcinoma. EGFR mutation. EGFR TKI resistance. Small cell lung cancer switch.*

PC 058. THE EXPERIENCE WITH ALECTINIB IN CONTROLLING BRAIN METASTASIS OF NSCLC ALK +

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Introduction: Lung cancer is one of the leading causes of death worldwide. Investigation of epidermal growth factor receptor (EGFR) and anaplastic lymphoma kinase (ALK) mutations has led to the establishment of targeted therapy with tyrosine kinase inhibitors (TKI), thus ushering in a new era in lung cancer therapy. ALK translocations are observed in approximately 5% of patients with non-small cell lung cancer (NSCLC). These patients have a higher risk of developing brain metastases compared to other sub-types of CPNPC, which dramatically influences the patient's quality of life.
Objectives: To evaluate the therapeutic response of the central nervous system (CNS) to Alectinib in CPNCP ALK + patients with initial metastasis or following therapy with another TKI.
Results: Twelve patients with adenocarcinoma and brain metastasis were treated with Alectinib. The average age was 50.08 years (min. 32 and max. 76). Regarding smoking, eight patients were non-smokers (66.7%), two smokers (with a mean smoking load (SL) of 55 PY) and the other two former smokers (with a mean SL of 12.5 PY). Regarding the performance status (PS) of these patients, four had a PS 0, six with PS 1 and two with PS 2. In six patients, the initial clinical condition was adenocarcinoma with brain metastasis and Alectinib was used as the first line of TKI. In the remaining six patients, brain metastasis appeared following treatment with Crizotinib with Alectinib being used as the second line of therapy. Regarding local therapy, two patients had whole-brain radiation therapy; one underwent surgical resection and another stereotactic radiosurgery. The remaining eight patients had no neurological symptoms and were not subjected to local therapy. So far, ten patients had imaging re-evaluation (MRI/CT-CE) after three cycles, with imaging improvement being observed in all patients; five patients with complete response and five patients with partial response. Of the three deceased patients, only one had CNS disease progression.
Conclusions: Our data corroborate the medical literature regarding CNS disease control with the use of Alectinib, which is an important factor to take into account in the therapeutic proposal for these patients. It is important to emphasize the early detection of brain metastasis in ALK+ patients.

Keywords: *NSCLC. Brain metastasis. ALK. Alectinib.*

PC 059. PEMBROLIZUMAB FIRST-LINE TREATMENT OF PATIENTS WITH NON-SMALL CELL LUNG CANCER

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Introduction: The treatment with pembrolizumab is recent and is currently indicated as first line in patients with stage IV non-small cell lung cancer (NSCLC) with PDL1 expression greater than 50%. In this group of patients, pembrolizumab was shown to be superior to conventional chemotherapy.
Objectives: The aim of this study is to verify the clinical results of first line pembrolizumab treatment in patients with non-small cell lung cancer.
Methods: Review of the clinical files of patients followed at Hospital Pulido Valente Oncology Pulmonology consultation treated with pembrolizumab as 1st line treatment from September 2017 to August 2019. Statistical analysis was performed using SPSS® v24 and progression-free survival (PFS) using Kaplan Meier curves was analyzed.

Effects on patients' quality of life, side effects and impact of pembrolizumab were also analyzed according to the different levels of PD-L1 expression.
Results: Forty-one patients were included in this analysis, 61% male (n = 25). The average age was 64 years (44-77 years). In this sample, 19.5% (n = 8) were non-smokers, 39% (n = 16) were former smokers and 41.4% (n = 17) active smokers and at the beginning of the treatment, 75.6% (n = 31) of the patients had Performance Status (PS) between 0 and 1, with the remaining 24.4% PS ≥ 2. There were 16 patients in stage IVA and from the 25 patients in stage IVB, 9 had metastasis at one site, 7 at two sites and 9 at three or more extrapulmonary sites. The median progression free survival (PFS) was 7.8 months (95%CI 5.2-9.2). Only two patients discontinued pembrolizumab, both due to grade 3 maculopapular rash. Regarding effects on quality of life, 56% of patients (n = 23) showed symptomatic improvement at the end of the first course of treatment. Regarding the impact of different levels of PD-L1 expression, median PFS was found to be longer (10.7 months) in patients with expression level ≥ 90% (n = 11) compared to patients with 50-89% (n = 30), where the median PFS is 6.9 months (p = 0.01), and these results are independent of patients' PS at initiation of therapy, as well as the number of metastatic sites.
Conclusions: In this study it was found that among patients treated with first-line pembrolizumab, significantly better results were obtained in the subgroup of patients with PDL1 expression level ≥ 90% regardless of the degree of metastasis or Performance Status of patients at the beginning of the treatment.

***Keywords**: Pembrolizumab. PDL-1. Cancer. Lung.*

PC 060. QUALITY OF LIFE AS PRIORITY: INDWELLING PLEURAL CATHETER IN MALIGNANT PLEURAL EFFUSION

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Introduction: Malignant pleural effusion (PE) is a frequent complication in cancer patients and may become recurrent despite active antineoplastic therapy. It is usually symptomatic (dyspnea; chest pain), bulky and implies functional limitation, with severe repercussions on patients' quality of life. It corresponds to the manifestation of advanced and systemically disseminated malignant disease, and its palliative treatment (symptomatic relief) is based on the survival expectation, ability to perform daily activities, symptomatology and underlying disease. The approach to PE involves evacuating thoracentesis, pleuro-peritoneal shunts, pleurodesis (not always possible/successful) or placement of an indwelling pleural catheter. The latter allows a different approach of recurrent PE, being less invasive, allowing the drainage of the effusion at home by the patient, obviating successive thoracocenteses, and bringing the possibility of inducing spontaneous pleurodesis (up to 50%). With the initiation of anti-neoplastic therapy, including chemotherapy, questions are raised regarding safety and increased risk of infection, given the immunosuppression associated with therapy.
Case report: The authors present a case report of a 70-year-old male, active smoker (50 pack-year), who went to the ED because of dyspnea, asthenia, anorexia and weight loss. From the initial investigation a left PE stands out. He underwent thoraco-abdominal-pelvic-CT which showed: occlusion in its division of the LMB with consequent collapse of practically the entire left pulmonary parenchyma and bulky left PE. He underwent thoracentesis that was compatible with neoplastic PE and bronchofibroscopy, where occlusion of all segmental bronchi of LMB was seen by apparent extrinsic compression, with suspected unconfirmed tumour infiltration of the LUL bronchial mucosa. On recurrence of PE, he underwent pleural biopsy and new thoracentesis, compatible with lung adenocarcinoma. The remaining staging showed unchanged Cranial-CT and PET/CT with abnormal left pleural metabolism. He was discharged to the Onco-Pulmonology Consultation, but returned to the ED because of worsening dyspnea and cough with mucopurulent sputum. The study highlighted increased PE and inflammation parameters. An obstructive pneumonia was assumed, treated with meropenem with clinical resolution. Because of the relapsing PE a thoracic drainage was placed although without complete pulmonary expansion. In this context, he underwent a Chest-CT that showed broncho-pleural fistula. Long-term drain placement was chosen, given the low probability of pulmonary expansion and follow-up in Onco-Pulmonology Consultation was maintained, having completed 4 QT cycles without infectious complications. Initially, there was a need for frequent evacuations of the effusion, currently neither with need of drainage nor with radiological aggravation on follow-up, being considered the removal of the catheter.
Discussion: Placement of long-term drains represents a new and less invasive approach to malignant PE, predominantly aimed at controlling dyspnea, evacuating the fluid at home comfort, avoiding multiple health services visits and preserving the patient's quality of life. The possibility of spontaneous pleurodesis represents one of the advantages of this technique, which also allows the simultaneous performance of systemic antineoplastic therapy, adding the infectious risk for which special attention should be paid. The authors highlight the increasing use of this type of drainage, promoting the sharing of experience among pulmonologists, in order to extend it to more patients and possible indications.

***Keywords**: Indwelling pleural catheters. Recurrent pleural effusion.*

PC 061. PULMONARY PLEOMORPHIC CARCINOMA, A RARE AND AGRESSIVE SUBTYPE OF NON-SMALL CELL LUNG CANCER: CASE REPORT AND LITERATURE REVIEW

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Introduction: Pulmonary pleomorphic carcinoma (PC) is a rare malignant tumor of the lung and its incidence has been estimated to be 0.1% to 0.4% of all lung cancer. According to the revised 2004 World Health Organization (WHO) classification, PC was grouped as a specific type of lung cancer with pleomorphic, sarcomatoid, or sarcomatous elements. PC has a more aggressive clinical course and a worse outcome than other nonsmall cell lung cancer (NSCLC).
Case report: We report the case of a 56 year-old-male, former smoker (60 pack years). He presented with a left cervical tumefaction since November 2017 with a progressive size increase. In May 2018 he was admitted for asthenia and dyspnea with 2 months of evolution, without fever, thoracalgia, cough, hemoptysis or nocturnal hypersudoresis. He underwent cervical ultrasound (27-08-2018) showing left cervical adenopathy and an adenopathic conglomerate. On chest CT (29-08-2018) it was seen a left mediastinal mass (12 × 7 cm) with left hilar involvement and apical extension with strong invasive mediastinal component with atelectasis. Admitted to IPO Porto in early September 2018, at that time with complaints of anorexia and significant weight loss (about 10 kg in 2 months) and abdominal pain in left superior quadrant, with left thoracic and back-lumbar irradiation. He also present a new onset of dysphonia since late August. On physical examination it was seen a left cervical adenopathic conglomerate; he was eupneic, with abolition of respiratory sounds through the upper two thirds of the left hemithorax, with no signs of thoracic collateral circulation, edema or flushing of the face or limbs. It was performed an aspiration biopsy of the left cervical adenopathy, whose histological result was inconclusive (unrepresentative sample). During diagnostic investigation he was admitted in the Oncology Ward due to worsening of general condition and uncontrolled thoracalgia. The Chest CT performed on 06/11/2018 showed a significant dimensional increase of the lung mass (18.5 × 10 × 19.2 cm), contralateral mediastinal deviation, pleural effusion, and nodular thickening of the

pleural leaflets. It was requested a pulmonary biopsy that was diagnostic for poorly differentiated carcinoma- pulmonary pleomorphic carcinoma (EGFR, ALK and ROS negative; PDL1 < 10%). The clinical course of hospitalization was favorable, with pain control and improvement of dyspnea, so he was discharged and it was planned to start systemic treatment with carboplatin and paclitaxel. Unfortunately, two days after discharge the patient was admitted in cardiopulmonary arrest and he died.
Discussion: The authors highlight this case because of the exuberance of the clinical and imaging presentation. There was a sharp dimensional increase of the tumor, which dictated an unfavorable final evolution prior to the beginning of systemic therapy, confirming the aggressiveness of the clinical behavior of these tumors.

Keywords: *Pleomorphic carcinoma. Rare histological subtype.*

PC 062. SYNCHRONOUS TUMORS. THE METASTASES AT THE CENTER OF DISCUSSION

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Introduction: Synchronous tumors diagnosis is essential to define the therapeutic approach and to establish prognosis. In some cases, malignancies from different origins may be diagnosed. The authors present the case of a patient diagnosed with lung adenocarcinoma and thyroid papillary carcinoma. The malignancies were not diagnosed simultaneously which led to alteration of the therapeutic strategy and prognosis.
Case report: Female, 56 years old, non-smoking, asymptomatic. Chest X-ray: nodular hypotransparency in the right pulmonary base. Chest CT: ground glass nodular lesion in the right pulmonary lobe of 3.4 × 2 cm. Multiple secondary micronodules in the middle lobe, lingula and left lower lobe. Transthoracic lung biopsy (29/11/2017): Lepidic-predominant adenocarcinoma of the lung. PET CT (12/15/2017): "Nodular lesion in the right lover lobe with increased metabolism compatible with the diagnosis of lipid adenocarcinoma; micronodular pulmonary metastases. Hypermetabolic thyroid mass in the left lobe requiring proper study". Stage IV lung adenocarcinoma (T4N0M1 - pulmonary metastasis) was diagnosed; EGFR exon 21 positive; PD-L1 negative. The patient started tyrosine kinase inhibitor (TKI - erlotinib, which was changed to gefitinib due to severe dermatological toxicity), with decrease of the size of major lung lesion, but the number and size of the pulmonary micronodules increased. She maintained a performance status of 0. The patient choosed to investigate the thyroid mass at another institution. She was diagnosed a papillary thyroid carcinoma and underwent total thyroidectomy; no need for adjuvant therapy. However, elevated follow-up thyroglobulin was detected (28.130 - cut-off 77 ng/mL). Given the increase of the number of pulmonary micronodules (despite the response of the larger lesion to TKI therapy) and elevated thyroglobulin in a thyroidectomized patient, it was hypothesized that these micronodules could be secondary to the papillary thyroid carcinoma and not the lung adenocarcinoma. The case was discussed in a multidisciplinary meeting. The patient underwent thoracic surgery for extemporaneous examination of the micronodules which were compatible with thyroid carcinoma metastases. Therefore, she underwent right inferior lobectomy at the same surgical time to treat lung adenocarcinoma. Therefore, we considered: Stage I-A3 lung adenocarcinoma (T1cN0M0) - surgically treated, no evidence of relapse to date, follow in Pulmonology Consultation; Stage IV papillary thyroid carcinoma, under lenvatinib and followed in Oncology Consultation.
Conclusions: Papillary thyroid carcinoma is one of the most common endocrine cancers, but with a low rate of metastasis. Secondary pulmonary lesions can be easily confused with other pathologies or attributed to other cancers, in this case the lung adenocarcinoma that has a high rate of metastasis. The good response of lung adenocarcinoma to TKI at an early stage is also to be emphasized, which reinforces the question of its use as adjuvant therapy after surgery as has been investigated in some clinical trials.

Keywords: *Synchronous tumors diagnosis. Non-small cell lung carcinoma. Thyroid papillary carcinoma. Tyrosine kinase inhibitor.*

PC 063. OSIMERTINIB SAFETY PROFILE EVALUATION IN PATIENTS WITH NON-SMALL CELL LUNG CARCINOMA PREVIOUSLY TREATED WITH 1ST/2ND GENERATION TYROSINE KINASE INHIBITORS

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Introduction: Tyrosine kinase inhibitors (TKI) treatment changed the prognosis of patients with non-small cell lung cancer (NSCLC) in advanced stage with an epidermal growth factor receptor (EGFR) gene mutation. However, tumors tend to develop resistance to these agents, in 40.55% of cases with T790M mutation. Osimertinib, a 3rd generation TKI, has proven efficacy in patients that acquire this mutation.
Methods: A retrospective analysis of patients with NSCLC with T790M mutation of EGFR gene, which initiated osimertinib after treatment with 1st/2nd generation TKI. Safety and efficacy data is presented. Data was analysed in SPSS® 25th ed.
Results: Twenty-one patients were included, 57.1% female (n = 12) with a mean age at diagnosis of 65.9 ± 11.9 years. Osimertinib was initiated in 2nd line in 16 cases (76.2%) and in 3rd or more lines in 5 cases (23.8%). Adverse events (AE) were observed in 9 patients (42.9%), grade 1 in 6 patients (28.6%), grade 2 in one (4.8%) and grade 3 in two (9.5%). Rash (n = 4, 19%), diarrhea (n = 2, 9.5%) and paronychia (n = 1, 4.8%) were observed. The grade 3 AE were pneumonitis and osimertinib was definitely suspended. No hepatic, renal or cardiac abnormalities were found. Between patients with AE, an objective response was observed in 4 patients (44.4%) and progression in 2 (22.2%). Disease control rate in this group was 77.8% (3 patients with stable disease). Four patients died, none of them related to the AE. Comparing patients with and without AE, significant statistical differences were observed in age (74 vs 64.5 years; p = 0.03). This group presented, so far, a superior follow-up time to patient without AE (21.84 vs 6.83 months; p = 0.02), making the comparison between overall survival (OS) ans progression free survival (PFS) between these groups not possible. The group with AE presented a median OS since the beginning of osimertinib of 21.9 months (min-max, 8.4-35.7) and PFS of 20.3 months (min-max, 8.4-35.7). No diferences with statistical significance were found in other compared features (sex, smoking status, performance status at osimertinib initiation, response, death).
Conclusions: In this group of patients treated with osimertinib, AE were already reported in the clinical trials. Osimertinib is a safe and effective therapy and the occurrence of AE didn't have a negative impact in prognosis.

Keywords: *Non small cell lung carcinoma. Tyrosine kinase inhibitors.*

PC 064. DABRAFENIB AND TRAMETINIB. AN INNOVATIVE, EFFECTIVE AND WELL TOLERATED THERAPY

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Introduction: Advanced non-small-cell lung cancer (NSCLC) remains a challenging disease. The limited utility of chemotherapy indicates

the need for additional therapeutic options. Targeted therapy remains an important tool in the treatment of NSCLC with genetic changes. Mutations in the RAS-RAF-MEK-MAPK pathway, specifically the BRAF V600E mutation, have become an important target for the NSCLC patient subgroup with this mutation.
Case report: A 69-year-old, non-smoking woman with a personal history of lung adenocarcinoma who underwent right lower lobectomy in 2005. She was admitted on August 17, 2017 for recurrent right pleural effusion of unknown etiology. He underwent diagnostic and evacuating thoracentesis, and the pleural fluid was an exsudate and revealed negative microbiological exams. The cytology was positive for adenocarcinoma cells. Bronchofibroscopy was performed with evidence of bronchial stump with pearly tissue (granulation?) And swollen and hyperemic surrounding mucosa (infiltration?). She underwet bronchial and distal biopsies at B2 and B4 levels. Bronchoalveolar lavage for cytology that did not reveal alterations and thoracoabdominal-pelvic computed tomography showed right pleural effusion with pleural enhancement and thickening and pre-tracheal retrograde adenopathy with 16 mm shorter axis. She underwent a new thoracentesis with 350 cc drainage of serofibrinous fluid and pleural biopsies that established the diagnosis of lung adenocarcinoma (CK7 and TTF1 +) with mutation V600 in exon 15 of the BRAF gene. Due to increased abdominal volume and evidence of ascites associated with densification of mesenteric fat and micronodular outline translating peritoneal dissemination in a new computed tomography, paracentesis with 2,100 cc outflow of serohematic fluid was performed. He started therapy with Dabrafenib and Trametinib on 11/30/2017 with good tolerance and evidence of clinical and imaging response at the 4th cycle, with clear reduction of pleural thickening, no pathological mediastinal adenopathy or no signs of peritoneal carcinomatosis or ascites. Currently the patient is in the 20th cycle maintaining response.
Discussion: As the case report illustrates, BRAF mutation research is important since targeted therapy controls the disease more effectively and provides a better quality of life.

***Keywords**: Lung adenocarcinoma. BRAF. V600 mutation. Dabrafinib. Trametinib.*

PC 065. ADENOCARCINOMA METASTASIS. LUNG IS NOT ALWAYS THE BAD GUY

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Introduction: Lung adenocarcinoma natural history has changed since the use of epidermal growth factor receptor (EGFR) tyrosine kinase inhibitors (TKI) has begun. The possibility of identifying the 1st/2nd generation TKI resistance mutation increased the relevance of histological revaluation of the tumor. A case highlighting this is presented.
Case report: A 75 year-old woman, in September 2010, was diagnosed with a stage IVA lung adenocarcinoma with contralateral pulmonary metastasis, presenting with de novo hypoxemic respiratory insufficiency. An exon 19 deletion was identified and gefitinib was initiated in 1st line with complete resolution of respiratory symptoms and a partial response. She remained clinical and imagiologically stable over several years. In June 2017, presented with clinical deterioration and dyspnoea and thoracic disease progression was verified. Liquid biopsy was done without conclusions and a T790M mutation was identified in a transthoracic lung biopsy, with exon 19 deletion maintenance. Osimertinib was initiated and the patient returned to basal performance status (ECOG 0) and presented a partial response. In June 2018, following hematochezia was diagnosed with rectal adenocarcinoma. Anterior rectal resection was performed in January 2019 and adjuvanteradiotherapy was proposed, but refused by the patient. In June 2019, she was asymptomatic (ECOG 0) and in a follow-up CT scan multiple hepatic lesions were observed. The liver biopsy proved an adenocarcinoma compatible with a rectal cancer metastasis, so the therapy with osimertinib was maintained.
Discussion: This case illustrates the excellent response to TKI therapy of lung adenocarcinomas with EGFR mutation and the importance of histological revaluation, on the one hand for switching for osimertinib, on the other hand confirming the absence of lung cancer progression, confirming the maintenance of osimertinib therapy.

***Keywords**: Non small cell lung carcinoma. Tyrosine kinase inhibitors.*

PC 066. NIVOLUMAB EXPERIENCE IN NON-SMALL CELL LUNG CARCINOMA PATIENTS

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Introduction: Non-small cell lung carcinomas (NSCLC) represent more than 80% of lung cancer and are associated to important mortality rates. Immune checkpoint inhibitors have been gaining importance in the last years in NSCLC patients. Nivolumab is a IgG4 monoclonal antibody that targets the programmed death-1 (PD-1) receptor. Its use is approved after progression disease with standard chemotherapy.
Methods: Retrospective and statistical analysis (IBM-SPSS v25) was conducted on patients with advanced NSCLC, observed at Hospital de Dia de Pneumologia Oncológica do Hospital Pulido Valente and treated with Nivolumab (3 mg/Kg, every 2 weeks) from April 2015 until December 2018. PD-L1 expression was routinely determined since January 2018. RECIST criteria 1.1 was used to define treatment response at the 5th/6th cycle of Nivolumab. Progression-free survival (PFS) was determined from the first administration of Nivolumab until progression disease or the 31st December 2018 (in patients still undergoing treatment).
Results: Ninety-four patients were identified, of which 73.4% (n = 69) were male, with a mean age of 64.8 ± 10.6 years old. Most patients had smoking history (n = 76; 80.9%). The performance status (PS) was 0-1 in 73.4% (n = 69) of the patients and it was 2 in 26.6% (n = 25). Histologically, 60.6% (n = 57) of the patients had adenocarcinoma and 36.2% (n = 34) had epidermoid carcinoma. PD-L1 expression was unknown (n = 62; 65.6%) or negative (n = 29; 30.9%) in most patients. 93.6% (n = 88) of the patients had stage IV disease. Nivolumab was used as second-line treatment in 55.3% (n = 52), as third-line in 33.0% (n = 31), as fourth-line in 7.4% (n = 7) and as fifth/sixth-line in 4.2% (n = 4) of the cases. The median value of Nivolumab administrations was 6.0 [3.0-16.0]. The analysis of best treatment response to Nivolumab was performed in 76.6% (n = 72) of the cases: 43.1% (n = 31) had stable disease, 11.7% (n = 11) had partial response, 1.1% (n = 1) had complete response and 30.6% (n = 29) had progressive disease. The median value of PFS was 2.5 [1.1-8.2] months for all patients, 2.2 [0.9-6.8] months for adenocarcinoma patients and 3.0 [1.8-8.9] months for epidermoid carcinoma patients. There was no statistical significance (p = 0.14) in PFS between adenocarcinoma and epidermoid carcinoma. Twelve or more cycles of Nivolumab were used in 29 patients (30.9%) with a median PFS of 11.3 [8.2-23.4] months. There was no statistical significance (p = 0.17) in PFS between patients who underwent ≤ 2 previous treatments when compared to those who underwent > 2 previous treatments. The total number of deaths was 54 (57.4%), by the time of the analysis. Adverse effects were documented in 25.5% (n = 24) of the patients and in the most cases the grade was ≤ 2. Suspension of Nivolumab was only needed in five (5.3%) patients.

Conclusions: In spite of there being an important number of PS 2 patients and patients having > 2 previous treatments, in our study Nivolumab contributed to disease control. The overall survival wasn't analyzed because there were was still a significant number of alive patients at the time of analysis.

Keywords: *Nivolumab. Non-small cell lung carcinoma.*

PC 067. A RARE RHEUMATOLOGIC MANIFESTATION OF LUNG CANCER

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Introduction: Paraneoplastic syndromes (PS) are common manifestations in cancer, being more prevalent in lung cancer (10-20%). PS develop in parallel with the underlying cancer but sometimes may appear as the first clinical manifestation.
Case report: We present a case of a man, 69years-old, autonomous. Active smoker (80 pack-year unit). No known occupational exposure or drug allergies. He had history of diabetes and retroauricular surgery for skin cancer. Admitted in the emergency department, in April 2019, for a 5-month-old clinical expression of macula-papular erythematous rash (initially on the back and later on the face, right upper limb (UL), trunk and lower limbs (LL)), bilateral loss of strength (3/3) in both LL and myalgia. He reported fatigue for medium-high exertion (mMrc 1) associated with anorexia and weight loss (20 kg). In March he started coughing with mucous expectoration, odynophagia and dysphagia for solids. He denied fever, night sweats, chest pain, dyspnea, haemoptysis, dysphonia, vomiting, gastrointestinal or urinary changes, arthralgia or headache. At hospital admission, he was hemodynamically stable and conscious, exhibit a facial, cervical and anterior thorax rash (in the sun exposure regions) with apparent skin thickening; bilateral eyelid edema; erythematous desquamative plaques in the right UL, back, abdomen and LL. Oropharynx without changes. Bilateral axillary lymphadenopathy. No changes in cardio-pulmonary auscultation. A whole body computed tomography showed a pulmonary mass in the right upper lobe (20 mm) and several hepatic nodular lesions. Laboratory evaluation revealed a CK > 1,000 Ul/L and LDH 598 Ul/L. Study of autoimmunity and complement as well as thyroid, liver and renal function had no changes. It was performed a bronchofibroscopy and bronchial biopsies, where cytological and histological results were negative; and positron emission tomography which showed metabolic evidence on the lung mass, mediastinal and abdominal lymph nodes, liver and bone lesions. It was observed by the department of Rheumatology highlighting an erythematous maculopapular exanthema, Gottron's papules, heliotrope rash, erythematous plaques on the posterior face UL and anterior thighs, decreased muscle strength in the neck, deltoids and thighs, compatible with dermatomyositis. It was performed a magnetic resonance imaging of the thighs which was suggestive of myositis. Subsequently, the patient underwent ultrasound-guided endobronchial biopsy of the mediastinal lymph having been obtained the diagnosis of Small Cell Lung Cancer (SCLC) - pT4N2M1c – Stage IVB. In this context, dermatomyositis(DM) was admitted as PS in SCLC. The patient underwent intravenous immunoglobulin (IG) 1 g/kg (iv) for two days, with improvement of the exanthema extension and exuberance, peri-orbital edema and muscle strength, with a concomitant decrease in CK value (1,000 to 222 Ul/L). In June, he started Carboplatin/Etoposide chemotherapy (CT) and maintained IG monthly administration, with progressively improvement of muscle strength and skin changes.
Discussion: We want to draw attention in this case report to the extensive and exuberant musculoskeletal manifestations of a paraneoplastic DM that emerged as the first manifestation of a SCLC, highlighting the importance of rheumatological syndromes as PS. Given the advanced stage of DM, we chose to start treatment with IG, which although is not 1st line therapy, it has a good response rate in this type of patients, concomitantly with the use of directed CT.

Keywords: *Paraneoplastic syndrome. Dermatomyositis. Lung cancer.*

PC 068. PD-L1 EXPRESSION SELECTS PATIENTS FOR TK INHIBITORS TREATMENT IN PULMONARY CARCINOMAS

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Introduction: EGFR-mutant pulmonary carcinomas are an important molecular group of patients together with efficacy of PD-1/PD-L1 monoclonal antibodies treatment as clinically demonstrated. The NCCN guidelines do not recommend immunotherapy when EGFR mutations are present. Although some studies suggest EGFR-mutant lung cancer patients cannot benefit from PD-1/PD-L1 monoclonal antibody monotherapy probably because the activation of the EGFR signaling pathway in effective immune cells may create an immunosuppressive microenvironment in lung cancer resulting in no response of this type of lung cancer to anti-PD-1/PD-L1 treatment. Other studies suggest that PDL1 positivity in EGFR mutant metastatic pulmonary carcinoma cancer is known to portend poor prognosis due to resistance to TKIs.
Methods: Formalin-fixed paraffin-embedded microdissected tumoural tissue of 175 cases with represented tumoural cells analyzed for EGFR mutations by IdyllaTM EGFR Mutation Test (exons 18/19/20/21), ALK/ROS1 rearrangements screened by FISH with ZytoLight SPEC ALK/EML4 Tricheck e ZytoLight SPEC ROS1 probes, were compared with PD-L1 antibody 22C3 Dako expression applied with manufacturer validated protocol for Anatomical Pathology.
Results: In 10% of cases, there were simultaneous EGFR mutations or ALK/ROS1 rearrangements together with PD-L1 expression, comprising 13 cases with mutant EGFR and 4 cases with ALK or ROS1 rearrangements.
Conclusions: Based on preclinical studies, ERK pathway inhibitors, PD-L1/PD-1 inhibitors or combination strategies should be considered to overcome the TKI resistance and improve outcomes in lung cancer patients, thereby it is important to understand the heterogeneity of EGFR mutant tumors for establishing the benefit and moment of use of PD-L1 therapies.

Keywords: *EGFR. ALK. Ros1. PD-l1. Lung carcinomas.*

PC 069. ADENOID CYSTIC CARCINOMA OF THE LUNG AND TRACHEA: REVIEW OF 8 CASES

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Introduction: Cystic adenoid carcinoma is a type of salivary gland tumor that is characterized by its indolent growth and tendency to relapse. It is a rare type of primary lung and tracheal cancer, and as such there are few guidelines for the management of these patients.
Objectives and methods: To characterize patients with primary cystic adenoid carcinoma of the lung and trachea followed at our

hospital from 2007 to 2018. To this end, the clinical files of patients with this diagnosis were reviewed during the mentioned period.
Results: Eight cases of primary cystic adenoid carcinoma of the lung and trachea were identified. Patients had a mean age of 67 years at diagnosis, 6 (75%) were female and 2 were smokers. The clinical presentation was cough, dyspnoea and wheezing in most cases (5 patients), in one case the disease manifested as obstructive pneumonia and in 2 patients chest nodules were identified on thoracic CT performed for other reasons. 4 of the lesions were in the left lung, 2 in the right and 2 were tracheal neoplasms. In addition to tracheal tumors, there was endobronchial invasion in 3 of the other cases. At the time of diagnosis most patients had localized disease, there was only one case of N1 disease for hilar adenopathy (stage IIb) and one stage IV (bone metastasis). Five patients underwent surgical treatment (1 left pneumectomy, 1 lower bilobectomy, 2 atypical pulmonary resections (RPA) and 1 segmental excision of the trachea). One patient with primary tracheal neoplasia did not meet the conditions for surgical treatment, so bronchial deobstruction was performed with palliative intent followed by radiotherapy. The stage IV patient underwent vinorelbine chemotherapy (QT) with progression at 9 months. All patients who underwent surgical treatment had pulmonary recurrence of the neoplasia within an average of 24 months. 3 of these were reoperated (RPA metastasectomy) and 2 underwent QT with vinorelbine. The median follow-up was 5 years (one patient with unrelated death before starting treatment was excluded). Two patients died, one with an initial presentation in stage IV after 2 years of follow-up and another in stage IIb at 3 years.
Conclusions: Analysis of our population showed a higher average age compared to other studies but is consistent with respect to the most common clinical presentation in the form of obstructive symptoms and high relapse rates after surgery. Given the limitation of chemo and radiotherapy, surgery is the best therapeutic option and should be privileged in eligible patients even in cases of relapse. These are rare tumors that need multicenter analysis to define therapeutic guidelines.

Keywords: *Adenoid cystic carcinoma. Thoracic surgery.*

PC 070. LUNG CARCINOID TUMORS. 2005-2018 ANALYSIS OF A TERTIARY HOSPITAL

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Introduction: Well-differentiated lung neuroendocrine tumors, commonly known as carcinoid tumors, represent 1-2% of lung primary tumors and often have an indolent behaviour. The pathological discrimination between a typical carcinoid tumor (or low grade well-differentiated lung neuroendocrine tumor) or atypical carcinoid tumor (or intermediate grade well-differentiated lung neuroendocrine tumor) is only accurate in the surgical specimen.
Methods: Retrospective analysis of all cases of lung carcinoid tumors submitted to surgery in a tertiary hospital between 2005 and 2018.
Results: Ninety-three patients were included, 59.1% female with a mean age at diagnosis of 58.3 (22-79). Most of the patients were asymptomatic at diagnosis (56.5%) and the most frequent symptoms were cough and hemoptysis. Lung nodule was the principal presentation in imaging (70.1%), followed by mass (18.4%). In bronchoscopy, the majority have endobronchial lesions and bronchial biopsy (BB) was the sample which made the diagnosis more often (44%), followed by CT-guided transthoracic biopsy (TTB) (38.5%) and in 17.6% of the cases the diagnosis was only possible in the surgical specimen. Lobectomy was the principal surgical approach (71%). The final diagnosis of typical carcinoid was made in 67 patients (72%), atypical carcinoid in 25 (26.9%) and in one patient (1.1%) the histological discrimination was not possible. In 3 patients with typical carcinoid in BB/TTB, the surgical specimen revealed an atypical carcinoid, the reverse situation was not observed. Most frequent TNM staging was IA (59.1%), node involvement was rarer (N0- 83.3%, N1- 7.8%, N2- 8.9%) and 94.6% present with free margins. Six patients (6.5%) presented progression with extra-thoracic metastasis with a mean progression free survival (PFS) of 4.1 years (± 3.4), being mostly atypical carcinoids (n = 4), without node involvement (n = 5) and with free surgical margins (n = 5). Four of these patients are currently under somatostatin analogue, presenting overall survivals between 2 and 11 years and PFS between 1 and 9 years. Eight patients deceased (8.6%) and only in two of them the death was tumor related, both were atypical carcinoids.
Conclusions: Well-differentiated lung neuroendocrine tumors or carcinoid tumors differ substantially from other lung primary neoplasms. The long follow-up is important, since progression over five years post surgical resection is observed, regardless of stating; however, it is still a good prognosis lung neoplasm.

Keywords: *Carcinoid tumors. Neuroendocrine tumors.*

PC 071. QLQ-LC29 ADAPTATION FOR PORTUGUESE LANGUAGE AND POPULATION

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Introduction: Lung cancer (LC) is usually diagnosed in advanced stages and is the first cause of cancer-related mortality worldwide. The comparison between treatments for lung cancer is made by response rates, progression-free survival and overall survival but the side effects and quality of life impact are also crucial points to have in count. Considering the quality of life (QoL) growing importance, the European Organization for Research and Treatment of Cancer (EORTC) has been developing several quality of life questionnaires, like the QLQ-C30, the most widely used instrument in patients with cancer. The first EORTC questionnaire for LC (QLQ-LC13) was published in 1994 but since then major advances have been made. Recognizing the developments, the EORTC QoL group decided to update the QLQ-LC13 to QLQ-LC29, in a four-phase project. During phase1, a comprehensive list of QoL issues relevant to LC patients was generated, using different sources of information. Upon phase2 the issues identified as relevant in phase I was transformed into questionnaire items according to the EORTC QLQ format, which was refined by phase3. A total of 308 patients participated in the 3 phases. Currently, it's in the fourth step, aimed for the validation of the psychometric properties of the QLQ-LC29.
Objectives: To adapt the QLQ-LC29 for Portuguese language and population.
Methods: This is a prospective study made in cooperation with EORTC Translation Unit. It followed EORTC translation guidelines, involving the translation for Portuguese and style uniformization with the EORTC Portuguese portfolio. The final questionnaire was distributed to a LC population. All patients could read and answered the questionnaire by themselves. In the end, the participants were individually asked about potential problems for each question. 10 participants were included in this study, 5 females, with a median age of 56.5 years (50-70 years). They presented the diagnoses of lung adenocarcinoma (n = 5), small cell lung cancer (n = 2), lung squamous cell carcinoma(n = 1), large cell neuroendocrine carcinoma(n = 1) and typical carcinoid tumor (n = 1). Half of the cases (n = 5) were in advanced stages (> IIIA). 2 participants were on the third line of treatment while the majority of the rest (n = 7) were on the first line. 8 patients were submitted to chemotherapy

(in 3 cases as adjuvant therapy) and 1 patient was submitted to immunotherapy. Surgery was performed to 3 patients. Radiotherapy was included in the treatment of 2 patients (one of them as adjuvant).
Results: The participants answered to 100% of the questionnaire and did not present any problem concerning the difficulty or the understanding of the questions or the choice of words. Two patients asked to confirm the answer of the 54 question in their cases that were gaining height, but they had answered properly.
Conclusions: The population included in the study was diversified in age, sex, histology, stage, and types of treatments reinforcing the value of this adaptation. The participants provided excellent feedback about the comprehension and applicability of the questionnaire, making no modifications necessary. This was the first step for the Portuguese utilization of this high-value instrument for measuring the health-related QoL of LC Portuguese patients.

Keywords: *Quality of life. Lung cancer.*

PC 072. CARDIAC METASTASES OF LUNG CANCER. A RARE BUT OMINOUS DIAGNOSIS

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Introduction: Although lung cancer is the most common malignancies worldwide, cardiac metastasis is rarely described in literature. In the majority of patients (pts), cardiac metastases are silent and entail a poor prognosis. Even when present, symptoms may be masked by the clinical manifestations of advanced lung cancer. Echocardiography is the imaging exam of choice, with transesophageal echocardiogram (TEE) granting better visualization of the atria and the great vessels than transthoracic echo (TTE), computed tomography (CT) or magnetic resonance imaging (MRI). Purpose: To review patients (pts) with lung carcinoma and echocardiographic findings of cardiac metastases, either by TTE or TEE, in a tertiary center between 1997 and 2019.
Methods: Retrospective analysis of clinical data from the digital files, echocardiographic assessment of cardiac metastases location, dimensions and morphology, CT assessment of lung carcinoma location and dimensions, as well as histology results and survival outcomes.
Results: A total of 4 cases of cardiac metastases were diagnosed: 3 cases of primary lung carcinoma, and 1 case of bladder cancer with lung metastases. The mean age of pts at time of diagnosis was 66 ± 11 years, 75% male gender, all with a history of heavy smoking habits (75 ± 18 pack years). The most frequent presentation was persistent cough, chest pain or weight loss. No significant arrhythmias, symptoms of heart failure or valve obstruction were noted. The most common histological types of primary lung cancer were adenocarcinoma (2 cases) and squamous cell carcinoma (1 case), located in the left hilum, left upper lobe and left lower lobe, respectively. The mean dimensions of lung carcinoma on CT were 59 ± 23 × 63 ± 49 × 55 ± 37 mm. The most common locations of cardiac invasion were the pericardium (2 pts, by direct extension from the adjacent lung) and left atrium (2 pts, by transvenous invasion through the left superior pulmonary vein), with mean dimensions of 23 ± 4 × 30 ± 3 mm in TTE or TEE. 75% of pts had a preserved left ventricular ejection fraction and 75% had mild or no pericardial effusion. Only 1 pt had severe pericardial effusion (33 mm) with hemodynamic compromise. Concomitant distant metastatic and lymph node involvement at presentation was also common, namely central nervous system (2 pts), mediastinal lymph nodes (2 pts) and contralateral lung (1 pt). Only 1 pt did not have other organ metastases at presentation. Regarding treatment options, only 1 pt was submitted to lung resection surgery, 2 pts to chemotherapy and 1 pt to radiotherapy. The authors found a mortality rate of 75% (the remaining pt had a recent diagnosis of stage IV lung cancer), with a median time to mortality of 7 months (minimum 24 days, maximum 23 months).
Conclusions: A high index of suspicion is necessary for the diagnosis of cardiac metastases and echocardiographic imaging is of paramount importance. Cardiac metastases represent a rare source of morbidity and mortality in pts with lung cancer and generally reflect widespread disseminated malignancy. Unfortunately, despite the evolution of diagnostic and therapeutic options, the prognosis remains dismal.

Keywords: *Lung cancer. Metastases. Cardiac metastases. Echocardiography.*

PC 073. LENT SCORE IN PROGNOSTIC ASSESSMENT OF MALIGNANT PLEURAL EFFUSION. THE IMPACT OF TKI THERAPY

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Introduction: The LENT score was developed as a risk stratification system to predict the survival of patients with malignant pleural effusion (MPD), calculated based on pleural fluid LDH, ECOG PS, serum neutrophil-lymphocyte ratio and tumor type. However, following the discovery of molecular markers and a new era of personalized therapy, prognostic estimation became a challenging exercise.
Objectives: Evaluate the performance of LENT score in predicting prognosis in patients with MPD and pulmonary adenocarcinoma.
Methods: Retrospective study of patients with MPD followed at the Pulmonology Department from 2008 to 2018. LENT score (L = pleural fluid LDH, E = ECOG PS, N = neutrophil-serum lymphocyte ratio and T = tumor type) was calculated at the time of diagnosis of MPD and patients classified into risk group. Survival was considered from the date of diagnosis of MPD until the date of death or the date of the last visit.
Results: A total of 152 patients with MPD secondary to lung adenocarcinoma were identified, but only the necessary analytical information could be obtained in 42 patients (mean age 76.4 ± 12.6 years, 52% female). Of these patients, 28.6% exhibited EGFR gene mutation or ALK gene translocation and received tyrosine kinase (TKi) inhibitor therapy, in contrast to 71.4% of patients without identification of mutational factors and receiving QT therapy. In the group of patients without identification of mutational factors, the average LENT score was 4 (3-6) and overall survival 77 (1-33116) days. About 33% of these patients were classified as high risk and 66.7% as moderate risk, with an overall survival of 37.5 (8-474) and 109 (1-33116) days, respectively, similar to that reported literature, 44 and 134 day. In the subgroup of patients receiving TKI therapy, the average LENT score was 3 (2-6), overall survival 430 (27-4243) days, with 7 patients still alive at the time of cut-off and with a median survival of 529 (197-1726) days. Of these patients, about 25% were classified as high risk and 75% as moderate risk, with an overall survival of 238 (27-529) and 1033 (177-4270) days, respectively, much higher than reported for 44 and 134 days. All risk groups of patients receiving TKI therapy had a longer survival than patients receiving conventional QT therapy ($p < 0.05$).
Conclusions: Overall survival in patients with MPD due to lung adenocarcinoma was similar to that predicted by the LENT score, except for patients with EGFR mutation or ALK translocation. In this subgroup, the LENT score seems to underestimate the prognosis of patients. Although this study has limitations regarding sample size,

it does reveal some limitations of the LENT score, demonstrating that it needs to be reviewed and revalidated in view of recent therapeutic advances.

Keywords: *Malignant pleural effusion. Lent score. Adenocarcinoma.*

PC 074. ANALYSIS OF THE HEADING RATIO N/L AND SURVIVAL IN PATIENTS TREATED WITH IMMUNOTHERAPY IN LUNG CANCER

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Introduction: Systemic inflammation response can be characterized by changes of peripheral blood cell amounts. The neutrophil-lymphocyte (N/L) ratio is a marker of general immune response in different stress situations, having shown a relationship between the quotient and the evolution of patients treated with immunotherapy, emphasizing the importance of inflammation in these patients. The aim of this study was to evaluate this relationship in a context of usual clinical practice.
Methods: We retrospectively reviewed patients with pulmonary neoplasia who received immunotherapy in the first line or successive, between 2016 and 2018. Data were collected from the clinical history, with attention to baseline neutrophil and lymphocyte numbers, response to therapy and overall survival, defined from the beginning of treatment until death.
Results: Forty-three patients were included (40 men, mean age of 64 ± 10 years) who received at least one cycle of immunotherapy. Predominant histologies were adenocarcinoma (58%) and squamous-cell carcinoma (33%). Median number of cycles was 10 (1-63). Two stretches of baseline N/L ratios ≤ 5 (low) and > 5 (high) were defined. Low ratio N/L was identified in 35 (81%) of patients and high ratio N/L in 8 (19%) of the patients treated. Of the 35 patients with a low ratio: 24 (69%) had disease progression, 10 (29%) had some type of response and one patient had PS reorientation. Among the patients with high N/L ratio, 6 (75%) presented progression and 2 patients responded to therapy. No statistically significant differences were observed on overall survival between the low N/L ratio group (34 weeks) and high N/L ratio group (39 weeks).
Conclusions: The N/L ratio has been identified in some studies as an adverse prognostic factor in patients treated with immunotherapy. Our data from the usual clinical practice don't support this theory, pointing out that other determinants may be involved.

Keywords: *Lung cancer. Immunotherapy.*

PC 075. EXTRANODAL MARGINAL ZONE LYMPHOMA OF THE LUNG. A LOW FREQUENCY DIAGNOSIS

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Introduction: Primary lymphomas of the lung are rare and in about 70% of the cases they are extranodal marginal zone lymphomas related to the bronchial mucosa-associated lymphoid tissue (MALT). MALT lymphomas with a pulmonary origin show a low incidence, corresponding to only about 0.1% of all the pulmonary neoplasms. Studies show a possible association between the development of this type of lymphoma and a chronical state of bronchial inflammation, although a specific causative agent has not been identified. It typically shows a slow evolution, with transformation into secondary forms of lymphoma, like diffuse large B-cell lymphoma, occurring in a minority of the cases.

Case report: 65 year-old male patient, admitted to the Pneumology Department after going to the ER with substantial worsening of his basal dyspnea. He denied any change in his basal pattern of cough and sputum, as well as fever or chest pain. In concerns with his past medical history, he was diagnosed with Idiopathic Pulmonary Fibrosis and lung emphysema, followed in Interstitial Lung Disease consultations and was under treatment with pirfenidone since 2017; in 2011 was submitted to a surgical procedure for a bronchial MALT lymphoma (it was performed a left superior lobectomy + lymphadenectomy, without adjuvant chemotherapy treatment). Ex-smoker since 2011 (25 pack-year), retired (pottery selling company), under treatment with Tiotropium Bromide/Olodaterol, Pirfenidone, Deflazacort, Esomeprazole and Ivabradine, long-term and ambulatory oxygen-therapy. During his hospital stay, for further work-up on his clinical situation, performed a chest CT, showing not only large areas of fibrosis, traction bronchiectasis and centrilobular emphysema, but also multiple areas of parenchymal densification, bilaterally, some of them nodular, with the biggest one (55 mm) located at the medial segment of the lower right lobe. Cytology study of the bronchial aspirate showed neoplastic cells, compatible with a B-cell lymphoma. PET-scan presented multiple nodular densifications, bilaterally, with intense hyper-metabolism, with the biggest one on the right middle lobe with 125 × 85 mm, and changes suggestive of gastric, intestinal and brain involvement. One of the right nodular lesions was approached by transthoracic biopsy, with the histological results confirming the diagnosis of diffuse large B-cell lymphoma. The patient was then submitted to chemotherapy with the R-CHOP scheme, showing positive clinical response after 6 months of treatment.
Discussion: This case-report pretends to portray a case of atypical evolution of a pulmonary neoplasm that has inherently a low incidence. We highlight the fact that even though a possible link between this diagnosis and a basal bronchial inflammatory state has already been suggested, it is mandatory, in the future, to further investigate the appearance of this type of neoplasm, its evolution and its link with other lung diseases.

Keywords: *Bronchial malt lymphoma. Diffuse large b-cell lymphoma. Idiopathic pulmonary fibrosis.*

Withdrawn abstract

PC 077. THE USE OF STOP-BANG QUESTIONNAIRE IN HYPERTENSE PATIENTS

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Introduction: Obstructive Sleep Apnea (OSA) is typically manifested by marked snoring, excessive daytime sleepiness, and apnea periods usually seen by others, and often is associated with hypertension (AHT) and obesity. Polysomnography is the goldstandard exam for OSA diagnosis; and the STOP-BANG questionnaire (S - Snoring; T - Tiredness during the day; O - Observed apnea; P - high blood Pressure (BP); B - body mass index (BMI) > 35 kg/m^2; A - Age > 50 years; N - Neck circumference (NC) > 43 cm in males or > 41 cm in female; G - Gender male) has been used as a screening tool for these patients, increasing the likelihood of diagnosis. This survey consists of a set of 8 easily asked questions classified into yes/no answers rated 1/0. The patient is at low risk of OSA if score ≤ 2 and at high risk if ≥ 5.
Objectives: To determine the risk of OSA, through the application of the STOP-BANG questionnaire, in patients followed on AHT consultation in a Health Unit (HU).
Methods: Observational and descriptive study. Population: patients followed on AHT consultation at a HU during an established period. Convenience sample: patients with AHT submitted to STOP-BANG questionnaire, being the only exclusion criterion OSA diagnosis already established. Variables: gender, age, BMI, BP, NC, snoring, tiredness, observed apnea, questionnaire result, Pulmonology referral and anti-AHT medication. Questionnaires were administered for 3 weeks and analyzed in SPSS.
Results: From a population of 95 patients, a sample of 89 was obtained and 6 were excluded due to OSA diagnosis already established. It was found: 43.8% male, 93.3% aged > 50 years and mean (± SD) age of 66.7 ± 10.8 years, 9% with BMI > 35 and average of 23.19 ± 12, 65.2% snoring, 11.2% tiredness, 11.2% observed apnea, 100% with high BP and 22.5% increased NC. 21.3% (n = 19) had a result ≤ 2 and 14, 6% (n = 13) had ≥ 5. In this last group, 13 patients had snoring, 5 tiredness, 7 observed apnea, 4 BMI > 35 Kg/m^2, 13 age > 50 years, 9 with increased NC, 10 male, 7 were referred to the Sleep Pathology consultation and 10 patients used 2 or more anti-AHT drugs. We found no difference in the number of anti-AHT drugs in low-risk patients in the STOP-BANG questionnaire compared to high-risk patients, 2.05 ± 0.78 vs 2.15 ± 0.90, p = 0.744.
Conclusions: Of the initial population, 6.3% had a diagnosis of OSA with instituted ventilotherapy and 14.6% had a high risk of OSA at STOP-BANG questionnaire. More than half of these were referred to the Sleep Pathology consultation, as they scored practically all the characteristics surveyed, and mostly were male. This study biases the type of sampling and the limited time period, which made the final sample consisted of a higher percentage of women than men. Although the relationship between AHT and OSA is established, we did not find a relationship between the number of anti-hypertension drugs and higher risk for OSA on STOP-BANG questionnaire.

Keywords: *AHT. OSA. STOP-BANG questionnaire.*

PC 078. CELLULAR AND MOLECULAR AGING MECHANISMS IN OBSTRUCTIVE SLEEP APNEA

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Introduction: Obstructive Sleep Apnea (OSA) is one of the most common sleep disorders worldwide and its prevalence is expected to continuously increase. Still, it is estimated that 80 to 90% of the OSA cases are undiagnosed. Untreated, OSA has been associated to functional decline, increased predisposition to several diseases and increased mortality. OSA-associated alterations resemble the typical physiological and functional decline observed along the aging process, however, untreated OSA patients seem to exhibit similar alterations at younger ages. We propose that OSA might promote/aggravate aging by inducing cellular and molecular aging mechanisms. Understanding OSA putative effect on aging and aging-related diseases may not only guide into new strategies to improve OSA diagnosis and treatment but also to counteract aging, a current global epidemics.
Objectives: To investigate whether OSA patients show peripheral aging-related cellular and molecular impairments and if OSA treatment can ameliorate such alterations.
Methods: A cohort of 6 Portuguese male patients [age: 53 ± 4 years; BMI: 32.1 ± 2.5] diagnosed with severe OSA [60.9 ± 12 apneas/hypopneas per hour - AHI] was followed from the moment of diagnosis with polysomnography - PSG (t0), up to 4 months (t4M) and 2 years (t24M) of treatment with standard continuous positive airway pressure (CPAP). In each phase (t0, t4M and t24M), blood was collected from enrolled subjects and peripheral blood mononuclear cells were isolated. Hallmarks of cellular and molecular aging were evaluated, namely, genomic instability (phosphorylated γH2AX, Chk1 and Chk2 protein levels), loss of proteostasis (mRNA and protein levels of autophagy-related proteins and ubiquitin levels) and telomere shortening. Results were compared to age-matched controls [age: 47 ± 7 years; BMI: 25.6 ± 0.5; AHI: 4.7 ± 0.8], validated by PSG, and younger controls [age: 24 ± 2 years; BMI: 23.5 ± 2.8]. This study was approved by the ethical committee of the Faculty of Medicine of the University of Coimbra and of Coimbra Hospital and University Centre.
Results: OSA patients show increased levels of phosphorylated Chk1 at t0 and t4M in comparison with age-matched and young controls ($p < 0.05$), an effect that was no longer observed at t24M. Regarding proteostasis impairments, OSA patients show a tendency of decreased beclin-1 levels at t0 and t4M that increase at t24M ($p < 0.05$). By opposite, at the mRNA level, there is an upregulation of Beclin-1, p62 and mTOR mRNA levels at t24M in comparison with patients at t0 ($p < 0.05$) and controls ($p < 0.05$). OSA patients telomeres also showed to be shorter than in controls ($p < 0.05$), at all the assessed phases and did not changed along treatment.
Conclusions: Our results show that OSA promotes/aggravates aging-related cellular and molecular impairments. OSA induces genomic instability, as evidenced by Chk1 increased phosphorylation, a re-

sponse to DNA damage. OSA may also compromise autophagy, as beclin-1 is a key regulator of autophagosome formation. Short-term treatment does not seem enough to recover from OSA consequences while long-term CPAP treatment might partially re-stablish some alterations. OSA-telomere attrition might be irreversible. The bidirectional interplay between OSA and aging will considerably help to increase OSA public awareness and the importance of healthy sleep, current society issues.

Keywords: *OSA. Aging. Genomic instability. Proteostasis impairments. Telomere attrition.*

PC 079. EVALUATION OF NIGHT-SHIFT THERAPY IN POSITIONAL OSA

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Introduction: Obstructive Sleep Apnea Syndrome (OSA) is a highly prevalent respiratory disease. In the subgroup of patients with positional OSA (POSA) positional therapy, which aims to prevent the supine position, appears as a therapeutic option.
The aim of this study was to evaluate the role of Night-Shift® electronic positional therapy devices in the treatment of POSA.
Methods: Prospective epidemiological study of patients with POSA who were prescribed with Night-Shift® in patients followed at our Sleep Medicine outpatient clinic. 29 patients with vibrating electronic devices placed in the posterior cervical region, with position detection algorithm and sleep efficiency (Night-Shift ®) were included. Devices have a validated algorithm. All Patients underwent level 2 polysomnography with Alice PDx tm (Philips®), which were manually staged by experienced technitions. In patients in whom positional POSA was detected and clinically indicated for treatment, positional therapy was proposed, among others: Positive pressure (PAP) or mandibular advancement devices. All patients agreed to experiment with positional therapy with Night-Shift® for 1 month, but 6 patients did not return to the reevaluation consultation and were not included. After placement of the positional device, patients were re-evaluated with reading Night-Shift® software and assessing sleep quality by the Pittsburg questionnaire. The reevaluations were made at 1, 3 and 6 months.
Results: We evaluated 23 patients, 13 men and 10 women, with a mean age of 50.7 years (± 13.4). The RDI on polysomnography averaged 22/hour (± 12), with AHI in the supine position averaging 40.9/hour (± 14). The prevalence of supine position was 50.6% (± 20.5). Clinical evaluation was performed in the first month in all patients, at 3 months in 13 patients and at 6 months in 8 patients, using the Pittsburg Questionnaire and Epworth Sleepiness Scale (EE). In the clinical evaluation of the patients the initial EE was on average 11.4 (± 5.4) and after the use of Night-Shift® 2.7 (± 0.8). 74% of patients reported good sleep quality and the device software showed an average of 84.4% sleep efficiency on the WASO scale. We had a good fit in 14 patients (61%) and 9 dropped out of therapy or switched to APAP (1 patient). Differences were found between sleep efficiency assessed by the device and that assessed in the Pittsburg questionnaire. We found as peculiarities that in shift workers there is recognition of the benefit of therapy but daytime sleepiness remains the same before and after therapy.
Conclusions: In patients with confirmed diagnosis of POSA, the use of positional therapies should be considered. In this study, Night-Shift® was considered by patients to be able to correctly avoid the supine position during sleep, which accompanied by a specific medical consultation, also allowed us to understand its influence on sleep efficiency. Further studies, preferably in the longer term, are needed to confirm the data disclosed herein.

Keywords: *Night-shift. Positional OSA.*

PC 080. ACCURACY AND USABILITY COMPARISON OF THE ALICE NIGHT ONE VERSUS ALICE PDX PORTABLE MONITORING DEVICE

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Objectives: To evaluate the accuracy and usability of the Alice Night One portable monitoring device compared to other portable device Alice PDx. To evaluate the accuracy and usability of the Alice NightOne ambulatory monitoring device compared to another portable device (Alice PDx) and the ability of Alice Night One to be used as another diagnostic tool, since it is easier to use than AlicePDX as it involves fewer sensors and the placement method is simpler.
Methods: Observational study in thirty three participants from the sleep consult who required a diagnostic sleep study. Once included in the study, patients undergo 2 diagnostic tests on 2 consecutive nights (first night - Alice PDx, second night - Alice NightOne) after receiving operating instructions and placement of both equipment, having performed the same at home. After these studies were completed, both were centrally classified.
Results: Sensitivity, specificity and correlation analysis were made. Comparisons between sensitivity and specificity were plotted using ROC curve analysis. Correlation analysis was made using Pearson coefficients and comparison between scored respiratory variables. Of the 33 patients recruited, only 31 were considered, which were those with analyzable results from both devices. Demographics: 5 women and 26 men, with a mean age of 50.55 and a mean BMI of 31.66 (20.3-43.8 kg/m^2). Alice Night One was in diagnostic agreement with Alice PDx in 71% of studies. In 19% of Alice Night One studies underestimated the Hypnopnea Apnea Index (AHI), and in 10% overestimated the AHI. Although there is a difference in diagnostic agreement there was no statistically significant difference in the comparison of AHI between equipments ($p = 0.287$). There was also a good intraclass correlation of 0.961 ($p < 0.001$) with an average bias of 1.43/h.
Conclusions: Of the 33 patients included in the study, after instructions, 31 were able to correctly configure both handheld devices at home, with Alice Night One being considered to be the easiest to configure. Despite the difference in diagnostic agreement, there were no significant differences in AHI. The results suggest that the Alice Night One portable monitoring device is highly accurate in its ability to detect and capture respiratory events during sleep and is easy for patients to use.

Keywords: *Sleep disturbances. Diagnosis. Ambulatory monitoring.*

PC 081. EVALUATING SLEEP APNEA PATIENTS USING A MOBILE APPLICATION. THE ESAMOBAPP STUDY

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Introduction: Obstructive sleep apnea (OSA) is associated with several serious health complications. Continuous positive airway pressure (CPAP) is an effective therapy for OSA, but adherence is a challenge. In the current technological era, strategies to improve adherence are necessary. We tested a mobile App designed to improve adherence to CPAP therapy.
Objectives: The aim of this study was to evaluate CPAP adherence in individuals who could access the mobile App.
Methods: Individuals were prospectively recruited by two national sleep centers within a 4-month period (September to December of 2018). Inclusion criteria were: adults with newly diagnosed OSA and Apnea-hypopnea-index (AHI) ≥ 15/h (moderate/severe OSA).

Fifty patients (n = 50) were included in the study. They were split into two groups based on a cut-off value of 50% mobile App usage (> or < 15 days of usage/month): The High App Use (HAU) and Low App Use (LAU) groups, respectively. After one month of treatment, adherence data was retrieved, and a satisfaction survey was applied.
Results: 26 patients (52%) were included in HAU group and 24 patients (48%) in LAU group. Both were homogeneous relative to age, Body Mass Index (BMI), Epworth Sleepiness Scale (ESS) and AHI. Women showed a higher App usage (p = 0.02; Wilcoxon). There was a significantly higher CPAP adherence in the HAU compared to the LAU group (73% vs 25%; p = 0.001; Fisher's exact). Comparing HAU and LAU groups, there was a lower percentage of patients with residual AHI > 5 (19% vs 29%) despite no significant difference. Adaptation to CPAP treatment was superior in the HAU group (85% vs 50%; p = 0.01; Fisher's exact). 96% of patients in the HAU group considered the mobile App helpful and only 25% of patients in the LAU group considered it unnecessary (p = 0.04; Fisher's exact). 73% of the patients considered that the mobile App increased self-confidence while using CPAP (p = 0.001; Fisher's exact). Air leaks were lower with App use, without statistical significance. In the HAU group, 73% of patients learned about OSA through the App usage.
Conclusions: Mobile App usage significantly increased CPAP adherence. The App was considered to be helpful, increased self-confidence and knowledge about the disease and respective treatment. It also significantly increased CPAP adaptation and seemed to help to control air leaks, contributing to a lower residual apnea-hypopnea-index.

Keywords: *Obstructive sleep apnea. Adherence. Mobile app.*

PC 082. FROM SUSPICION TO DIAGNOSIS OF SLEEP APNEA SYNDROME. ANALYSIS OF PATIENTS REFERRED TO HOSPITAL CONSULTATION

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Introduction: Sleep Apnea Syndrome (SAS) has a high impact on quality of life and represents a frequent and growing reason for referral to hospital consultation, with very long waiting times. Some symptoms and characteristics of the patient are suggestive of this diagnosis and motivate referral.
Objectives: Identify the specialties that send patients to the Sleep Breathing Disorders (SBD) consultation and determine the percentage of confirmation of SAS for each one.
Methods: Prospective study of patients observed at the SBD consultation of University Hospital São João with suspected SAS who performed level 3 Polysomnography and symptom based questionnaires, between January and June 2019.
Results: A total of 380 patients were analyzed, with a mean age of 57 (± 13) years old and male predominance (64.5%). The mean BMI was 31.3 (± 6.3) kg/m^2 and 55.3% had obesity. Most patients had other comorbidities, such as hypertension (60%), dyslipidemia (44.2%) and diabetes mellitus (22.1%). Most patients reported snoring (67.5%), in addition to assisted pauses or gasping and nocturia (38.2% each). The average score of the Epworth Sleepiness Scale was low (8.4 ± 5.4). SAS was confirmed in 328 patients (86.3%). More than half had moderate to severe SAS (60.7%) and 53.7% started treatment with positive pressure. Patients were sent mainly by General and Family Medicine (GFM) with 30.3%, followed by Otorhinolaryngology (ENT) with 16.1%, Internal Medicine (10.5%) and Neurology (9.2%). Of the patients referred by Pulmonology, 91.7% had confirmation of clinical suspicion. SAS was also confirmed in 88.7% of cases sent by GFM, 87.5% of Internal Medicine cases and 86.9% of ENT cases. Regarding severity, GFM presented the highest percentage of moderate to severe SAS (62.6%), followed by Pulmonology (58.3%) and ENT (55.8%). More than half of the patients sent from Pulmonology, Internal Medicine and GFM initiated positive pressure treatment (66.7%, 55% and 51.3%, respectively), mainly with auto-CPAP.
Conclusions: The high percentage of confirmation of SAS suggests an appropriate referral to SBD consultation by most specialties. In addition, a good number of cases revealed moderate to severe SAS requiring treatment initiation, a proper indication for evaluation in hospital consultation. This study confirms GFM as the main origin of these patients, revealing a good tendency in the criteria used for referral, due to the amount of confirmed diagnoses and the severity of the cases sent.

Keywords: *Sleep apnea syndrome. Referral. Hospital consultation. Diagnosis.*

PC 083. KEY STRATEGIES FOR ADAPTATION TO VENTILATION THERAPY ACCORDING TO PROFILES AND BARRIERS OF INDIVIDUALS WITH OSAS: THE REALITY AT HOME

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Introduction: Apnea/Hypopnea Obstructive Sleep Syndrome is characterized by a partial or complete obstruction of the upper airways during sleep. OSAS is more common in obese men, but it also affects women with some major risk factors. Knowing that a good adherence and adaptation is preponderant to achieve therapeutic efficacy, there are many obstacles presented by individuals with OSAS in adapting to therapy.
Objectives: The main objective of this study is to identify and systematize the main profiles and barriers presented by patients with Portuguese OSAS at the time of adaptation to ventilotherapy and the principal strategies presented by health professionals to facilitate the adaptation and adherence to therapy.
Methods: A prospective and observational study was conducted between January and August 2019. The analysis is based on the collection of the main profiles and objections presented by individuals during the adaptation to Auto-CPAP therapy in the home environment and the main strategies used to promote therapeutic adherence. The most frequent profiles were stratified: female, male, active population, non-active population, bed partner or sleeping alone, driver or not. We present which are the key strategies of the CRD health professional based on the motivational focus.
Results: It was found that many of the objections presented were transversal between groups; there are several common objections to patients in the same group/profile. The female and active population is more resistant to adaptation and, consequently, less therapeutic adherence, even with the key personalized strategy outlined by the CRD health professional. Two important moments of positive reinforcement and/or strategic re-evaluation were identified, namely 1 week after the adaptation and 1 month after the adaptation, moments in which the intervention so that the patient has the greatest possible comfort significantly contributes to increase adherence and treatment effectiveness.
Conclusions: Adequate personalization and behavioral communication at the time of adaptation to A-CPAP/CPAP therapy increasingly play a predominant role in individuals with OSAS, given that they are mostly active individuals. The gender and daily life of each individual, as well as age, marital status, profession and symptomatology are factors to be taken into account in order to adopt a personalized strategy.

Keywords: *CPAP. Barriers. Comfort. Home respiratory care. Personalization. Behavior.*

PC 084. ALTERATION OF LONG-TERM AUTO-CPAP THERAPY TO CPAP IN INDIVIDUALS WITH THERAPEUTIC EFFICACY: WHAT IS THE INFLUENCE ON ADHERENCE?

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Introduction: Obstructive sleep apnea-hypopnea (OSA) is characterized by a partial or complete obstruction of the upper airways during sleep. In moderate or severe clinical situations, the gold standard of treatment is Auto-CPAP (Automatic Continuous Positive Airway Pressure), CPAP (Continuous Positive Airway pressure) or Bi-PAP (Bi-level Positive Airway Pressure). Adherence to ventilation therapy is considered to exist if there is use of more than 4 hours over a period of more than 70% of nights and therapeutic efficacy whenever clinical improvement is associated with an AHI < 5/h. These treatments are provided at home by health professionals within the scope of Home Respiratory Therapies.
Objectives: The main objective of this study was to assess the influence on adherence after changing from Auto-CPAP to CPAP therapy in long-term patients (> 2 years) who had therapeutic efficacy with A-CPAP treatment. The secondary objective is the correlation of other variables related to patient comfort (leaks, change of interface).
Methods: An observational, retrospective and longitudinal study was conducted between 7/2018 and 7/2019 in the northern region of Portugal (districts of Porto and Aveiro), with 1,123 individuals being followed up with Auto-CPAP ventilatory mode therapy. All these individuals started therapy in the Auto-CPAP mode to treat sleep-disordered breathing. The sample whose patients had been undergoing therapy for at least 2 consecutive years, with therapeutic efficacy, and who, after medical consultation, changed from ventilatory mode to CPAP mode, was 47 individuals (4%). Thirteen individuals were excluded because they had other changes besides the therapeutic mode (humidifier adaptation, interface change, etc.), so the final sample was 34 individuals.
Results: 34 individuals changed therapy from A-CPAP to CPAP for therapeutic efficacy. 22 were male (65%) and 12 female (35%). The individuals had a mean age of 64 years (± 8.6). The percentage of withdrawal due to inadequate CPAP therapy was 11.8% (4/34). The results of the individuals after 3 months of therapy (n = 30) were: AHI (events/h) in A-CPAP of 2.05 (± 1.7) and in CPAP of 1.9 (± 2.1), the adherence to therapy (h) in APAP was 6.4 (± 1.6) and in CPAP of 6.1 (± 1.4), with% > 4h in A-CPAP of 88.6 (± 10.6) and in CPAP of 88 (± 15.1). Regarding the leaks (l/min) we obtained A-CPAP 15.4 (± 7.8) and CPAP 22.5 (± 17).
Conclusions: Approximately 90% of patients adapted to CPAP, maintaining therapeutic adherence and therapeutic efficacy. However, they have higher leak values, with an impact on patient comfort, which may compromise long-term therapy. The correct follow-up of these individuals, especially in phases of therapy modification, is essential.

Keywords: *OSA. Home respiratory therapies (HRT). Auto-CPAP/CPAP. Therapeutic efficacy. Therapeutic adherence.*

PC 085. IMPORTANCE OF SMOKING IN THE OBSTRUCTIVE SLEEP APNEA SYNDROME

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Introduction: Obesity and smoking are important risk factors for Obstructive Sleep Apnea Syndrome (OSAS). The relevance of smoking in OSAS results from the chronic inflammation of the nasopharyngeal mucosa associated with tobacco, with the consequent reduction of the calibre of the superior airway, facilitating its collapse during sleep.
Objectives: Analyse the impact of smoking habits in the diagnostic and severity of obstructive sleep apnea in a population undergoing pre-operative evaluation for bariatric surgery.
Methods: A patient sample was gathered from those followed in the sleep apnea consultations and already subjected to sleep studies (level I or III) at Beatriz Ângelo Hospital between January 2017 and April 2019. Smoking (actives or past) and non-smoking patients were compared for demographic, anthropometric, clinical (roncopathy and excessive daytime sleepiness), comorbidities (HT, diabetes and dyslipidaemia), and polysomnographic/polygraphic (AHI, T90, ODI) characteristics. It was considered a positive study for obstructive sleep apnea the presence of an Apnea-Hypopnea Index (AHI) equal to or above 5, being classified as mild, moderate or severe in accordance with the AHI (5 to 14, 15 to 29 and ≥ 30, respectively) and an Epworth score above 10 was indicative excessive daytime sleepiness. The Mann-Whitney test was used for the comparison of continuous variables, given that the sample was not normally distributed in these cases. For categorical variables, group comparison was used by means of Fisher's exact test.
Results: Of the 131 patients evaluated, 87 had no smoking habits (66.4%). The remaining 44 (33.6%), with active or past smoking habits, had an average load of 19.6 SPY. Within the group with smoking habits, higher prevalence of male patients (34.1% vs 14.9%; p = 0.012), higher daytime sleepiness (38.6% vs 19.5%; p = 0.019) and higher average cervical perimeter (42.89 ± 3.88 vs 41.05 ± 3.95; p = 0.005) were identified. However, a statistically significant difference in prevalence of OSAS diagnostic between the two groups was not found (86% vs 88%; p = 0.908), for any case severity. Nevertheless, a higher t90 period was identified (19.78 ± 27.14 vs 6.20 ± 13.71) in the patients with smoking habits, this with statistical significance (p = 0.003). There were also not found statistically significant differences between groups in what concerns presence of roncopathy (74.7% vs 79.5%; p = 0.539), comorbidities such as HTA (54.5% vs 48.3%; p = 0.498), diabetes (13.6% vs 17.2%; p = 0.595) or dyslipidaemia (36.4% vs 25.3%; p = 0.187).
Conclusions: Despite having been identified a higher average cervical perimeter and higher prevalence of daytime sleepiness among patients with smoking habits, a difference with statistical significance in what concerns the diagnostic of OSAS was not found. Nevertheless, the difference identified in T90 levels should be pointed out, as it suggests a role of smoking in this factor, therefore reinforcing the relevance of smoking cessation in this population.

Keywords: *Obstructive sleep apnea. Smoking habits. Male gender. Epworth score. T90.*

PC 086. SCREENING OF SLEEP BREATHING DISORDERS IN ACUTE HEART FAILURE

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Introduction: Sleep-disordered breathing (SDR) is underdiagnosed in patients with heart failure (HF). The ApneaLink™ is a validated level III home sleep device for assessing the Apnea/Hypopnea Index (AHI) and Cheyne-Stokes Breathing Index (RCS), allowing for earlier diagnosis and treatment.
Objectives: To evaluate SDB in patients admitted to an Advanced Heart Failure Treatment Unit.
Methods: Retrospective analysis of Resmed's ApneaLink™Air records in patients admitted to the Unit within the previous 5 years, diagnosed with decompensated chronic heart failure, after stabilization and/or previous suspicion of OSAS.
Results: 39 exams were evaluated. 33 patients were men (85%). The average age was 53.9 ± 15 years. 81.8% had a reduced left ventricular ejection fraction (LVEF). Regarding comorbidities, dyslipid-

emia and hyperuricemia were more frequent (63.2%, n = 24 in both), followed by obesity (62.1%) and arterial hypertension (57.9%). 51.5% of patients had exposure to tobacco smoke. 71.8% (n = 28) of the patients had an AHI ≥ 15. AHI was higher in patients with coronary artery disease (40.1 vs 24.0, p = 0.049) and lowest in diabetic patients (12.0 vs 25.1, p = 0.039), with no difference in AHI values of patients with hypertension, dysrhythmia, thyroid disease, hyperuricemia and dyslipidemia. The mean AHI was higher in men (30.5 vs 17.8, p = 0.173). Cheyne-Stokes respiration (CSR) was present in 48.7% (n = 19) of the patients, associated with higher AHI (37.8 vs 19.7, p = 0.005) and higher IDO (38 vs 18.8, p = 0.001). This pattern was more frequent in men (duration of 16.6% of registration time vs 2.7%, p = 0.012). 6 patients had CRS for ≥ 120min, with higher AHI and oxygen desaturation index (IDO) (50.5 vs 24.5 and 48.5 vs 24.5 respectively; p = 0.022).
Conclusions: HF patients have important nocturnal symptoms, and level III screening allows timely treatment of sleep pathology in these patients. However, in our study about 1/3 of the patients, once the cardiac decompensation period was over, was oriented to polysomnography to confirm the severity of OSAS/RCS and to determine the most appropriate home ventilation mode.

Keywords: *Sleep-disordered breathing. Heart failure. Cheyne-Stokes respiration.*

PC 087. QUALITY OF LIFE AND SLEEP OF HEALTH CARE PROFESSIONALS IN A CENTRAL HOSPITAL

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Introduction: Working in a hospital may be exhausting and tiring, often requiring shiftwork. These factors may have an impact on quality of life and sleep of health care professionals and burnout symptoms may occur.
Objectives: To analyze the quality of life, sleep, anxiety and depression in health care professionals (doctors, nurses and health care assistants), working at different departments of a central hospital.
Methods: Cross-sectional study in which data were collected using a questionnaire, randomly distributed to hospital workers, based on socio-demographic questions and sleeping habits, as well as the Portuguese versions of the following questionnaires: WHOQOL-Bref; Pittsburgh Sleep Quality Index (PSQI); Epworth Sleepiness Scale (ESS) and Hospital Anxiety and Depression Scale (HADS).
Results: A total of 125 health care professionals answered our questionnaire. The mean age was 34.5 years-old and 76% were female. A great proportion of health care professionals had a high weekly workload, 56% worked 45h/week or more and 68% worked night shifts. The majority of them also exhibited factors that contributed to a bad sleep quality, namely: daily consumption of energy drinks (76%) and bad sleep hygiene (84%) -referring workout practice before bedtime, regular use of tablet, computer or cell phone before going to bed and irregular sleep. Even though only 16% of health care professionals presented values suggestive of daytime sleepiness (ESS ≥ 11), a great proportion had bad sleep quality (69%) with PSQI scores ≥ 5. Regarding quality of life, the subjective evaluation of their quality of life, using the WHOQOL-Bref questionnaire was, in average, 3.61 (maximum 5). Concerning the evaluation of anxiety and depression, we found that almost half of the health care professionals (42%) had scores suggesting anxiety and a quarter had values suggesting depression in the HADS questionnaire (values > 7).
Conclusions: In our sample, health care professionals had a high workload and, most of them worked night shifts. It didn't seem to have great impact on quality of life and daytime sleepiness, probably due to our relatively young population. A great proportion had bad sleep quality and bad sleep habits which may be contributing to high levels of anxiety and depression, which in the long run can have harmful effects. It is important not only to create better working conditions but also to promote better lifestyle habits, to control anxiety and depression symptoms, so that hospital work does not become another exhausting factor for hospital workers.

Keywords: *Quality of life. Sleep. Health care professionals.*

PC 088. AGRICULTURE AND CHRONIC FUNGAL INFECTION. A CASE REPORT

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Introduction: Chronic pulmonary aspergillosis occurs in immunocompetent or mildly immunocompromised patients and is characterized by an indolent clinical course with the development of progressive cavitary lesions (with or without a fungal ball) or nodules on thoracic imaging and direct evidence of Aspergillus infection by biopsy or positive serum precipitins to Aspergillus fumigatus.
Case report: Sixty-seven year old woman, farmer, non-smoker with personal history of hypertension and dyslipidemia, was observed in the emergency department for hemoptysis for 2 days. She also referred dry cough, asthenia and weight loss of 4 Kg through the last 3 months. Physical exam showed HR 67 bpm, room-air SpO2 97%, BP 160/100 mmHg. Lung auscultation revealed slight crackles on the lower third on the right lung. Blood test showed mild increase on inflammatory parameters (CRP 4.40 mg/dL) and GGT (241 U/L). Chest radiograph displayed a round opacity with poorly defined limits located next to the hilus on the right, which was confirmed to be posterior. She underwent bronchofibroscopy, during which, a cloth was observed; however, there were no signs of active bleeding or endobronchial lesion. The patient was admitted an started therapy with amoxiciline/clavulanic acid. From the additional study, she underwent chest CT scan, which showed on the right inferior lobe several cavitary lung lesions, filled with necrotic material (air crescent sign), as well as cylindrical bronchiectasis. Aspergillus fumigatus was isolated in sputum and bronchoalveolar lavage; IgG Aspergillus fumigatus was positive. The diagnosis of subacute invasive pulmonary aspergillosis was assumed, and started therapy with voriconazol.
Discussion: Subacute invasive pulmonary aspergillosis, formerly called chronic necrotising or semi-invasive pulmonary aspergillosis occurs in immunocompetent or mildly immunocompromised patients and has similar clinical and radiological features to chronic cavitary pulmonary aspergillosis, but is more rapid in progression. In this particular case, the occupational context and the subsidiary exams were fundamental for the diagnosis and treatment of this unusual form of Aspergillus infection.

Keywords: *Pulmonary aspergillosis. Fungal infection.*

PC 089. RESPIRATORY VIRUS DETECTION DURING FLU SEASON IN AN INTERNAL MEDICINE DEPARTMENT

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Introduction: Viral respiratory infections, especially influenza, are an important cause of morbidity and mortality, especially when associated with complications such as secondary bacterial infection. Vaccination is the best way to prevention flu, especially important in risk groups. In Portugal, there are few studies about flu in ward.
Objectives: Characterization of the patients admitted in an internal medicine department (IMD) with a respiratory virus (RV) identified in respiratory secretions. Evaluate the impact of RVI during the flu season and development of a protocol for RVI's workup.

Methods: Observational and retrospective study, between October 2018 and March 2019, of patients admitted to an IMD, with a virus identified in respiratory secretions. Data obtained from the electronic clinical files. Statistical analysis performed using the SPSS®.
Results: A total of 275 respiratory virus detection tests were made, with 37% positive (n = 102); 8 patients were excluded because they were discharged. Sample constituted of 94 patients, 56.4% female (n = 53), median age of 71.5 years (IQR = 60.8-82.0), a functional index of approximately 90% and a median Charlson Comorbidity Index of 1 (IQR = 0.0-3.0). The Influenza virus A was the most frequent (87.2%; n = 82), followed by the Respiratory Sincitial Virus (16%; n = 15). The median length of hospital stay was 7 days (IQR = 4.0-11.0). The mortality rate was 10.6% (n = 10), 60% male (n = 6), median age of 83 years (IQR = 75.0-87.8), median length of stay until death of 7.5 days (IQR = 4.8-10.0). There was no statistically significant difference between the two agents, regarding these variables. Secundary bacterial infection was considered to be present in 36.2% of cases (n = 34). Analysing the inflammatory biochemical markers, the sample presented a median C-Reactive Protein (CRP) of 25.2 mg/L (IQR = 7.7-70.5), with 14.1 mg/L (IQR = 5.85-50.6) being the median in patients with viral infection and 37.0 mg/L (IQR = 15.4-120) in those with secondary bacterial infection. In 77.7% (n = 73) of the patients no leukocytosis was reported. There was 6 procalcitonin assays, median value of 0.1 ng/mL (IQR = 0.05-0.39). Empirical antibiotic therapy was instituted since admission in 85.1% (n = 80) of patients and empirical antiviral in 40.4% (n = 38). Viral isolation promoted discontinuation of antibiotic therapy in 17.5% of cases (n = 14) and antiviral institution in 76.8% (n = 43). In 40.4% of the cases (n = 38), there was flu vaccination, with lower median delay (5 days versus 7), without statistical significance.
Conclusions: There was a high profitability of virus scans, with INF-A being the most frequently identified. Isolations allowed therapeutic change in 60.6% (n = 57) of the cases. Empirical antibiotic therapy was started in 85% (n = 80) and was discontinued in 17.5% (n = 14) of the patients. At discharge, secondary bacterial infection was considered in only about 1/3 of patients (36%; n = 34). This allows us to infer the difficulty in distinguishing between isolated viral etiology of secondary bacterial infection. There were few procalcitonin assays, a biomarker that may help distinguish these two etiologies. Vaccination seems to correlate with a shorter hospitalization delay.

Keywords: *Viral respiratory infections. Ward. Influenza. Respiratory syncytial virus.*

PC 090. INHALED AMIKACIN FOR TREATMENT OF PULMONARY NONTUBERCULOUS MYCOBACTERIAL DISEASE

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Introduction: Nontuberculous mycobacterial (NTM) are difficult to eradicate. Usually, treatment of NTM pulmonary disease requires a prolonged multidrug regimen, with non-negligible toxicity and limited efficacy. Inhaled amikacin has been proposed as an option for refractory Mycobacterium avium complex (MAC) pulmonary disease.
Methods: Retrospective analysis of patients with NTM pulmonary disease that have been proposed for amikacin inhalation therapy in Centro de Diagnóstico Pneumológico de Gaia, between 12/2017 and 08/2019. All patients were submitted to tolerance test to inhaled amikacin (clinical evaluation and spirometry at baseline and after amikacin inhalation). Exclusion criteria for starting the antibiotic: poor tolerance, namely decrease in FEV1 ≥ 15% following inhalation of amikacin.
Results: From a total of 10 patients, one was excluded because FEV1 dropped by 26.6% (200 mL). All patients started inhaled amikacin after a 3 to 6 months period of lead-in with injectable amikacin.
Conclusions: Inhaled amikacin can be a valuable therapeutic adjunct in some patients with refractory NTM pulmonary disease. In our cohort, there were no significant adverse events. Prospective studies are required to clarify the clinical efficacy and the safety profile of inhaled amikacin.

Keywords: *Inhaled amikacin. Nontuberculous mycobacteria.*

PC 091. INDIVIDUAL CONDITIONS AND CLINICAL RESPONSE IN PNEUMOCYSTIS JIROVECII PNEUMONIA: A RETROSPECTIVE ANALYSIS

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Introduction: Pneumocystis jirovecii is a major cause of pneumonia in immunocompromised individuals. Its prognosis may be associated with some pre-existing conditions and influenced by timing of adequate treatment institution.
Objectives: This study aimed to estimate the burden of immune compromise states and to evaluate the impact of individual risk factors on patient response and mortality, during treatment for Pneumocystis jirovecii pneumonia.
Methods: Retrospective analysis of patients admitted under hospitalization with pneumocystis jirovecii pneumonia over a period of 6 years, performing data recollection of individuals submitted to search and with identification of this agent in respiratory samples. Measurements included immune compromise conditions, timing of appropriate treatment institution, length of hospitalization and presence of poor prognostic factors frequently described in literature.
Results: Data of 45 individuals were collected. They were mostly of male gender (n = 33; 73.3%). The mean age was 59.6 ± 14.8 years (minimum 28; maximum 84 years). Human immunodeficiency virus infection (n = 17), solid or haematological neoplasms (n = 17), chronic corticosteroid therapy (n = 13), cases of antineoplastic chemotherapy regimen (n = 10) and kidney transplant recipient (n = 3) were identified in the sample. A low control of pre-existing condition(s) resulted in a delay in clinical response (29.5 ± 18.1 days versus 22.6 ± 10.7 days, with a p value of 0.205). In eighteen patients (40%) agent-directed antibiotic was instituted seven or more days after hospitalization. A statistically significant association was found between timing of appropriate treatment institution and death occurrence ($p < 0.05$). During appropriate treatment of infection, there were reports of shock (n = 9; 20.0%) and invasive mechanical ventilatory support (n = 6; 13.3%). In-hospital mortality rate was 26.7% (n = 12).
Conclusions: This analysis highlights the impact of non-controlled pre-existing disorders over clinical response to specific treatment of Pneumocystis jirovecii pneumonia. This study suggests that a delay in appropriate treatment institution may have a negative influence on patients' survival; a high index of suspicion is necessary in the presence of immune compromise conditions. Future studies/ trials will be essential to confirm these, and other data recently published.

Keywords: *Pneumocystis jirovecii pneumonia. Mortality. Immune compromise.*

PC 092. PNEUMONIA IN THE IMMUNOCOMPROMISED PATIENT. CASE REPORT

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Introduction: Pneumonia is one of the most common invasive infections in immunocompromised patients and still carries both a high mortality and morbidity rate. Symptoms and signs may be mild and

pathogenic microorganisms differ from the most common in the general population.
Case report: 75-year-old Caucasian man with a history of diffuse large-cell non-Hodgkin's lymphoma (undergoing the sixth cycle of chemotherapy, in remission), AHT, COPD, high suspicion of hypersensitivity pneumonitis, unknown history of varicella infection, denies flu vaccination. He presented to the ER with a clinical history of cough, fever and pruritic skin lesions with four days of evolution beginning on the thorax and with a craniocaudal distribution. The physical exam revealed tachypnea, with signs of respiratory distress; pulmonary auscultation with bronchovesicular murmur maintained bilaterally, with crackles scattered throughout both lung fields; inspection with dispersed and variable size erythro purpuric maculopapular lesions without sparing palms, plants and scalp, which did not blanched to digital pressure. Analytically with leukocytosis and neutrophilia, hyponatremia and increased C-reactive protein. Gasimetrically with type 1 respiratory failure. Chest X-ray with bilateral pleuroparenchymal lesions. Chest CT showed a honeycomb-patterned pulmonary fibrosis, as well as areas of interstitial lesion with a ground-glass pattern. Initially the main differential diagnoses were viral pneumonia in an immunocompromised patient vs community-acquired pneumonia associated with vasculitis in the context of hematologic disease. The patient underwent treatment with oxygen therapy, antibiotic therapy, antiviral and corticotherapy. On the third day of hospitalization the patient evolved to respiratory failure requiring endotracheal intubation and transfer to a Intensive Care Unit. Bronchofibroscopy revealed bronchial mucosal lesions similar to those of the skin. Cultural examination of bronchial secretions was negative. Serologies: Negative for Legionella, Weil-felix, Widal, HIV, VDRL and Pneumocystis jirovecii. PCR research of Herpes Varicella-Zoster virus in the blood was positive. Skin biopsy revealed histopathological findings compatible with herpetic infection. The patient showed an improvement in rash and breathing pattern at 2 weeks of treatment but the weaning from invasive ventilation was unsuccessful. The patient died on the 36th day of hospitalization.
Discussion: Herpes zoster is about 5 times more common in patients with hematologic cancers when compared with the general population. Between 5% and 15% of cases of adult chickenpox will produce some form of pulmonary illness. Immunosuppression is a risk factor for progression to pneumonia in a herpetic infection. Varicella pneumonia has a relatively high rate of respiratory failure, but early diagnosis with prompt administration of antiviral medication can improve outcomes.

Keywords: *Pneumonia. Varicella-zoster virus. Immunossupresion.*

PC 093. PASTEURELLA MULTOCIDA PNEUMONIA: THE IMPORTANCE OF ANAMNESIS

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Introduction: Pasteurella multocida (P. multocida) is a Gram-negative, commensal aerobic bacteria present in the oropharynx of pets, such as cats and dogs, and which in humans may be responsible for scratching or bite infections. Skin and soft tissue infection is the most common cause, and the respiratory tract being the second most common site of infection, affecting mainly individuals with underlying chronic lung disease, immunocompromised and elderly.
Case report: 43-year-old female from Romania living in Portugal for the last 12 years. Active smoking (10 cigarettes/day). Right pneumonia in April 2018. Denied usual medication. Profession: shellfish collector. Indicated the presence of cats and dogs at home. In August 2018 she went to the Emergency Department with a clinical condition with about 15 days of evolution, characterized by cough with mucopurulent sputum, functional dyspnea, asthenia and weight loss of about 2.5 kg. Denied fever or chest pain. She referred a dog bite and contact with sick cats. Cardiopulmonary auscultation revealed crackles in the base of the right hemithorax. Analytically with elevation of inflammatory parameters (CRP 16.7 mg/L) and with normocytic and normochromic anemia. Arterial blood gases without alterations. CXR showed condensation in the middle lobe and the sputum smear was negative. For a complementary diagnostic study, and considering it was a second episode of pneumonia with the same radiologic localization, a CT scan was performed, which showed consolidation with air bronchogram in the external segment of the middle lobe and bronchofibroscopy, which revealed the presence of large mucopurulent secretions at the level of the middle lobar bronchus and the basal pyramid; P. multocida multisensitive was isolated in the aspirate and bronchial lavage performed. She had 10 days of amoxicillin/clavulanic acid with good clinical, analytical and radiological evolution. Not yet motivated for smoking cessation, but gradually reduced consumption (about 5 cigarettes/day). Analytical study of autoimmunity and immunology was normal. Maintained follow-up in Pulmonology consultation.
Discussion: P. multocida is a zoonotic agent that can cause a wide spectrum of infections in humans. Beta-lactam therapy for 7 to 14 days is the treatment of choice for P. multocida pneumonia, and in this case, the good clinical and radiological resolution occurred after its establishment. Obtaining a detailed clinical history, particularly with regard to contact with animals, is essential for the suspicion of this etiological agent, for the selection of the pertinent diagnostic/therapeutic complementary exams and for the implementation of appropriate antibiotic therapy.

Keywords: *Pasteurella multocida. Pneumonia. Zoonosis.*

PC 094. CHRONIC COUGH: A CHALLENGING DIAGNOSIS

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Introduction: Chronic cough is a common clinical complaint, with relevant impact on patient's life quality. The main causes are the postnasal drip syndrome, asthma, bronchial hyperractivity, gastroesophageal reflux disease, smoking, chronic bronchitis, emphysema, atopy and drug iatrogenesis, among other less frequent causes. Clinical history and physical examination suggest the etiology in over half the cases, nevertheless, achieving a diagnosis might be challenging.
Case report: The authors present the case of a 79 year-old woman, non-smoker, with previous occupational exposition to cork for 20 years. She has a medical history of gastroesophageal reflux and a hemodynamically significant aortic stenosis, the last one proposed for surgical intervention. The patient is followed in Primary Health Care due to 10-month long complaints of dry, irritative cough, which worsens in the supine position. She was also recently evaluated at a pulmonology consultation due to chronic cough and identification of a 6 mm pulmonary nodule on chest CT. The patient goes to the emergency department of Hospital de Santa Maria due to an increase in cough intensity, haemoptoic sputum and chills. She reports two respiratory tract infections in the last three months, treated on an outpatient basis. At evaluation the patient is hemodynamically stable, with a 96% peripheral oxygen saturation. Chest auscultation reveals crackles on the lower third of the right pulmonary field and global wheezing. Additional investigation reveals elevated analytical inflammatory parameters and a consolidation in the middle lobe on chest radiograph. The patient is admitted at the pulmonology ward due to community-acquired pneumonia and initiates empirical antibiotic therapy. Chest CT reveals a cavitary middle lobe pneumonia and no other changes are described. Despite the decrease in inflammatory parameters, there is maintenance of episodes of dry cough and intermittent wheezing. Bronchofibroscopy is performed, revealing a partial obstruction of the intermedi-

ate bronchus by an 8 mm larger diameter animal bone, which is removed, following complete resolution of the previously mentioned complaints.
Discussion: The approach to chronic cough follows an etiological investigation logarithm, largely supported by response to therapy directed to the most common causes. The identification of etiologies often implicated in cough may delay the diagnosis. We emphasize the importance of identifying alarm signs, such as haemoptysis, recurrent respiratory tract infections, and complaints or physical examination changes which are persistent, therefore requiring additional investigation.

Keywords: *Chronic cough. Foreign body.*

PC 095. PULMONARY ACTINOMYCOSIS. THE GREAT MIMIC

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Introduction: Actinomycosis is a rare, indolent and slowly progressive granulomatous infection caused by species of Actinomyces, facultative anaerobic Gram-positive bacteria. Pulmonary actinomycosis results from aspiration of oropharyngeal or gastrointestinal secretions into the respiratory tract, with risk factors being poor hygiene or oral mucosal lesions and dental procedures. The diagnosis of asymptomatic pulmonary actinomycosis is difficult, not only due to the rare isolation of these bacteria in culture, but also due to the imaging presentation of the infection as a slowly growing mass, mimicking pulmonary tuberculosis, lung abscess or neoplasia. The definitive diagnosis is based on histological or microbiological confirmation.
Case report: We report the case of a 77-year-old retired non-smoking logistician with a known history of essential hypertension, dyslipidemia, and peripheral venous insufficiency for whom she was treated and pleomorphic parathyroid adenoma. Surgical dental treatment of various dental parts since 2 years ago. Referenced to Pulmonology consultation for 8 months of evolution of tiredness and significant weight loss, without cough, sputum, dyspnea, fever, night sweats or other symptoms. Thoracoabdominal-pelvic CT scan with right upper lobe apex mass 4 cm of spiculated contours, suggestive of primary neoplasia, with small central cavity, without adenopathy or other findings. Objectively eupneic at rest in room air, pulmonary auscultation with vesicular murmur maintained bilaterally, without other alterations. CT-PET scan showed right upper lobe injury without suspicious metabolic expression. Analytically without relevant changes, tumor markers (NSE, SCC, CYFRA-21, CEA) within normal range. Bronchofibroscopy was normal, brushed and bronchial lavage was performed at the right upper lobe level with negative cultures and negative cytology for neoplastic cells. He repeated a new bronchofibroscopy with lavage in the right upper lobe with the presence of numerous filamentous structures morphologically compatible with Actinomyces spp. Given the clinical context and the findings of the complementary exams, the diagnosis of pulmonary actinomycosis was admitted and hospitalization was proposed for intravenous antibiotic therapy with high doses of Penicillin G for 6 weeks. Negative blood cultures. A chest CT-scan at discharge revealed evolution of the right upper lobe lesion to a 38 mm pneumatocele in close contact with a small-caliber bronchus. Given the favorable clinical and imaging evolution, the patient was discharged and indicated to maintain oral antibiotic therapy with Amoxicillin (1 g 8/8h). Six months after the beginning of therapy, the patient was asymptomatic, with weight recovery and imaging improvement of the lesion.
Discussion: Response of pulmonary actinomycosis to treatment should be monitored radiologically, with expected lesion decrease at 4 weeks of treatment. Surgery is reserved for cases that are complicated or unresponsive to medical therapy. This case reinforces the importance of differential diagnosis of pulmonary Actinomyces infection with tuberculosis, lung abscess or neoplasia as well as the rapid initiation of prolonged directed therapy to prevent disease progression.

Keywords: *Actinomycosis. Lung. Differential diagnosis.*

PC 096. AN UNUSUAL CASE OF OBSTRUCTIVE PNEUMONIA

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Introduction: Endobronchial chondromas are rare benign tumours made entirely from mature hyaline cartilage. They may appear in the larynx, trachea or the main bronchi.
Case report: We present a case of a 69-year old woman, non-smoker, with a history of hypertension for which she was medicated with olmesartan/hidroclorotiazide 20 mg/12.5 mg. She presented to the emergency room with a 3-day history of fever and left pleuritic chest pain. On physical examination she had no fever, was hemodynamically stable and showed no alterations on auscultation. A blood analysis was performed and showed C-reactive protein of 196 mg/dL and leucocytosis (17,000/uL) with neutrofilia. A thoracic CT scan revealed an alveolar pattern densification of the anterior segment of the left superior lobe, with air-bronchogram, that made contact with the mediastinal pleura, suggesting an underlying pneumonic process. She completed a course of levofloxacin with total recovery and after 4 months, a new CT scan was performed, revealing complete radiological clearance.
In order to exclude a possible neoplasm as the underlying cause for the radiological exuberance of our case, in a patient without any relevant medical history, a bronchoscopy was performed. The result showed a nodular endobronchial lesion of unknown etiology, in the anterior segmental bronchi of the left superior lobar bronchi, with partial obstruction. Bronchial biopsy showed inflammation and the cytologic analysis of the bronchial aspirate was negative for neoplastic cells. Another bronchoscopy was performed and, once again, the cytology of the bronchial aspirate and brush were negative for neoplastic cells. Histological analysis of the lesion revealed an endobronchial chondroma. The patient remained asymptomatic, without any new pneumonia episodes. A conservative strategy was decided, with follow-up consultations.
Discussion: Endobronchial chondromas are usually diagnosed late, because of their slow growth rate and unspecific symptoms. In our case, the bronchial obstruction caused by the tumour led to an episode of obstructive pneumonia, whose exuberance raised the clinical suspicion of a possible underlying endobronchial process which ultimately led us to the diagnosis.

Keywords: *Endobronchial chondorma. Obstructive penumonia. Bronchoscopy.*

PC 097. ACUTE RESPIRATORY ILLNESS IN SICKLE CELL ANEMIA: INFECTION VERSUS VASO-OCCLUSION

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Introduction: Sickle cell disease is the most common hereditary hematological disease, with a global prevalence of 7%. It is a hemoglobinopathy caused by the substitution of the sixth amino acid in the beta-globin chain, glutamate, by valine. This results in the formation of hemoglobin S (HbS). The transmission pattern is autosomal recessive, which means only homozygous individuals (SS) develop sickle cell anemia, while heterozygous individuals are carriers and mostly asymptomatic. When deoxygenated, HbS polymerizes, causing distortion of the erythrocytes, which become less flexible.

This loss of erythrocyte deformability is responsible for hemolysis and vaso-occlusion, the hallmarks of the disease. Vaso-occlusive crises can occur in any organ, and frequently affect the lungs. A severe complication, with a 25% mortality rate, is the acute thoracic syndrome (ATS), which can present similarly to pneumonia, with fever, cough, chest pain and hypoxemia, as well as de novo opacities in the chest radiograph.
Case report: The authors present the case of a 22-year-old female patient with sickle cell anemia (SS), medicated with hydroxyurea. She had had several recent hospital admissions for respiratory infections, and had been referred to Pulmonology clinic after pneumonia complicated with left pleural effusion. Since then, she had two other admissions for necrotizing pneumonia. Despite clinical improvement after antibiotic therapy, the chest radiograph showed a persistent opacity in the left lower lung field. She was admitted to the Pulmonology ward, presenting with high fever, dyspnea and left chest pain aggravated by inspiration, after being treated as an outpatient initially with amoxicillin/clavulanic acid, and subsequently with levofloxacin. The same roentgenographic changes were present, and blood tests revealed leukocytosis and elevated C-reactive protein, as well as acute anemia, requiring transfusion support. The patient was started on a course of piperacillin/tazobactam and linezolid, with clinical and laboratorial improvement. However, no causative agent was identified, even in culture of bronchoalveolar lavage. A previous CT pulmonary angiogram had excluded pulmonary embolism. Therefore, she underwent a ventilation/perfusion lung scan, which showed a perfusion defect in the left lower lung. These findings favored the hypothesis of vaso-occlusive events, which were admitted as the cause of repeated respiratory infections in the left lower lobe. After antibiotic and analgesic therapy, the patient's clinical status improved. She was then discharged and referred to Thoracic Surgery, to be evaluated for surgical resection of the necrotized area.
Discussion: The relationship between vaso-occlusive crises and respiratory infections is complex. Due to splenic infarcts, patients with sickle cell anemia are more susceptible to respiratory infections caused by capsulated organisms, such as Streptococcus pneumoniae. Moreover, areas of pulmonary consolidation, such as those occurring in pneumonia, create a hypoxic environment, which favors HbS polymerization, erythrocyte deformation and vaso-occlusion. On the other hand, repeated vaso-occlusive phenomena can result in pulmonary infarct and necrosis, which favor the development of infection. Both entities can coexist in the same patient, and a multifaceted approach is required to ensure the best prognosis.

Keywords: *Sickle cell anemia. Vaso-occlusive crisis. Acute thoracic syndrome. Pneumonia.*

PC 098. FROM RARITY TO REALITY: PNEUMONIA BY RAOULTELLA ORNITHINOLYTICA

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Introduction: The genus Raoultella is an aerobic Gram-negative bacterium within the Enterobacteriaceae family. Even though there are few cases described, the species Raoultella ornithinolytica appears as aetiologic agent in several diseases, mainly in urinary tract and systemic infections, and most rarely in Pneumonia, Sepsis or Peritonitis.
Case report: The authors present a case of a former smoker (60 pack-years), 74-year-old male, with diagnosed Chronic Obstructive Pulmonary Disease (COPD) GOLD 4B (under Budesonide 200 µg and Umeclidinium/Vilanterol), chronic respiratory failure under long-term oxygen therapy (0.5 L/min/24h) and arterial hypertension. He was admitted in Emergency Room in July/2019 with mucopurulent sputum and nasal obstruction with 3 days onset. At observation, had peripheral oxygen saturation of 84% (with 0.5 L/min oxygen through nasal cannula), with no fever, and breath sounds globally diminished at auscultation. In chest radiograph showed a homogenous hypotransparency in upper half of the left hemithorax. Blood analysis had increased inflammatory biomarkers (leucocytosis with neutrophilia and CRP of 28.82 mg/dL). In blood gas analysis, only had moderate hypoxemia (pO2 65). It was assumed a community-acquired pneumonia (CURB 2) and started IV therapy with Amoxicillin/Clavulanic acid (1.2 g) and Clarithromycin (500 mg), after sampling blood and sputum cultures. In sputum was isolated Raoultella ornithinolytica and Escherichia coli, sensitive to on-going antibiotherapy. In day 4 of therapy, after clinical and analytical deterioration (hypoxemia with hypercapnia), he started Non-invasive ventilation and increased Amoxicillin/Clavulanic acid dosage to 2.2 g 8/8h. He underwent Computer Tomography of Thorax (CT Thorax), which revealed a consolidation area with air bronchogram in upper left lobe and a gas-filled cavity, suggesting necrosis. At day 8, he started fever and had a radiograph aggravation, assuming Nosocomial pneumonia, collecting new blood and sputum cultures and switching antibiotherapy to Piperacillin/Tazobactam (4,500 mg) and Vancomycin (1,000 mg). All of the cultures were negative. He completed a total of 14 days of Piperacillin/Tazobactam and 11 days of Vancomycin with favourable response, clinically, analytically and imagiologically (reduced size of the cavitation), and therefore clinical discharge. It was assumed an exacerbation of COPD (GOLD D) due to necrotizing community-acquired pneumonia by R. ornithinolytica and E. coli, and probable nosocomial pneumonia with no microbial agent identified.
Discussion: The authors highlight the case, not only for the rarity of the causal aetiological agent, but also for the specificity of the diagnostic method used (Matrix Assisted Laser Desorption/Ionization, MALDI-TOF MS), which is only available in a few amount of hospitals. Even though there are few cases described and without knowing the real pathogenicity and virulence of this bacteria, the clinical features presented appear to be similar to the literature. The identification of this bacteria can be useful, not only in epidemiologic context, but also because it's described to produce beta-lactamase, leading to multiresistant. They also highlight the importance of performing additional studies to understand the real prevalence and incidence of pneumonia by Raoultella ornithinolytica and identify risk factors.

Keywords: *Cavitated necrotizing pneumonia. Raoultella ornithinolytica.*

PC 099. LUNG ABSCESSES AND EMPYEMA DUE TO FUSOBACTERIUM NECROPHORUM

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Introduction: Fusobacterium necrophorum is an anaerobic bacteria that is rarely isolated in daily practice. It is strongly associated with Lemierre Syndrome, which is characterized by the classic triad of thrombophlebitis of internal jugular vein after oropharyngeal infection (mostly tonsillitis) and detection of this agent in microbiological specimens. Outside the context of this syndrome, it is very rarely described but there are some reports of cases of bacteremia and septic metastization to lung, liver, bone, etc. in which the initial infections focus was gastrointestinal or genitourinary tract.
Case report: We report a case of a 36 years old man, smoker of 20 pack-years, with high consumption of alcohol (average of four beverages per day), without any other relevant medical or past history. He presents with productive cough and dyspnea for small efforts, worsening in the last three days, only two weeks after being hospitalized with a presumptive diagnosis of acute gastroenteritis. In this

new episode, he presented septic shock on admission (Blood pressure of 74/40 mmHg; heart rate of 166 bpm) and his arterial blood gas test documented a PaO2 of 59.7 mmHg and lactates of 7.5 mmol/L. His chest radiography detected a right pleural effusion of large volume. After thoracentesis, observation of purulent liquid and harvest of specimens for microbiology, a chest drain was introduced and a total of 1800mL of liquid was drained. Blood cultures (aerobic and anaerobic) were also obtained and the patient started an empiric antibiotic - Piperacilin/Tazobactam. As it was necessary to begin aminergic support, patient was first admitted to intensive care unit. A chest computed tomography was preformed and the patient showed to have consolidation areas, some of which with cavitation and a few well defined necrosed nodules, distributed in both lungs, mainly peripherally. Abdomen evaluation showed a liver mass, measuring 95 × 73 × 34 mm, compatible with abscess. When the patient was clinically stable, he was transferred to Pulmonology service, where it was known the results of hemocultures and microbiological exam of pleural effusion, all positive for Fusobacterium necrophorum.
Discussion: Despite bacteremia due to F. necrophorum being very rare (< 1% of all bacteremia), when associated to Lemierre Syndrome, metastases of septic embolus is very common, particularly to liver, bone and lung, not being exceptional the development of empyema in that context. This case is different because criteria for that syndrome it's not met, with a probable infectious focus in gastrointestinal tract. There is scant reports of Fusobacterium infection with a focus that is not presumably located at the level of the head and neck. Other particularity of the case is that this patient didn't present any risk factor, beside the alcohol consumption, that could contribute to the development of this infection: immunosuppression, diabetes mellitus, chronic kidney disease, bad dental status/hygiene or drug dependence/habits.

Keywords: *Empyema. Abscess. Bacteriema. Lemierre syndrome.*

PC 100. FEBRILE NEUTROPENIA TO ROTHIA MUCILAGINOSA PNEUMONIA, A CASE REPORT

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Introduction: Rothia mucilaginosa is a gram-positive coccus micrococcaceae that is part of the normal microflora of the mouth and upper respiratory tract. Although it is believed to be of low virulence, it is increasingly recognized as an opportunistic pathogen mostly affecting immunocompromised hosts. The infections caused by this pathogen are generally quite rare, but R. mucilaginosa should be considered in the diagnosis of pneumonia in this group of patients.
Case report: We present the case of a 66 year-old man, diagnosed with a stage IV squamous cell lung cancer in September 2018, under chemotherapy with gemcitabine and cisplatin, the last cycle on 6th November. He was admitted on the 14th November 2018 with cough, haemoptysis, pleuritic left chest pain and fever since the previous 3 days. On admission, his body temperature was 39.5 ºC, pulse rate 122/min, respiratory rate 26 breaths per minute, pulse oximetry 88% (FiO2 21%) and blood pressure of 128/65 mmHg. Chest auscultation revealed diffuse crackles at the upper third of left hemythorax. Laboratory study showed a total white cell blood count of 2,060/mm^3 (neutrophils 520), hemoglobin 7.4 g/dL, platelet count of 22,000/mm^3, and C- reactive protein level of 115 UI/L. The chest CT revealed an increase of the cavitated lesion in the apical-posterior segment of the left upper lobe (compatible with the known lung tumour), currently with 74 mm, with a larger wall thickness, inseparable from an extensive parenchymal consolidative component, believed to be attributable to a concomitant respiratory infection. Due to a diagnostic hypothesis of febrile neutropenia secondary to pneumonia he was empirically treated with amoxicillin-clavulanic acid (1.2 g) and clarithromycin (500 mg). It was also performed a bronchoscopy with bronchoalveolar lavage (BAL) (on the 2nd day of antimicrobial treatment), that didn't reveal signs of active bleeding or endobronchial lesions. After three days of treatment, there was a mild clinical improvement but the maintenance of fever and an increase of C-reactive protein level to 150 UI/L, guided the change of antimicrobial treatment to piperacillin-tazobactam (4.5 g). After 3 days, there was a resolution of fever, improvement of neutropenia and a decrease on C-reactive protein. The culture of BAL identified Rothia mucilaginosa, with susceptibility profile to ongoing antimicrobial treatment, so it was confirmed the diagnosis of severe pneumonia to Rothia mucilaginosa, without bacteraemia (3 negative blood cultures), so it was completed 14 days of piperacillin-tazobactam with complete clinical and laboratorial improvement.
Discussion: As there are few documented cases of pneumonia due to Rothia mucilaginosa, the authors believe that presenting this case will be of great interest. The variable susceptibility of R. mucilaginosa to beta-lactams, aminoglycosides, macrolides and fluoroquinolones dictates that the choice of antimicrobial agents should be guided by individual susceptibility tests in cases of severe infection. Early diagnosis and timely administration of appropriate antimicrobial treatment are necessary to obtain a favourable outcome.

Keywords: *Lung cancer. Rothia mucilaginosa. Febrile neutropenia. Pneumonia.*

PC 101. ROUND PNEUMONIA: UNUSUAL PRESENTATION OF PNEUMOCOCCAL PNEUMONIA

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Introduction: Round pneumonia is a rare subtype of lobar pneumonia which arises due to a developmental defect in connective tissue (pores of Köhn and channels of Lambert). Although it is a well-known entity in childhood, is rarely described in adults. It presents normally as small and solitary nodule, but densities can be multiple and larger. Most cases are attributed to Streptococcus pneumonia but microbiologic study must also include agents of atypical pneumonia. Authors present a case of a previously healthy 30-year old smoker that presented with multiple pulmonary nodules due to Strep. Pneumonia.
Case report: A 30 year-old Caucasian female, teacher, presented with a six-day history of cough with sputum, dyspnea, high fever, chills, asthenia and pleuritic left chest pain, with progressive worsening. Her medical history noted for smoking (10 pack -year), breast cysts and sinusitis. She denied any chronic medication or known allergies. She referred contact with a student with influenza A virus flue but had no recent history of travelling to foreign countries or animal exposure. On admission she was febrile, sweaty, pale and had bilateral discrete bilateral crackles on auscultation. Her arterial blood gas analyses at room air revealed hypocapnia (FIO2/PaO2 0.23) and elevated lactate. Laboratory workup showed thrombocytopenia, elevated C-reactive protein and acute kidney disease. Chest X-Ray revealed round densities on both lungs and blunting of the left costophrenic angle. Nose swab was negative for influenza A virus but S. pneumoniae urinary antigen was positive. Blood cultures were collected and patient was started on intravenous ceftriaxone and azytromicin. Four hours after her emergency admission and despite medical therapy and oxygen supply her vital signs and blood gas analyses worsened dramatically (FIO2/PaO2 2.12), CT scan showed multiple large roundshaped consolidations with air bronchogram and she was admitted to the intensive care unit. Further microbiologic study with search for agents of atypical pneumonia was performed but negative and repeated blood, sputum and urine cultures were persis-

tently negative. The patient showed progressive clinical improvement with lung consolidations resolution and she was discharged after 3 weeks of hospital treatment.
Discussion: Differential diagnosis of multiple pulmonary nodular opacities is wide and includes tumor involvement, particularly if risk factors are present. Also, infection, immunological causes, metabolic or vascular causes or professional diseases. Septic presentation and decrease in size/resolution of lung nodules after antibiotic therapy favors an infectious cause. Round pneumonia is a rare subtype of lobar pneumonia, that presents as nodular opacities, mostly described in children. In conclusion, authors aim to raise awareness since multiple-lesion round pneumoniae is an infrequent but benign cause of multiple pulmonary nodules.

Keywords: *Round pneumonia. Pores of Köhn. Channels of lambert. Streptococcus pneumoniae.*

PC 102. THEY WERE FUNGI AFTER ALL!

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Introduction: Single pulmonary aspergilloma is one of the most common and well-recognized forms of pulmonary involvement by Aspergillus spp, occurring predominantly in pre-existing cavitary lung lesions.
Case report: The authors present a case report of a 69-year-old female, non-smoking, textile worker (33 years) with a history of pulmonary tuberculosis at 20 years of age, referred to the attending physician for a clinical course of 3 months characterized by dry cough of nocturnal predominance and 3 episodes of small amount hemoptoic sputum. The patient underwent chest computed tomography which revealed nodular formation with irregular soft tissue density of 29mm and small calcifications in the apical-posterior segment of the left upper lobe with contrast uptake. The patient was referred for pulmonology consultation and underwent videobronchoscopy that presented total occlusion of the anterior segment of the left superior lobar bronchus and enlargement of the spurs of the apical-posterior segment of the left superior lobar bronchus. The pathological result was negative for neoplastic cells. Positron emission tomography/computed tomography revealed abnormal nodule hypermatabolism as well as mild to moderate hypermetabolism in the left hilar region. Due to the location of the nodule, she was rejected for transthoracic biopsy and proposed for thoracic surgery (nodule excision) whose anatomopathological study reported an aspergilloma. The patient is now totally asymptomatic.
Discussion: The authors present the case by the unexpected diagnosis, as well as to demonstrate that not all lesions/lung masses correspond to malignant lesions, even if they present characteristics of malignancy.

Keywords: *Aspergilloma. Tumor.*

PC 103. HYDROCARBON PNEUMONITIS AFTER GASOLINE SIPHONAGE

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Introduction: Hydrocarbon pneumonitis following fuel aspiration is a rare form of acute pneumonitis. It's associated to professional exposure in fire-eaters workers or in siphonage of fuel (the latter are more rarely reported). The more common imagiological findings are atelectasis, consolidation with an air bronchogram and ground glass attenuation, most commonly in lower lobes and middle lobe (less frequently). Hydrocarbon pneumonitis is related with macrophages' activation, inducing bronchial edema, tissue damage and surfactant destruction; the inflammatory response is more important than the direct action of compounds. Usually, the patients recover without significantly sequels.
Case report: Male, 62-year-old, non-smoker, without relevant medical history, came to ED for accidental ingestion of gasoline after motor's siphonage. As he was asymptomatic and had no imaging or physical findings, he was under surveillance for a few hours and was discharged. He came again to ED after 10 days, reporting an episode of large volume hemoptysis. He referred to have dry cough, dyspnea and wheezing since the day of ingestion. At physical examination: hemodynamically stable, apyretic, oxygen saturation of 97% in room air, crepitations on the right inframammary region on pulmonary auscultation. Blood analysis without alterations. The chest radiograph revealed a right paracardiac opacity with silhouette sign. Computed tomographic (CT) scan of chest showed an irregular densification in the middle lobe, with 5 cm diameter, with bronchovascular involvement, air bronchogram and an adjacent ground-glass area. Considering imagiological pattern of bronchovascular involvement, the option was hospitalization for antibiotherapy and clinical surveillance. He had started empiric antibiotherapy with amoxicillin/clavulanate and azithromycin. Subsequently he performed a bronchoscopy, which revealed inflammatory signs in the middle lobar bronchus' mucosa, were the bronchial brushing was made. No microbiological isolations were detected and the bronchial brushing results were negative for neoplastic cells. Considering the clinical and imagiological improvement he was discharged for ambulatory consultation. The thorax CT scan was repeated one month later with a great improvement in the middle lobe densification, assumed in context of hydrocarbon pneumonitis. The patient stayed asymptomatic after discharge.
Discussion: The hydrocarbon pneumonitis is a relatively uncommon cause of acute pneumonitis. It is more frequent in the lower lobes, mostly on fire-eaters. In this case, the location on the middle lobe may be due to the fact that in siphonage the preferential position is the body leaning forward, while in fire-eaters (most reported cases) there is usually orthostatism while aspiration. The clinical presentation is often non-specific and includes dyspnea, cough, thoracalgia and hemoptysis. Frequently there is resolution of the condition in a few days just with conservative treatment. In such case, the asymptomatic period between aspiration and the symptoms led to considering other hypothesis such as infection or neoplasia, being treated with empirical antibiotherapy. Attention is draws to a less usual cause of aspiration pneumonia, being that the early diagnosis is important to the reduction of morbidity and anticipating other possible complications of hydrocarbon intoxication, both at pulmonary and organic levels.

Keywords: *Pneumonia. Aspiration pneumonitis. Hydrocarbon. Siphonage.*

PC 104. CHRONIC CAVITARY PULMONARY ASPERGILLOSIS

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Introduction: Chronic pulmonary aspergillosis comprises several manifestations of the disease, including simple aspergilloma, Aspergillus nodules, chronic cavitary pulmonary aspergillosis, and chronic fibrotic pulmonary aspergillosis. It usually occurs in patients with structural lung pathology, most often sequelae of tuberculosis and chronic obstructive pulmonary disease.
Case report: Male, 74 years old, smoker (50 pack year) with known medical history of pulmonary tuberculosis (PT), not treated, with left lung sequelae. Patient was observed in a Pulmonology consulta-

tion after the Emergency Department due to mild hemoptysis, increased inflammatory parameters and hypotransparency in the upper third of the left hemithorax. He underwent chest CT that showed a thick wall cavitation with the hypothesis of reactivation of PT, occupation by mycetoma, or infectious complication of bronchiectasis. Following the study, he underwent bronchofibroscopy: macroscopic non-specific inflammatory changes and, the bronchoalveolar lavage was positive for Galactomannan antigen and isolation of Aspergillus niger, and was negative for neoplastic cell, culture tests, and acid fast bacilli test. He started treatment with voriconazole 200 mg 12/12h; reassessment chest CT after 6 weeks showed decreased contents within the cavitation and the patient was clinically asymptomatic. There was a need for discontinue therapy for mild hepatic toxicity which he retook at a lower dose -100 mg 12/12h- after 12 days. On his own initiative, the patient discontinued antifungal therapy after 7 months of treatment. In the reassessment imaging exams it remained stable, with cavitation but no intracavitary nodular area.
Discussion: Surgical excision of simple aspergilloma is recommended. Long-term antifungal therapy is indicated for chronic cavitary pulmonary aspergillosis. Careful monitoring of antifungal serum concentrations, drug interactions and possible toxicities is recommended. Patients with single Aspergillus nodules only need antifungal therapy if not fully resected, but if multiple they may benefit from antifungal treatment.

Keywords: *Aspergillosis. Aspergillus. Mycetoma. Cavitation. Fungal infection.*

PC 105. OLIGOPHRENIA AND CHRONIC COUGH. WHAT TO THINK ABOUT?

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Introduction: Cough is one of the most frequent causes of visits to the doctor's office. The most common causes of chronic cough are postnasal drip, gasteroesophageal reflux disease and asthma. A chronic cough lasts longer than 8 weeks.
Case report: A 65-year-old male patient, non-smoker, oligophrenic, referred to General Pulmonology consultation for cough with 3 years of evolution and changes in chest radiography. During the physical examination, a non-cooperative patient with peripheral oxigygen saturation of 95%. The chest radiography showed a hypotransparent lesion in the right pulmonary base. The thoracic computed tomography scan disclosed a slightly curvilinear 4 cm-long linear image proximal to the right inferior lobar bronchus. Distally to this location, there were exuberant bronchiectasis and proximally multiple micronodular lesions suggesting inflammatory or infectious disease. The possibility of a foreign body –bone– was considered. The bronchofibroscopy reavealed swollen mucosa throughout the right bronchial tree, a plug secretions in the origin of the right lower lobar bronchus and the foreign body, that was resected. The bronchial aspirate was negative for neoplastic cells and the bronchial biopsy revealed respiratory mucosa with chronic inflammation associated with foreign body – bone tissue and colonies of microorganisms with Actinomyces morphology. He did doxycycline for 6 months. At follow up visit, the patient was clinically better, with no cough or sputum and with no changes in the chest radiography.
Discussion: Foreign body aspiration is an uncommon condition in adults and it is often associated with neurologic disorders. A detailed clinical history, a complete physical examination and appropriate diagnostic tools are essential for timely diagnosis and to prevent late complications.

Keywords: *Chronic cough. Foreign body.*

PC 106. THE CHERRY ON TOP OF THE DIAGNOSIS

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Introduction: Foreign body aspiration is more common in children than adults and symptoms can be very subtle in the latter group. The most common causes of foreign body aspiration in adults are age over 75, neurologic and psychiatric disorders, altered mental status and ineffective chewing by the use of inadequate dental prosthesis.
Case report: An 82-year-old male patient, ex-smoker, with previous history of chronic obstructive pulmonar disease, congestive heart failure, benign prostatic hyperplasia and dementia, referred to General Pulmonology consultation for dyspnea, productive cough and recurrent respiratory infections with 2 years of evolution. During the physical examination, patient with peripheral oxigygen saturation of 95%, without alterations. Previously, the patient did a chest radiography, a flexible bronchofibroscopy and a thoracic computed tomography scan. The chest radiography revealed a bronchovascular strengthening. The bronchofibroscopy showed an endobronchial mass with necrotic appearance and mucopurulent secretions partially obstructing the right upper lobar bronchus, that couldn't be removed with forceps or aspiration. The bronchial brush and biopsies were negative for neoplastic cells and the bronchial aspirate was positive for E. coli and M. morganii, susceptible to cefotaxime. The thoracic computed tomography scan disclosed a rounded and endoluminal nodular image with higher peripheral density and two foci of coarse millimetre calcifications located in the right superior lobar bronchus compatible with foreign body. The patient was admitted to the Pulmonology Department. The patient underwent rigid bronchoscopy, which confirmed the presence of a rounded formation, covered by purulent secretions at the level of the right upper lobar bronchus, compatible with a cherry stone, which was completely removed. The bronchial aspirate was negative for neoplastic cells and the bronchial biopsy revealed a non-specific chronic inflammation. After foreign body removal, the respiratory clinic improved and the patient was discharged in short term.
Discussion: Foreign body aspiration is an uncommon condition in adults, but if present can lead to potentially serious long-term complications, including aspiration pneumonia, bronchiectasis, hemoptysis, lung abscess and also mimics lung cancer in imaging.

Keywords: *Respiratory infections. Aspiration. Foreign body.*

PC 107. ROUND PNEUMONIA: CLINICAL CASE

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Introduction: Round pneumonia is a rare presentation of pneumonias. Is a bacterial infection that occurs most often in children and is manifested radiologically as an opaque rounded, well defined, in the lower lobes simulating a lung mass. It is a rare entity in adults representing less than 1% of cases.
Case report: The authors describe the case of a 36-year-old patient, female, observed by a vespertine fever, sporadic episodes of cough without sputum and easy tiredness with about four days of evolution. Smoker (10 units pack year), family history of cancer (father and uncle deceased by stomach cancer). Normal vital signs and without changes to the examination of respiratory system. The chest X-rays evidenced rounded image about 4 cm in diameter on the upper lobe of the left lung and the chest computed tomography (CT) showed nodular hyperdensity in the apico-posterior segment of the left lung (4 × 3 cm), with air bronchograms, contours irregu-

lar and discreetly apparent contact with the pleura, without pleural effusion. The patient was treated with amoxicillin + acid clavulanic and clarithromycin. Returned on the fifth day of treatment asymptomatic and chest X-rays revealed considerable improvement. On the tenth day of treatment, was again observed, asymptomatic and brought a new chest x-rays without changes.
Discussion: The pathophysiological mechanism of round pneumonia not well studied. It is thought that initially there is an exudative inflammatory process, which spread by direct extension through the pores of Kohn and the canals of Lambert, segmental distribution. Subsequently, the centrifugal spread peri-bronchial inflammatory process determines the appearance of segmental or lobar image. The radiological aspect is early stage round in the evolution of the disease. In children, the pores of Kohn are underdeveloped and the connective tissue septa and alveoli is scarce, which helps to produce more compact and confluent areas of margins bounded, more frequent in this age group. Being an entity infrequent in adults, the differential diagnosis must be made with round atelectasis, post inflammatory pseudo tumor, bronchogenic cyst, pulmonary sequestration, blastoma, arterio-venous malformation, hamartoma, metastases and mediastinal masses, when in contact with the mediastinum. The big clue to the diagnosis of pneumonia is the presence of air bronchograms inside the mass, often only provable by chest CT. The primary aetiological agent is the Streptococcus pneumoniae, although others like the Micoplasma pneumoniae, Chlamydia pneumoniae, Legionella pneumophila, Klebsiella pneumoniae, Coxiella burnetii, Mycobacterium tuberculosis, may be involved in less frequently. The treatment is essentially clinical and antibiotic treatment directed toward the primary aetiological agent must be indicated. Usually the clinical and radiological response is quick and favorable. Before a radiological rounded image, with air bronchograms without clinical signs that suggest malignancy is reasonable to formulate the hypothesis of round pneumonia and wait for the clinical response to antibiotic therapy, delaying diagnostic procedures of greater complexity.

Keywords: *Round. Pneumonia. Adult.*

PC 108. SALMONELLA EMPYEMA: THE HISTORY OF A RARE CASE

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Introduction: Salmonella is a pathogenic enteric agent responsible for gastrointestinal and extra-intestinal infections. Pleuropulmonary infections by these gram-negative bacteria are rare.
Case report: A 83 year old male patient attended the emergency department with a one-week history of fever (38.2 ºC), productive cough, dyspnea and pleuritic pain localized to the right hemithorax. He denied nausea, vomiting, diarrhea and had no history of smoking or respiratory diseases. The patient had a medical history of myelodysplastic syndrome with excess blasts, requiring blood transfusion support every fifteen days. At physical examination the patient was pale, afebrile and eupneic. Pulmonary auscultation revealed decreased of the breath sounds and dullness to percussion over the right base. Chest radiography showed right base opacification and thorax computerized tomography revealed a right loculated pleural effusion with adjacent parenchymal consolidation and mediastinal lymphadenopathy. The laboratory tests revealed anemia (Hb 6.8 g/dL; Htc 19.8%) no leukocytosis (5,700 cells/µL; 3.65 × 10^3/µL (60%) neutrophils) and an elevated C-reactive protein (36.2 mg/dL). Urinary antigen for Legionella and Pneumococcus were negative. Blood cultures were obtained. A diagnostic ultrasound-guided thoracentesis was performed, which revealed a purulent pleural fluid. Samples of fluid were sent for culture and cytological analysis. A thoracic chest tube was inserted, with drainage of 450 mL of purulent fluid. Respiratory physiotherapy was started. It was assumed pneumonia with empyema and empiric antibiotic therapy was initiated with amoxicillin/clavulanic acid associated with clindamycin. Pleural fluid revealed an exudate with the following parameters: pH 6.24, glucose < 5 mg/dL, lactate dehydrogenase 6,743 U/L and proteins 3.8 g/dL. Cytology: 97,600 cells/mm^3 with 99% neutrophils. Pleural fluid and blood cultures were positive for Salmonella enteritidis. Antimicrobial susceptibility testing showed sensitivity to cotrimoxazole, ceftriaxone, ciprofloxacin and ampicillin. Stool cultures were negative for pathogens. In the presence of Salmonella non-typhi bacteremia with empyema and on the basis of antibiotic sensitivity, were started intravenous ceftriaxone and ciprofloxacin, resulting in clinical and laboratorial improvement. After seven weeks of antibiotic therapy, with negative blood cultures, the patient was discharged, with significant imaging improvement.
Discussion: This patient was a successful case despite his uncontrolled hematologic disorder. The diagnosis was challenging by the lack of gastrointestinal symptoms and no leukocytosis. Pleuropulmonary disease due to non-typhoid Salmonella is extremely rare and has a high mortality but should be considered in immunosuppressed patients. In this case the source of the patient's Salmonella wasn't discovered.

Keywords: *Empyema. Salmonella.*

PC 109. SPECIFIC BACTERIAL VACCINES. SINGLE STIMULUS VERSUS REIMMUNIZATION

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Introduction: Specific bacterial immunotherapy (ITBE) is a relatively recent tool in infection prevention strategy and with scarce clinical experience data. However, there has been increasing interest in its application, especially in preventing exacerbations of chronic obstructive pulmonary disease (COPD), with good results.
Objectives: To evaluate the efficacy in reducing the number of exacerbations of patients with chronic respiratory disease and frequent infectious exacerbations, with and without repetition of stimulus.
Methods: Retrospective study of a convenience sample of patients followed at the Consulta de Readaptação Funcional Respiratória of the Pulmonology Department of the Centro Hospitalar Universitário de Coimbra, with frequent infectious exacerbations (3 or more) despite the best therapeutic strategies employed. ITBE was used as an add-on therapy. Demographic and clinical data were analyzed, namely number of exacerbations 1 year before therapy and 2 years after. The total number of patients after the first immunization was divided into two groups, one containing reimmunized patients and the other not, comparing the results.
Results: Sample consisting of 10 individuals, 40.0% male, mean age 62.5 years. Seven had non-cystic fibrosis bronchiectasis, 2 COPD and 1 patient Mounier Kuhn syndrome. Three patients were on or were on long-term azithromycin therapy, 1 patient on inhaled colistin and 2 on inhaled tobramycin (colonized with Pseudomonas aeruginosa). Of the total, 4 patients had bacterial colonization [Pseudomonas aeruginosa (4) and/or Haemophilus influenzae (1)] and received a personalized vaccine with a higher percentage of colonizing agent (at least 10% in the composition) associated with at least 50% of standard microorganisms. The remaining 6 received the standard vaccine. The 10 patients initially treated had an average of exacerbations in the previous year of 3.4 (0.7 with hospitalization). In the year after therapy the average number was 1.2 exacerbations (0.2 with hospitalization). The data were then analyzed again (1 patient excluded, died of stroke) on 4 reimmunized patients and 5 non-immunized patients. The reasons for repetition were not only presence/absence of benefit (which could introduce very important bias) but also cost and

convenience, allowing, in a way, to standardize the 2 groups (this is evidenced by the similar number of exacerbations both 1 year before and after ITBE of both groups). The average number of exacerbations of the reimmunized in year 2 was 0.8 (no hospitalizations) and in the non-immunized was 3.3 (0.8 with hospitalization). When comparing the groups, no statistically significant difference was obtained, namely in the number of exacerbations requiring hospital stay.
Conclusions: With the caveats of a very small sample, there seems to be a difference in the mean exacerbations between groups depending on whether or not reimmunization is performed (despite the absence of statistical significance probably due to sample size), suggesting, in line with the available literature, the benefit of this therapy is obtained and maintained with repeated stimulation.

Keywords: *Specific bacterial immunotherapy. Exacerbations.*

PC 110. WHAT IS THE IMPACT OF BACTEREMIA IN PNEUMONIA DUE TO S. PNEUMONIAE?

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Introduction: S. pneumoniae urinary antigen detection is a quick test with high sensibility and specificity. Isolation of the agent is important for identifying false positives and resistances, but in many pneumonias blood cultures are negative. The impact on prognosis of the presence of bacteremia on pneumonia due to Streptococcus pneumoniae (SP) is not clear.
Objectives: Comparative analysis of patients with community acquired pneumonia (CAP) due to SP admitted on an Intensive Care Unit (ICU), with or without associated bacteremia, relatively to comorbidities, organ failure and mortality.
Methods: Retrospective analysis of clinical and laboratorial data of patients admitted to an ICU for CAP due to SP, during a 5 years period. The patients were separated based on the presence or absence of SP isolation on blood cultures. Hyponatremia was defined as a serum sodium level under 135 meq/dL. Organ failure was defined as the need for invasive mechanical ventilation, vasopressors (norepinephrine or equivalent) or renal replacement therapy. The ventilator-free days and alive (VFD) on the first 10 days after admission to ICU were calculated for both groups.
Results: 28 patients were included, 12 with positive blood culture (PBC) and 16 with only positive urinary antigen test (negative blood culture - NBC). The majority was male (PBC 67% vs 56% in NBC), with a mean age of 60.3 ± 19.6 years old in PBC and 69 ± 13.8 in NBC (p = 0.218). Patients in NBC group have more frequently comorbidities (≥ 2, 31.3% vs 18.2%), namely heart failure (38% vs 25%), diabetes mellitus (38% vs 25%) and COPD (31% vs 8%), although less chronic renal failure (13% vs 17%) or human immunodeficiency virus infection (6% vs 8%); 19% of NBC were active smokers (vs. 8% in PBC). In PBC patients the presence of leukocytosis and hyponatremia, and also reactive C protein concentration (35.8 vs 37.0 mg/dL, p = 0.80) were similar to NBC group. The need for support of a least one organ was similar (PBC 33% vs 31% NBC; p = 0.91). The most common organ support was invasive ventilation (42% on PBC group and 25% on NBC, p = 0.350). The VFD was similar in both groups, 7.8 days in PBC group and 7.5 in NBC group. The need for vasopressor support and renal replacement therapy, in PBC and NBC groups, was, respectively, 25% and 31%, and 17% and 19%. The mean ICU length of stay (on survival patients) was also similar: PBC group 5.4 ± 2.0 vs 5.6 ± 4.9 days on NBC group (p = 0.55). The mortality rate was 17% with PBC and 13% with NBC (p = 0.755).
Conclusions: In this sample there was no evidence that bacteremia in patients with CAP due to SP was associated with higher severity or worse prognosis.

Keywords: *Pneumonia. Streptococcus pneumoniae. Bacteremia.*

PC 111. TUBERCULOSIS IN PATIENT UNDER BIOLOGICAL THERAPY

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Introduction: Biological therapy is associated with an increased risk of tuberculosis. Infliximab is a monoclonal antibody that counteracts the biological activity of Tumor Necrosis Factor Alpha (TNF-α), preventing its binding to its receptor. TNF-α is fundamental in the immune defense against mycobacterium tuberculosis, especially in the formation and maintenance of granulomas, so its inhibition, and thereafter the inhibition of the chemokine network regulated by it, increases the susceptibility to the development of tuberculosis disease. Tuberculosis disease in the context of anti-TNF-α therapy may result from reactivation of latent infection or infection during treatment. Preventive therapy in patients with latent tuberculosis significally reduces the incidence of tuberculosis disease, which is why a systematic screening of these patients is critical. Annual screening, as well as research on potential exposure to cases of tuberculosis during treatment may reduce the number of cases due to new infections. All patients applying for biological therapy should be screened. Screenings should be performed prior to the initiation of biological therapy and preferably at the time of diagnosis, before the introduction of any immunosuppressive therapy. Patients that maintain biological therapy should also undergo annual screenings if the first one is negative or whenever they are exposed to cases of tuberculosis.
Case report: We report the case of a 44-year-old male patient, diagnosed with Behçet's disease about 15 years ago and under infliximab therapy for 13 years, with no record of tuberculosis screening in his clinical record before or during treatment but a tuberculin skin test before starting therapy. He mentioned contact with two close relatives the year before but was never screened. The patient was sent to the Emergency Department via Rheumatology consultation with a 5-week history of afternoon-predominant fever, a cough that was initially dry and then productive, weight loss and anorexia. He also had evidence of bilateral micro-nodular pattern on chest radiography. Direct sputum examination was negative but IGRA (Interferon Gamma Release Assay) test was positive. Given patient's risk factors, he started antibacillary therapy after procedures for mycobacteriological and pathological examination. In addition to pulmonar involvement, the study showed a stenosing lesion of the right colon, which turned out to be an inflammatory lesion of the ileocecal valve after colonoscopy was performed. The biopsy revealed granulomatous terminal ileitis. Isolation of Mycobacterium tuberculosis was obtained from sputum culture.
Discussion: Treatment with biological agents, particularly TNF-α inhibitors, is associated with an increased risk of tuberculosis, specially the more severe forms of the disease such as disseminated tuberculosis. Tuberculosis is a present disease and particular attention should be taken in patients at risk in order to prevent reinfection, spread of latent tuberculosis or new cases of tuberculosis disease. Disease screening is important and should be adapted according to the population in study.

Keywords: *Tuberculosis. Biological therapy. Infliximab. Immunosupression. Screening.*

PC 112. SILICOSIS UNDER TUBERCULOSIS' SHADOW: THE IMPORTANCE OF THE CASE HISTORY

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Introduction: Tuberculosis remains a relevant disease in the modern society (16.6 notified cases/100,000 inhabitants in Portugal in

2018) affecting primarily the lungs, but also manifesting itself in other organs or systems, such as lymph nodes. The risk of tuberculosis increases in some populations, namely in patients with silicosis (chronic disease caused by the entry of silica dust into the lungs) with recent studies reporting a risk of tuberculosis development 2.8-39 times higher in these patients.
Case report: 41 year-old male patient, smoker (20 pack-year), pottery factory worker, went to the ER with complaints of weight loss (10 kg in 12 months), fatigue, anorexia, night sweats, productive cough with mucopurulent sputum and exertional dyspnea to moderate efforts. Work-up showed interferon gamma release assay non-suggestive of Mycobacterium tuberculosis infection, normal levels of serum angiotensin conversion enzyme, chest X-ray with bilateral hyperinsufflation and chest-CT with mediastinal and hilar adenomegalies, centrilobular and paraseptal emphysema, densification in the right lower lobe, ground glass nodules in the lingula and left lower lobe. PET-scan showed hyper-metabolism of the adenopathies. Bronchofibroscopy with bronchial aspirate and lavage showed negative PCR, direct and cultural examination for mycobacteria. Afterwards, the patient was submitted to a mediastinoscopy with mediastinal adenopathy biopsy, excluding lymphoproliferative disease and showing the diagnosis of probable tuberculosis. Tuberculin sensitivity intradermal reaction showed a discrete induration of 10 mm. In face of this clinical, imagiologic and histological results, maintained anti-bacillary therapy for 9 months, showing clinical improvement and weight gain (5 kg). Imagiologic follow-up showed persistence of the adenopathies with numeric stability but heterogeneous evolution in dimension and metabolic activity (only a few showed dimensional and metabolic decrease), and persistence of the bilateral pulmonary nodules with numeric and dimensional stability. Taking this heterogeneous evolution of the adenopathies into account, the patient was further questioned about his professional expositions, identifying an exposition to silica and feldspar, without the mandatory use of the individual protection equipments, framing this clinical case into a diagnosis of silicotuberculosis.
Discussion: The diagnosis of tuberculosis is frequently complex and not always linear. With this case report we aim to demonstrate that tuberculosis still remains a current diagnosis with high relevance, but also that therapeutic response can be conditioned by the existence of comorbidities such as silicosis, highlighting the necessity to identify potentially response modifying factors when the disease's evolution and/or its treatment doesn't correspond to the expected.

Keywords: *Tuberculosis. Silicosis. Silicotuberculosis.*

PC 113. TUBERCULOSIS, AN ATYPICAL FORM OF PRESENTATION

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Introduction: Tuberculosis is an infectious disease caused by Mycobacterium tuberculosis complex agent and the most affected organ is the lung. Extrapulmonary involvement can be found in 25% of cases: lymph nodes, pleura, central nervous system, pericardium, bones and kidneys.
Case report: Authors report a case of a male patient with 59 years old with past medical history of type 2 diabetes mellitus, ischemic cardiomyopathy, kidney stone disease and Still's disease receiving infliximab treatment for 18 years. The patient complained of a four month fever, night sweats and weight loss. Within that period, developed left forearm bursitis and cellulitis with no identified agent on synovial fluid and blood cultures. It was prescribed antibiotics with transitory recovery followed by clinical worsening with persistent fever. Complementary exams revealed: positive interferon-γ release assays (IGRAs) and a micronodular lung pattern was detected on chest radiography which motivated bronchoscopy. Afterwards the patient was sent to pulmonology appointment to clarify the diagnose. At that time the patient presented an exuberant oropharynx lesion, documented by the Otolaryngology department as a right tonsil pillar and palatine veil superficial ulcerative lesion with right tonsil pillar involvement, with symmetrical and normal mobility of the palatine veil. Due to malignant suspicion, biopsies were made but only revealed chronic granulomatous inflammation. After identification of acid-fast bacillus (AFB) on bronchoalveolar lavage, quadruple antibacilar therapy was initiated with resolution of oropharynx lesion, although maintaining fever. Treatment was altered due to detection of isoniazid molecular resistance (inhA gene mutation). Despite the treatment, there was recurrence of the bursitis (synovial fluid with AFB) and scrotal edema, with pus confirming the presence of AFB.
Discussion: This case report highlights atypical presentations of the disease such as lesions on oral cavity (only reported on 0.5-5% cases) and reinforces the importance of latent tuberculosis exclusion on patients submitted to anti-TNF alpha therapy, especially on cases treated before Portuguese society of pulmonology and rheumatology guidelines were published in 2006.

Keywords: *Tuberculosis. Anti-TNF alpha.*

PC 114. EXTRA-PULMONARY TUBERCULOSIS: 2 CLINICAL CASES

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Introduction: The incidence of tuberculosis has been decreasing in the past few years and Portugal is nowadays considered as a low incidence country. Extra-pulmonary tuberculosis comprises 12 to 20% of all tuberculosis cases and is more frequently observed in children and imunocompromised, hence the need of a high degree of clinical suspection.
Case reports: We firstly report a case of a female 52-year-old patient, non-smoker, with a past medical records of right tonsillectomy in 2017, with biopsy results of reactive follicular hyperplasia of tonsilar lymphoid tissue. In November 2018 the patient presented in our hospital with a 5-month old history of weight loss (5%), productive cough and a right painless submaxillary mass, adherent to deep tissue. Neck ultrasound showed a solid heterogeneous mass and neck and thorax CT displayed a right submandibular lesion with irregular margins, right tonsil enlargment, a pulmonar nodule in the upper left lobe (ULL), a micronodule in the lower left lobe (LLL) and bilateral mediastinal, right hylar and axillary left adenopathies. Bronchofibroscopy showed a lesion in the ULE bronchus with biopsy suggestive of lymphoid infiltrate, with normal bronchoalveolar lavage and bronchial secretions examination. PET demonstrated orofaryngeal thickening (SUV 6.69), pulmonar nodule in the ULL (SUV 5.69) and hypermatabolic changes in cervical, right supraclavicular, bilateral mediastinial, left hylar and left axilar lymph nodes. Transthoracic lung biopsy was performed, with no pathological abnormalities. The patient underwent left tonsillectomy, with biopsy displaying tonsillary tissue hyperplasia, and right cervical adenectomy, with a result consistent of necrotising granulomatous lymphadenitis of tuberculosis etiology. Diagnosis of pulmonar, lymph node and tonsilar tuberculosis was assumed and TB therapy started in April 2019, with a favorable clinical and imagiological outcome. The second case regards a 49-year-old female patient, non-smoker, with history of arterial hypertension, dyslipidemia, a stroke at 35 years of age with sequelae of epilepsy, Takayasu arteritis under prednisolone and azathioprine and anal canal adenocarcinoma at 46 years of age. In June 2019 the patient was admitted in our hospital for impaired left visual capacity and a diagnosis of ischemic optical neuropathy was made. During hospital stay, the presence of hyperpigmented skin scars in both legs, and one erythematous and puru-

lent plaque lesion, led to the performance of skin biopsy which revealed lobular panniculitis, Bazin induratum erythema like. The patient also tested positive for IGRA. Diagnosis of cutaneous tuberculosis was assumed and treatment for TB initiated, with a satisfactory clinical response.
Discussion: Extra-pulmonary tuberculosis presents itself in cutaneous form in 2 to 4% of cases, with the tonsilar form being even rarer1.3. Its diagnosis constitutes a clinical challenge, not only due to its plural forms of presentation but also because of the frequent need multidisciplinar discussion.

Keywords: *Cutaneous tuberculosis. Tonsillar tuberculosis.*

PC 115. EPIGLOTE NEOPLASIA AND PULMONARY TUBERCULOSIS: CONCOMITANT OR SEQUENTIAL?

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Case report: M.S.A, male, black, docker, native and resident of Luanda. Interned in May 2017 symptomatology about one month of evolution characterized by persistent cough with sparse hemoptoic sputum, progressive weight loss, anorexia. He denied chest pain, dyspnea, fever, excessive night sweats. Personal history: Pulmonary Tuberculosis for over 15 years; active smoker (20UMA), ethanolic habits 5 g/day. Family history: Not relevant. Objectively: Vigil, oriented and collaborative. Slim aspect. Flushed and hydrated, eupneic, acyanotic, anicteric. Vital parameters within normal range. Mouth, head and neck: No change. Thorax: No changes to inspection, palpation or percussion. AC: Audible, rhythmic, no wind. AP: Vesicular murmur maintained and symmetrical, without adventitious noises. Abdomen, members, neurological examination: No changes. Analyses: No changes worth highlighting. HIV negative serology. Negative smear microscopy. Chest X-ray (May/2017): with right apical heterogeneous opacity with cavitation outline. Diagnostic hypothesis: Reactivation of Pulmonary Tuberculosis/Infected Bronchiectasis/Neoplasia. Thoracic CT scan: "A cavity in the posterior segment of the right upper lobe is sequela in nature from an earlier inflammatory/infectious process. Another bullous lesion of apparent residual nature at the basal segment level. No mediastinal or hilar adenomegalies. Bronchofibroscopy: increased epiglottis volume with mucosal irregularity and irregular granulomatous lesions with pearly aspect extending to the right piriform sinus. Laryngeal tuberculosis?/Neoplasia of the right bronchial tree?). Bacteriological and mycobacteriological examinations were negative. During hospitalization, he was treated with ceftriaxone, aminocaproic acid, and the clinical evolution was favorable, and he was discharged awaiting the histological result of epiglottis biopsy, which revealed keratinizing squamous cell carcinoma. Which was why he was referred for medical oncology consultation. He was hospitalized again in August/2017 for right thoracalgia, cough with hemoptoic expectoration. Chest X-ray: worse, showing homogeneous opacity of rounded limits occupying the upper 2/3 of the right pulmonary field. Chest CT: Large, hyperdense lesion located on the 11-inch-long LSD with larger regular contours. Adjacent emphysematous bubble. No mediastinal or hilar adenomegalies. Pulmonary metastasis of epiglottis squamous cell carcinoma? Pulmonary Tuberculosis? Diagnostic bronchofibroscopy repeated: slight epiglottis irregularity (improved) in both bronchial trees with no indirect or direct signs of neoplasia, non-specific inflammatory signs at BLSD level where bronchial lavage was performed and BLSD division spur biopsy whose direct studies were negative. Given the epidemiological context and the radiological and endoscopic findings, it was decided to initiate first-line oral antibacillaries. There has been considerable clinical improvement with decreased coughing and sputum production, regression of chest pain, improved appetite and general condition. Radiological improvement was also observed, with a reduction in the dimensions and opacity density of the right upper lobe, which further supported the infectious hypothesis. Cultural examination of bronchial lavage. Analytically without relevant changes. Diagnosis: epiglottis squamous cell carcinoma + pulmonary tuberculosis (therapeutic test).

Keywords: *Pulmonary tuberculosis.*

PC 116. ENDOBRONCHIAL TUBERCULOSIS. A RARE PRESENTATION

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Introduction: Tuberculosis is an old infectious disease but still present in our days. It can present in many forms and affect many organs, although pulmonary involvement is the most common. It presents mainly as an insidious infection, with cough, fever and radiologically with alveolar opacities with a tendency to confluence and cavitation. We report a rare case of severe endobronchial and pulmonary tuberculosis in an immunocompetent patient.
Case report: A 74-year-old from China but residing in Portugal, with a previous history of psoriasis and an ischemic stroke without sequelae, resorted to the emergency department with severe weight loss, dry cough, wheezing, night fever and sweats, presenting with a heterogeneous hypotransparency with a cavitated lesion in the left upper lobe in the chest X-ray. Clinical history and radiological findings led to a high suspicion for pulmonary tuberculosis and in this context a videobronchofibroscopy was performed showing abundant whitish plaques in the vocal cords with antraconic lesions extending throughout the tracheal pathway and both bronchial trees, predominantly in the upper left lobe and with necrosis of the posterior apical segment. Acid resistant bacilli Mycobacterium tuberculosis was isolate in bronchial secretions and bronchoalveolar lavage microbiology. Thus, the diagnosis of pulmonary and endobronchial bacilliferous tuberculosis was established, which led to therapy with isoniazid, rifampicin, pyrazimanide and ethambutol. HIV research was negative. Due to the large extent of the disease affecting the larynx, trachea, the entire bronchial tree and the pulmonary parenchyma, the patient died after 4 months of antibacillary therapy.
Discussion: The evolution and prognosis of endobronchial tuberculosis varies, from complete resolution to severe endobronchial stenosis. Therefore its early diagnosis is very important, avoiding serious complications such as bronchiectasis, pulmonary destruction, respiratory failure and the need for endobronchial prostheses. We also underline the need for a high rate of suspicion for the diagnosis of M. tuberculosis infection, even in the absence of known prior contact and immunosuppression.

Keywords: *Laryngeal tuberculosis. Endobronchial tuberculosis. Bronchofibroscopy. Necrosis.*

PC 117. WIDESPREAD TUBERCULOSIS: ONE MUST SUSPECT THE GREAT MIMIC!

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Introduction: Tuberculosis remains a serious global public health problem. Its importance is most recently highlighted by the context of the human immunodeficiency virus pandemic, increasing use of immunosuppressive therapy, population aging and emergence of multidrug-resistant strains. In Portugal, tuberculosis is concentrated in the large urban centers where it has an intermediate incidence. Thus, a diagnosis remains to be taken into account especially in risk groups.
Case report: Female, 70 years old, partially autonomous, with relevant history of atrial fibrillation and valvular heart failure condi-

tioning chronic liver disease. She resorted to the emergency department for two weeks with progressive fatigue, anorexia, abdominal distension, constipation, fever and weight loss in the last year. The objective examination included: holositolic heart murmur III/VI (already known), distended abdomen, tympanized and painful upon right flank palpation. The exams performed at the emergency department showed: cholestasis pattern and CRP 12 mg/dL; abdominal ultrasound with evidence of hepatomegaly, echocardiography compatible with chronic liver disease, elongated hypoechogenic image, compatible with subcapsular hepatic hematoma, however atypia cannot be excluded and chest radiography with diffuse micronodular hypotransparency. In this context, she was admitted to the Medical Service for investigation and treatment, assuming as a probable diagnosis - hepatic neoplasia with pulmonary mestastization. During hospitalization, she maintained profuse sweating, fever, dysuria and polyaquiuria, without isolation of agent in cultural examinations. Urinary infections were admitted and two cycles of antibiotic therapy were completed. He underwent thoracoabdominal-pelvic CT: multiple dispersed micronodular formations, some of them coalescent, predominantly centrilobular, suggestive of miliary tuberculosis. Dysmorphic liver, oval hypodense area, which may be subcapsular hematoma. Contrast-marked thick-walled liquid areas in the upper peritoneal recesses as well as peritoneal fat densification may be infected and organized ascites. Bronchofibroscopy showed no endobronchial lesions and bronchoalveolar lavage revealed lymphocytic alveolitis (44% lymphocytes with decreased CD4/CD8 ratio). Bronchial secretions direct examination was positive for mycobacteria and positive nucleic acid amplification test for mycobacterium tuberculosis. Once confirmed the tuberculosis diagnosis, antibacillary were started. To better characterize the abdominal cavity imaging findings, the patient underwent abdominal MRI revealing multiple intraperitoneal liquid collections. Considering the patient's symptoms, the pattern of initial cholestasis (not characteristic of liver congestion secondary to heart failure, which leads to destruction of hepatocytes) and imaging changes, CT-guided aspiration puncture of the largest abdominal lesions was performed. Direct examination for drainage fluid mycobacteria was positive. Subsequently, cultural examination of bronchial secretions, bronchoalveolar lavage, blood and urine were positive for Mycobacterium tuberculosis confirming the diagnosis of disseminated tuberculosis.
Discussion: This case report reinforces that tuberculosis can affect any organ or tissue. Since its clinical manifestations are often systemic and nonspecific, early diagnosis can be difficult, (especially at age extremes such as the elderly) leading to disseminated disease. In summary, we stress the importance of clinical suspicion for early diagnosis and treatment in order to reduce morbidity and mortality risk.

Keywords: *Tuberculosis. Disseminated. Morbidity. Public health.*

PC 118. TUBERCULIN TEST VS IGRA IN LATENT TUBERCULOSIS SCREENING IN BIOLOGICAL THERAPY CANDIDATE

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Hospital Prof Dr. Fernando Fonseca.

Introduction: Tuberculosis remains a serious and important public health problem worldwide. Screening for latent tuberculosis infection includes exclusion of active disease and assessment of the immune response to Mycobacterium tuberculosis by the tuberculin skin test (TST) or interferon-gamma test (IGRA). The introduction of biological agents in the treatment of immune-mediated diseases increased the risk of tuberculosis reactivation for active disease.
Objectives: To compare the detection accuracy of TST and IGRA for latent infection screening in individuals with immunomediated diseases that are candidates for biological agents.
Methods: Retrospective study including patients proposed for biological agents that were screened for TBIL during 2017 in Centro Diagnóstico Pneumológico Dr. Ribeiro Sanches. Individuals with reaction values ≥ 5 mm (immunocompromised) or ≥ 10 mm (immunocompetent) in TST and concentration ≥ 0.35 IU/ml in IGRA-Quantiferon-TB were considered reactive. Data were collected by reviewing electronic medical records and data analysis was performed using Microsoft Excel 2010. K coefficient was calculated to determine concordance between the 2 tests.
Results: A total of 62 patients were included: 55% (n = 34) were females and 45.2% (n = 28) were males, with a mean age of 52.3 ± 14.2 years. We found that 87% (n = 54) had neither personal history of tuberculosis nor epidemiological contact, while 4.5% (n = 3) have reported contact with individuals with tuberculosis and 8% (n = 5) reported a history of previous TB. All patients underwent chest X-ray (n = 55) and/or chest CT (n = 30) and 17 had abnormalities in any of the exams. Tuberculin skin test (TST) was performed in 79.0% (n = 49) of patients and 81.6% (n = 40) was positive, 18.4% non-reactive (n = 9) and 13 with unknown results. The mean value of induration diameter was 16.9 mm, with a minimum value of 0 mm and a maximum value of 60 mm. Interferon gamma release assay (IGRA) was performed in 83.9% (n = 52) of patients and 65.4% (n = 34) was positive. HIV1/2 test was negative in 62.9% (n = 39) of patients and unknown in the others. Among the results of concordant TST and IGRA (n = 17), it was observed that 14 obtained positive tests in both. Between discordant tests, 9 showed positive IGRA with non-reactive TST, and 15 showed positive TST with negative IGRA. Concordance between the TST and IGRA tests was assessed using Cohen's Kappa coefficient, which was 0.274, demonstrating a slight agreement between these tests.
Conclusions: Comparative studies between TST and IGRA are few and the results of these tests should be carefully interpreted in the appropriate clinical context. While TST is more sensitive, IGRA is more specific and can be used to confirm a positive TST. There is no gold standard test for the diagnosis of latent tuberculosis, and considering the limitations that both TST and IGRA present, we believe that the best solution is based on the concomitant use of both tests, as directed by the Directorate-General for Health.

Keywords: *Tuberculosis. Screening. Tuberculin skin test. Interferon-gamma test. Biological therapy.*

PC 119. AN UNEXPECTED AND RARE CAUSE OF PLEURAL EFFUSION

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Introduction: The possibility of bacillary aetiology should be considered in any patient with unilateral pleural effusion of unknown cause. Pleural tuberculosis constitutes the second most common form of extrapulmonary tuberculosis. The occurrence of infection by Mycobacterium tuberculosis complex agents (M. tuberculosis, M. africanum e M. bovis) is influenced mainly by local epidemiology and by human individual immune factors.
Case report: We present a 26-year-old female patient, Caucasian, non-smoker, born in Turkmenistan and living in Portugal for four years; with antecedent of pulmonary tuberculosis five years ago; without any other comorbidities, or immune compromise conditions such human immunodeficiency virus infection. She reported a two-week clinical picture of pleuritic chest pain, sparsely productive cough, asthenia and nocturnal hypersudoresis. Pulmonary auscultation evidenced decrease of respiratory sounds at lower half of right hemithorax, with remaining physical examination unremarkable. On chest X ray a homogeneous opacity was evidenced, suggesting a moderate volume pleural effusion on right pulmonary field. The

analysis of pleural fluid revealed exudate characteristics with lymphocytic predominance and an adenosine desaminase level of 140 U/L, with direct microscopy negative for acid alcohol resistant bacilli. Given the clinical, epidemiological context and pleural fluid features, an antibacilar regimen was initiated with isoniazid, rifampicin, pyrazinamide, ethambutol and streptomycin. The patient started doing well with good clinical and radiological evolution. During treatment, the cultural exam of pleural fluid became available, with Mycobacterium tuberculosis complex identification, and drug-susceptibility test for tuberculosis revealing isolated pattern resistance to pyrazinamide. A property that differentiates M. bovis from other M. tuberculosis complex species is the single intrinsic resistance to pyrazinamide.
Discussion: Despite clinical similarities inside M. tuberculosis complex, M. bovis –for its intrinsic resistance to pyrazinamide e worst prognosis– must be identified. This case reminds the importance of specie description, since this is an agent rarely involved in this form of extrapulmonary tuberculosis.

Keywords: *Pleural tuberculosis. Mycobacterium bovis. Infection.*

PC 120. RASMUSSEN'S PSEUDOANEURYSM, A RARE CAUSE OF HAEMOPTYSIS FROM THE PULMONARY ARTERY

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Introduction: Rasmussen's pseudoaneurism is a focal dilation of a branch of the pulmonary artery into and adjacent cavity caused from past tuberculosis. This vascular complication is rare and could lead to massive haemoptysis of difficult management. The origin of this bleeding is the pulmonary artery instead of the bronchial artery as most haemoptysis cases. We report the case of a male with treated tuberculosis who had recurrent haemoptysis causing haemodynamic instability, previously treated with bronchial artery embolization.
Case report: 42 year-old male, melanodermic, born in Guiné-Bissau. Known medical history of bronchiectasis and tuberculosis treated 18 years ago. Non usual medication. Recent admittance to hospital because of haemoptysis with Pseudomonas aeruginosa isolation, treated with antibiotics. The complementary investigation of tuberculosis with mycobacterial culture and direct exam of bronchoalveolar lavage was negative. Thoracic computed axial tomography (CT) scan identified a large size cavity in the left upper lobe and multiples bronchiectasis in this area with the presence of a branch of the bronchial artery in straight relation with this bronchiectasis. Endovascular intervention was made with embolization of the bronchial artery at that level. The patient was discharged. A month after he returned to emergency room because of new abundant haemoptysis. No fever, weight loss, night sweats or other symptoms of active tuberculosis were noticed. At evaluation he was hypotensive (90-50 mmHg) with active haemoptysis. After cough stabilization, because of 7.1 g/dL haemoglobin count, he was transfused with 2 units of erythrocyte concentrate. During hospital stay he had new episode of abundant haemoptysis only controlled with high doses of aminocaproic and tranexamic acid. New contrast thoracic CT scan revealed an almost total filled cavity in the left upper lobe, with signs of active bleeding in significant amount from an image with 5 mm suitable with Rasmussen's pseudoaneurysm in the posterior wall of the cavity. Left pulmonary artery angiography confirmed this artery as the source of the lesion. The patient underwent, with success, pulmonary artery coil embolization by radiology intervention team. No haemoptysis episodes were recorded until discharge.
Discussion: Rasmussen's pseudoaneurysm is a potential lethal complication of tuberculosis. Although a rare cause, this form of aneurysm should always be included in the differential diagnosis of haemoptysis in patients with known history of tuberculosis, especially in those that already underwent bronchial artery embolization. Comparative studies of the best therapeutic approach (surgery or endovascular) remain yet to be done. We presented a case treated with success trough endovascular approach.

Keywords: *Rasmussen. Pseudoaneurysm. Haemoptysis. Tuberculosis.*

PC 121. LATENT TUBERCULOSIS IN PATIENTS PROPOSED FOR BIOLOGICAL THERAPY - SCREENING AND AVOIDING

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Introduction: The introduction of biological agents for the treatment of immunemediated diseases increases the risk of progression from latent tuberculosis infection (TBIL) to tuberculosis (TB) disease. Therefore, screening for TBIL is strongly recommended before starting this kind of therapies.
Methods and objectives: Retrospective study including patients proposed for biological agents that were screened for TBIL during 2017 in Centro Diagnóstico Pneumológico Dr. Ribeiro Sanches. The main objective of this study was to identify the prevalence of progression to TB disease among patients that completed prophylactic treatment. Data were collected by reviewing electronic medical records and data analysis was performed using Microsoft Excel 2010.
Results: A total of 62 patients were included: 55% (n = 34) were females and 45.2% (n = 28) were males; with a mean age of 52.3 ± 14.2 years. Only 4.5% (n = 3) of patients have had a history of contact with TB and 8% (n = 5) had suffered from previous TB. Every patient underwent chest X-ray (n = 55) and/or CT scan (n = 30) and 17 had at least one of the exams with suggestion of TB disease. Tuberculin skin test (TST) was performed in 79.0% (n = 49) of patients and 81.6% (n = 40) was positive; interferon gamma release assay (IGRA) was performed in 83.9% (n = 52) of patients and 65.4% (n = 34) was positive. Overall, 2 patients gave up consultation before completed screening. 3 patients had negative screening. All of the 57 patients eligible for treatment completed therapy, 54 were treated with Isoniazid, for 8.6 ± 1.4 months of treatment, and 3 were treated with Rifampicin, for 4 months of treatment. Most of them (73.7%, n = 42) had none adverse effect of drug therapy. 14% (n = 8) had liver toxicity and 12.3% (n = 7) had minor adverse effects. Between the ones that completed treatment, there were only 3 patients (5.3%) that presented progression to TB disease: ocular (1), lymph node (1) and pulmonary (1). All 3 patients had taken 9 months of Isoniazid. None of them presented concordance between TST and IGRA tests. 2 had positive TST and 1 had positive IGRA results. All 3 patients were HIV-negative. The patients with ocular TB and lymphadenitis TB started the biological agent after 2 months taking Isoniazid, and progressed to TB disease 6 and 7 months, respectively, after had completed the prophylactic scheme. The patient with pulmonary TB started biological therapy after had concluded prophylactic scheme and progressed to TB disease 15 months later.
Conclusions: Risk of tuberculosis infection is higher during treatment with biological agents, especially with tumor necrosis factor inhibitors (anti-TNF). Prophylactic therapy in these patients reduces the risk of reactivation of TBIL or new infection, so in such situations, careful screening of TB and its treatment is mandatory. In our study, between 57 patients who had completed screening, only 3 had TB disease during treatment, which supports the recommendation for screening and preventive treatment for TBIL in such patients.

Keywords: *Latent tuberculosis screening. Biological therapy. Prevention of tuberculosis disease.*

PC 122. OCULAR TUBERCULOSIS. CASE SERIES OF A REFERENCE CENTER OVER 3 YEARS

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Introduction: Portugal has been considered since 2017 a country with a low incidence of tuberculosis, with less than 20 cases per 100,000 inhabitants. However, in Porto and Lisbon this incidence remains higher. Extrapulmonary forms represent 25-30% of cases. The eye is a rare location and may be affected even in the absence of lung disease. According to the Portuguese consensus, published in 2017, the gold standard for the confirmed diagnosis of ocular tuberculosis (OT) is the identification of Mycobacterium tuberculosis in ocular tissues or fluids. When definitive diagnosis is not possible but there are clinical manifestations of tuberculosis or lack of response to conventional treatment and evidence of exposure to tuberculosis, the diagnosis of OT should be presumed and treatment initiated.
Objectives and methods: Retrospective study of patients diagnosed with OT and observed from January 2016 to December 2018 at Centro de Diagnóstico Pneumológico Dr. Ribeiro Sanches (CDP-RS). The aim of the study was to characterize the patients with OT. Data were collected through consultation of the clinical process, and demographic parameters, history of tuberculosis, immunological tests, radiological alterations, SUN Working Group classification, treatment and evolution were analyzed. Data were analysed and processed through Microsoft Excel program.
Results: In total, 38 patients were studied, corresponding to 1.8% of all tuberculosis patients seen in CDP-RS during this period. Of these, 17 (44.7%) were men and 21 (55.3%) were women, with a mean age of 53.2 ± 15.7 years. Only 6 patients (23.7%) reported personal history of tuberculosis, of which: latent (n = 3), ganglion (n = 2), pulmonary (n = 1) and ocular (n = 1) infection. Of the 38 patients, only 2 (5.3%) reported contact with tuberculosis patients. The diagnosis was presumptive in all patients. None had a confirmed diagnosis, and most of the diagnosis was possible (n = 29) or probable (n = 9). In the etiological investigation, the tuberculin test (TST) was positive in 24 (63.2%) patients. The average area was 23.2 ± 9.3 mm. The IGRA (QuantiFERON-TB Gold test) was positive in 33 (86.8%), negative in 2 (5.3%) and unknown in 3 patients (7.9%). Only 3 (7.9%) had pulmonary tuberculosis sequelae alterations on chest X-Ray and 9 (23.7%) on chest CT. Regarding ocular manifestations, 14 presented posterior uveitis, 9 anterior uveitis, 2 intermediate uveitis and 13 panuveitis. Most patients had bilateral ocular involvement (44.7%, n = 17). Initially all patients received quadruple tuberculostatic therapy, and 2 had to undergo therapeutic change for toxicity. Systemic corticosteroid therapy was performed in 21 (55.3%) patients. The median duration of treatment was 8.6 ± 2.1 months and 9 (23.7%) patients abandoned treatment. Most patients (44.7%) showed improvement with remission of ocular manifestations, with 2 still under therapy.
Conclusions: The diagnosis of OT is difficult and requires a high index of suspicion. It is mainly presumptive and should be part of the differential diagnosis of therapy-refractory uveitis. Treatment is effective and should be started early and maintained for at least 6 months in all patients where TO is a possibility.

Keywords: *Ocular tuberculosis. Extrapulmonar tuberculosis.*

PC 123. TUBERCULOSIS: THE GREAT IMITATOR

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Introduction: Tuberculosis has a widely variable clinical presentation. It may appear as a pulmonary nodule mimicking pulmonary neoplasia.
Case report: We present the case of a 51 year-old Brazilian man who works as an electrician with a previous history of smoking, binge drinking habits and cocaine inhalation. He developed symptoms of orthopnea, nocturnal paroxysmal dyspnea and NYHA II class fatigue. The study performed by his general physician was in keeping with a low-ejection fraction heart failure (LVEF of 22%), for whom he was started with specific medication (furosemide, carvedilol), with symptomatic improvement. He also performed a lung spirometry, whose results were unremarkable. The patient denied night sweats, cough, sputum and anorexia. He reported a weight loss of 6 kilograms (9% of body weight) and his physical examination was normal. The thoracic CT showed an irregular 11 × 20 mm nodule located in the external middle lobe and mediastinal adenopathies (both pre-tracheal and subcarinal locations), measuring 10-11 mm in major axis. The blood analysis including HIV, HCV, HBV, Rickettsia conori and Treponema pallidum serologies, CEA, CA 125, CA 15.3, NSE, SCC and Cyfra 21.1 were irrelevant. PET CT showed a maximal SUV of 1.85 in the previously identified nodule that was morphologically and metabolically inconsistent with active malignancy. Some mediastinal adenopathies were also identified in 4R position (SUV of 4.86, 2.1 cm size) and in pre-vascular location (SUV of 4.98, 1.72 cm size). He was submitted to transbronchial needle aspiration (TBNA) of stations 4R and 7, guided by endobronchial ultrasound (EBUS), which were negative for malignancy and showed no relevant findings. The two transthoracic biopsies showed no abnormalities besides necrosis. The patient remained in clinical follow-up, and the nodule had a progressive increase in its major diameter up to 17 × 20 mm in 6 months. In the multidisciplinary meeting, we decided to repeat EBUS and perform angio-CT to clarify the relationship between the nodule and the lung vessels and there was no evidence of any adjacent structure invasion. Through the second TBNA, we were able to obtain material at station 7 for cytology. The cell block study revealed lymphoid tissue with areas of caseous necrosis and granulomatous chronic inflammation, in keeping with Mycobacterium tuberculosis infection. The aspirative cytology showed lymphocyts, epithelioid histiocytes and giant multinucleated cells. Antibiotic treatment was initiated with rifampicin, pyrazinamide, ethambutol and isoniazid. He is currently being followed-up on a Tuberculosis clinic with regular clinical, analytical and imaging surveillance.
Discussion: The association of ganglionar tuberculosis and tuberculoma is uncommon. Antibiotic treatment may last beyond 1 year and regular imaging surveillance is recommended to assess the favorable response and rule out concomitant neoplasia.

Keywords: *Tuberculosis. Cancer. Pulmonary nodule. Adenopathy. Tuberculoma.*

PC 124. NECROTIZING PNEUMONIA?

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Introduction: The greatest source of anaerobic bacteria that causes pulmonary infections is the oral cavity. Most of the pacientes gather some conditions that leads to aspiration, like disfagia and alteration of consciousness. These changes can occur for drug abuse, alcohol abuse, seizures and neurologic diseases. Necrotizing pneumonia caused by Mycobacterium tuberculosis is a rare but severe condition. Distinguish M.tuberculosis pneumonia from bacterial necrotizing pneumonia is not an easy task.
Case report: L.M.G.N., 49 year old man, 60 pack-year smoker, history of alcohol abuse, goes to the emergency service with productive cough that lasts for one week, dyspnea, rigth pleuritic chest pain, fever and asthenia. At physical exam, he had fever (38.5 ºC), a lot of teeth in extremely poor condition; at lung auscultation he presented diminished vesicular breath sound with crackles in the right lung base. At blood gas analysis he presented partial respiratory insuffi-

ciency. Analitically, thrombocytosis (platelets = 505), hyponatremia (Na+ = 131) and increased acute inflammatory markers (CRP = 43.92) stood out. The chest x-ray presented an upper third opacity of the right lung field with aureolar opacities and bulging fissure. The patient was admitted to the Pulmonology Service with diagnosis of community acquired pneumonia. He had risk factors for aspiration and there for, empiric therapy was initiated with amoxicillin and clavulanic acid 2.2g and azithromycin. During hospitalization he suffered a clinical and analitycal worsening so it was added clindamycin to the previous medication, after 5 days of its initiation. A chest computed tomography (CT) was performed which highlighted a right apical cavitated lesion with 8-9 cm, containing small liquid level, presenting slightly thick walls, irregular internal contour and pseudomembrane images corresponding to apical peribroncovascular thickening of probable infectious nature. In the remaining parenchyma there was a slight diffuse prominence of the centrilobular interstitium, compatible with small airway disease. Calcified right anterior paquipleuritis was also observed. No pleural effusion. Small right subcentimeter paratracheal ganglia. Large mediastinal vessels with globally conserved tomodensitometric aspects. Broncofibroscopy was also performed that showed diffusely inflammatory thickened mucosa, conferring diffuse widening of spurs, more pronounced in the right bronchial tree. Cyto, myco, bacteriological examination of BAL was requested that turned out to be negative. During hospitalization, he fulfilled 14 days of amoxicillin and clavulanic acid, 5 days of azithromycin and 14 days of clindamycin. Subsequently, in Lowenstein Jensen medium culture, there was positivity for AAFB (Acid Alcohol Fast Bacilli). The therapeutic approach of tuberculosis with isoniazid, rifampicin, pyrazinamide and ethambutol was initiated. He underwent a control CT that showed a significant favorable evolution of the cavitated upper right lobe lesion with approximately 3.5 cm, with slightly thickened walls and densification of the adjacent pulmonary parenchyma with some striae extending to the adjacent pleurae. Significant pleural thickening especially on the right with extensive calcified paquipleuritis.
Discussion: Tuberculosis continues to be a prevalent disease in our country and its differential diagnosis is required in community acquired pneumonia with long term clinical course.

Keywords: *Pneumonia. Necrotizing. Anaerobic bacteria. Tuberculosis.*

PC 125. DISSEMINATED TUBERCULOSIS AND CYSTIC LUNG DISEASE, A RARE ASSOCIATION

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Introduction: There are multiple causes for pulmonary cysts and may rarely arise as a complication of pulmonary tuberculosis. Cystic lesions may develop before, during or after anti-bacillary treatment.
Case report: A 41-year-old male patient, with no relevant medical history presented to a general practitioner with 2 months of evolution of weight loss (2 kg), anorexia, asthenia and left cervical adenopathy. In the initial analytical evaluation it presented hepatic cytocholestasis, HIV1/2 negative serology, and accentuated CXR bronchovascular. The high-resolution thoracic CT showed no alterations. It was scheduled a excisional biopsy of left cervical adenopathy but was not performed. After 2 months, the patient went to the emergency room due to complaints of dyspnea, afternoon fever, night sweats, asthenia and persistent weight loss (about 7 kg in 6 months). He was cachectic, polypneic, feverish and with sub-crackling fervors audible in both pulmonary bases. Arterial blood gases showed partial respiratory failure. Blood tests showed leukocytosis (12,900 cel/mL) with elevated neutrophils (91.5%), RCP of 5.55 mg/dL and liver cytocholestasis standard. CXR suggested micronodular pattern with miliary distribution. Miliary tuberculosis was admitted as the most probable diagnosis and a bronchoscopy performed in the absence of sputum. The bacilloscopies of bronchial secretions and bronchoalveolar lavage were negative, but RCP for Mycobacterium tuberculosis was positive in bronchial secretions without rpoB mutations. The patient began a gradual introduction of potentially hepatotoxic anti-bacillary. Thoraco-abdominal CT also showed necrotic mediastinal adenopathy, adenopathy hepatic hilar and destructive lytic bone lesions of the vertebral bodies and left iliac bone, admitted as bone involvement by tuberculosis. Later the cultural examination of bronchial secretions came positive for Mycobacterium tuberculosis complex confirming the definitive diagnosis of disseminated tuberculosis in a patient with HIV negative serology. For positive meningeal signs lumbar puncture was performed. RCP for Mycobacterium tuberculosis in cerebrospinal fluid was positive, confirming the diagnosis of meningeal tuberculosis, so systemic corticotherapy was started. Head CT did not demonstrate any changes. Good clinical outcome was observed and the patient was discharged on the 29th day of full dose antibacillary (HRZE). In reevaluation consultation was found on radiograph left pneumothorax with indication for placement of thoracic drainage. Thoracic CT confirmed the left pneumothorax and multiple cysts with predominance in the upper lobes. By alteration of the state of consciousness the patient was endotracheally intubated (EIT) and transferred to Intensive Care Unit (ICU). Head CT and angio-CT showed unfavorable evolution of the meningeal tuberculosis, later confirmed by magnetic resonance. Dexamethasone was started in scheme. The chest tube (TD) was removed on the 10th day after placement. The patient was extubated on the 7th day after EIT, returning to the Pulmonology Department. After pneumothorax recurrence on the left, a new thoracic drain was placed. Because it was a second secondary spontaneous pneumothorax, thoracoscopy was performed with pleurodesis by poudrage.
Discussion: Pulmonary tuberculosis should be considered a possible cause of acquired cystic lung disease. In the case presented, the patient developed pulmonary cysts during anti-bacillary treatment.

Keywords: *Tuberculosis. Lung cysts. Pneumothorax.*

PC 126. IMMUNOGLOBULIN G SUBCLASS DEFICIENCY AND BRONCHIECTASIS. RETROSPECTIVE STUDY

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Introduction: Immunoglobulin G subclass deficiency (IgGSD) is a common finding in people with severe or recurrent infections. This is defined by a deficiency of one or more Immunoglobulin G (IgG) subclasses, when the total IgG level is normal. IgGSD is associated with immunoglobulin A deficiency, atopy, autoimmune diseases and chronic respiratory diseases such as bronchiectasis.
Objectives: To study a sample of adult patients with IgGSD and its impact in bronchiectasis.
Methods: Retrospective study of adult patients with IgGSD followed-up in outpatient appointments over a ten-year period. Demographic, clinical and diagnostic data was collected for all patients. Patients with available thoracic computerised tomography (T-CT) scan images were selected and divided in two groups according to the presence of bronchiectasis (BQ and N groups). For these patients, lung function tests results were also included in the study. The statistical analysis was conducted using SPSS version 22.0.
Results: The initial sample included 54 patients with a median age of 41.5 years, of which 61.1% were females. These patients had selective deficiencies of either IgG1 (29.6%), IgG2 (38.9%) or IgG4 (11.1%), and a combined IgG2 and IgG4 deficiency in 16.7% of cases. There was only one case of selective deficiency of IgG3 and another of combined IgG1 and IgG4 deficiency. Eight cases presented with an IgA deficiency as well, from which three had an IgG2 deficiency and two had a combined IgG1 and IgG4 deficiency. The median total serum IgG was 8.14 g/L, whereas subclass median levels

were 3.64 g/L for IgG1, 1.50 g/L for IgG2 and 0.01 g/L for IgG4. Approximately two thirds had associated sinopulmonary diseases, including recurrent respiratory infections, asthma, rhinitis, pulmonary sarcoidosis (one case) and alfa-1 antitrypsin deficiency (two cases). Additionally, 29.6% of patients had a diagnosis of atopy and four patients had a diagnosis of autoimmune diseases such as Graves' disease. Out of 22 patients with available T-CT images, seven had bronchiectasis (BQ). Patients with bronchiectasis were generally female (57.1 vs 33.3%) and younger (42 vs 52 years) in comparison with patients without bronchiectasis. They had IgG1 (3 cases) and IgG2 (2 cases) selective deficiencies and combined IgG2 and IgG4 deficiency (2 cases). Bronchiectasis mainly affected the medial lobe and lower lobes. Lung function tests results (FEV1, FVC, FEF25-75%, TLC and RV) presented lower values in the bronchiectasis groups.
Conclusions: These results were not statistically significant. However, patients with bronchiectasis and IgGSD were generally younger, mainly females, and had an IgG1 selective deficiency. The authors recommend routine measurement of total serum IgG and IgG subclass levels as part of the aetiological study of patients with bronchiectasis as it alters the management of these patients.

Keywords: *Bronchiectasis. Immunoglobulin g subclass deficiency.*

PC 127. CYSTIC FIBROSIS DIAGNOSIS AFTER AGE 40. A CENTER EXPERIENCE

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Hospital Prof. Doutor Fernando Fonseca.

Introduction: Cystic Fibrosis (CF) is a genetic disease that progressively affects multiple organs. With the diagnostic and therapeutic advances, CF is no longer a terminal disease of childhood. This study aimed to evaluate the characteristics of CF patients over 40 years.
Methods: Thirteen patients diagnosed with CF and over 40 years of age, attending in a reference center in Lisbon during 2019.
Results: A total of 13 patients evaluated, 4 were men and 9 women. Average age of 47.9 ± 5.2 years. Of the 13 patients most were diagnosed after age 18 and only 3 were diagnosed before that. The diagnosis was confirmed by genetic study in all patients (1 Delta-F508/DeltaF508 homozygous patient, 9 Delta-F508 heterozygous patients, 2 G85E mutation heterozygous patients, 1 3272-26A < G mutation homozygous patient). Twelve of 13 patients had a positive sweat test. Only 1 patient was asymptomatic with all other respiratory symptoms (cough and sputum), 5 had exocrine pancreatic insufficiency and 1 CF-related diabetes. The average Body Mass Index (BMI) was 25.24. Six patients were found to have chronic colonization by Pseudomonas aeruginosa (PA), 5 by Haemophilus influenza, 2 by Streptococcus pneumoniae, 2 by methicillin-resistant Sphaphylococcus aureus (MRSA). Mean FVC and mean FEV1 were 88.2 ± 16.2% and 65.8 ± 23.8%, respectively. Of particular note was the greater functional deterioration observed in patients with chronic colonization by Pseudomonas aeruginosa (PA), resulting in lower mean FEV1 values in this group, which reached statistical significance (p = 0.047). Regarding the average number of hospitalizations due to acute exacerbations in the last 5 years, there was an average of 1.43 hospitalizations per patient (maximum: 5, minimum: 0). The number of hospitalizations for acute exacerbation was slightly higher in the non-colonized PA group (mean hospitalization 1.86 versus average: 1 hospitalization in the PA colonized group).
Conclusions: Our reality shows that CF is no longer a disease of pediatric age, with an increasing number of adult patients with this condition maintaining a reasonable respiratory function reserve, good nutritional status and good quality of life. life translated by an acceptable number of exacerbations. To this end, much has contributed to advances in diagnosis and therapeutic strategies developed in recent years. Of note is the still important number of cases diagnosed only in adulthood, a problem that is currently expected to be resolved given the possibility that we can currently count on CF neonatal screening in Portugal. In view of the fact that seemingly very effective therapeutic interventions are currently appearing that appear to have a significant impact on changing the natural history of the disease with significant reduction in morbidity and mortality when introduced early, and in view of the fact that neonatal screening programs are in place, CF is a pathology with an increasingly important expression in adulthood.

Keywords: *Cystic fibrosis. Adults. Longevity.*

PC 128. PSEUDOMONAS AERUGINOSA ISOLATION IN PATIENTS WITH CYSTIC FIBROSIS. PROFILE OF A REFERENCE CENTER

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Hospital Prof. Doutor Fernando Fonseca.

Introduction: Pseudomonas aeruginosa (PA) is a microorganism that often colonizes the airways of patients with cystic fibrosis (CF), having a major impact on pulmonary functional deterioration. Eradication of this airway agent from colonized patients is difficult, and suppression therapy with inhaled antibiotics in chronic colonization and systemic antibiotic therapy in acute exacerbations are recommended. The emergence of antibiotic resistant PA strains in this population is an increasingly common problem.
Objectives: To assess the antibiotic susceptibility profile of PA strains in CF patients and chronic colonization by this agent according to the Leeds criteria at a Reference Center involving the Lisbon Tagus Valley region up to the Algarve and to correlate with data on functional impairment, respiratory and nutritional status.
Methods: Retrospective analysis of patients over 18 years of age followed at a CF Reference Center who were colonized by PA in July 2019. Statistical analysis was performed using Microsoft Excel software.
Results: A total of 18 adult CF patients (47.3% of patients followed at the Reference Center) with a mean age of 32.1 ± 8.9 years and a slight female predominance (n = 10; 55; 6%). The mean value of % predicted FEV1 was 54.1 ± 17.7% and the body mass index (BMI) was 22.5 kg/m^2. Patients were divided into two groups according to antibiotic susceptibility profile (patients colonized with multidrug resistant strains (n = 8) and patients colonized with non-multidrug resistant strains (n = 10)). There was no statistically significant difference between the two groups in the mean FEV1 value (p = 0.09), although this value was lower in the group of patients colonized by multidrug resistant strains (FEV1 46.1% vs 60.4). Regarding the BMI value, the mean was lower in the group of patients colonized by multiresistant strains but did not reach statistical significance (p = 0.23). The antibiotic sensitivity pattern of the isolated AP strains showed that excluding the 6 patients with strains sensitive to all antibiotics, all other patients had colonization with gentamicin resistant strains (n = 12). Compared to the remaining aminoglycosides, resistance to amikacin was 55.6% (n = 10), while 38.9% (n = 7) showed resistance to tobramycin. Cephalosporin resistance (cefepime, ceftazidime) was 44.4% (n = 8). The resistance to ciprofloxacin was 38.9% (n = 7). In patients who were tested (n = 6) half had meropenem resistance. No resistance of PA to colistin and ceftolozano/tazobactam was reported.
Conclusions: The results of the present study reveal a high prevalence of PA colonization in adult patients followed at a CF Reference Center and a worrying value of colonization by multidrug-resistant strains (about half). It is also noted that more than half of the patients were colonized by strains resistant to at least one antibiotic. The pattern of antibiotic sensitivity in this study had no statistically significant impact on respiratory function pattern and nutritional status.

Keywords: *Cystic fibrosis. Pseudomonas aeruginosa. Resistence. Antibiotics.*

PC 129. MICROBIOLOGICAL PROFILE IN A PORTUGUESE BRONCHIECTASIS COHORT

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Centro Hospitalar de Leiria.

Introduction: Bronchiectasis (BE) is defined as a permanent and irreversible dilation of the airways. Chronic bronchial infection is a central feature of this pathology. Microbiological surveillance is mandatory in order to define targeted therapeutic approaches. The aim of this study was to describe the microbiological profile of a BE cohort followed in a specialized consultation in a Portuguese hospital.
Methods: Prospective cohort study. Patients followed in a specialized bronchiectasis consultation at Centro Hospitalar de Leiria were consecutively included from 01/2017 to 07/2019. Demographic data were recorded. Microbiological isolations of any respiratory sample were retrospectively collected and prospectively evaluated until the current time. Antibiotic resistance profile of the main BE pathological bacteria was evaluated (Pseudomonas aeruginosa [Pa], Haemophilus influenzae [Hi] and Staphylococcus aureus [Sa]). Statistical analysis was performed using IBM® SPSS vr25.
Results: 138 patients were included, 49.3% males, mean age 61.6 years (SD = 17.5). Microbiological diagnosis was achieved in 57.2% patients. Gram-negative bacteria were the most frequently identified microorganisms (113 isolates). Pseudomonas aeruginosa was the most prevalent pathogen (26.1%), followed by Haemophilus influenzae (23.2%) and Staphylococcus aureus (MSSA 13.1%; MRSA 5.1%); 27.5% of patients had more than one isolate through this period. 32.6% of patients had at least one hospitalization due to bronchiectasis exacerbation in the last 4 years. 63.9% of Pa isolates were susceptible to all tested antibiotics; resistance to fluoroquinolones (16.6%) and cotrimoxazole (11.1%) were the most commonly found. Among Hi, 90.6% of isolates were fully sensitive; only 3 isolates showed resistance (1 to amoxicillin, 1 to amoxicillin and cotrimoxazole and 1 to ampicillin). Non-tuberculous mycobacteria were isolated in 4.3% of patients: 4 Mycobacterium avium complex, 1 Mycobacterium lentiflavus and 1 Mycobacterium haemophilum. Tuberculosis was diagnosed in 3 patients (first-line drugs susceptible). Aspergillus fumigatus and Candida albicans were isolated from 4 subjects each.
Conclusions: Pa and Hi were the most common bacterial isolates in this cohort. These findings are in line with the published literature (12-43% for Pa and 14-52% for Hi). Antimicrobial resistance is one of the major concerns in bronchiectasis treatment since antibiotics are frequently used in this pathology (systemic or inhaled). Little is known about the current picture of antimicrobial resistance in this cohort of patients worldwide. Pa resistance to fluoroquinolones was the most prevalent antibiotic resistance in our study. This should be a major concern since quinolones are one of the first-line eradication treatment options. Surprisingly Hi showed a very low rate of antibiotic resistance. Sa isolates are increasing in BE patients as demonstrated in this cohort. NTM isolates are still rare, in contrast with other cohorts like the US data. Pa, Hi and Sa are the major pathogens in this cohort. Quinolone resistance is a major finding for Pa isolates. NTM and fungus were still rarely isolated.

Keywords: *Bronchiectasis. Microbiology. Chronic bronchial infection.*

PC 130. PHENOTYPIC DIVERSITY IN BRONCHIECTASIS EXACERBATIONS

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Introduction: Bronchiectasis is a chronic inflammatory condition, exploring the phenotypic diversity of the microbiological agents in exacerbations contributes to understand its evolution.
Objectives: Clinical characterization of patients hospitalized with non-cystic fibrosis bronchiectasis exacerbation.
Methods: Retrospective and descriptive study of clinical data of the 40 patients admitted with exacerbations in a eighteen month period.
Results: Patients had a median age 74.5 years, 57.5% (23) where female, 42.5% (17) male and 20% (8) had smoking habits. Beside bronchiectasis 70% (28) had other respiratory comorbidity, the more common where: 22.5% (9) COPD, 17.5% (7) tuberculosis sequelae and 7.5% (3) had both conditions. Bronchiectasis were bilateral in 60% (24) of the cases and 67.5% (27) had cylindric type, 12.5% (5) presented more than one type. Among patients, 65% (26) had 1 exacerbation with hospitalization in the last year, 15% (6) had 2, and 30% (12) had 3 or more. Mean hospitalization time was 12.6 days. At admission, 87.5% (35) had respiratory insufficiency. Of note, 25% (10) of the patients had history of bacterial colonization and 57.5% (23) presented sputum cultures positive: 26.1% (6) methicillin-resistant S. aureus (MRSA), 21.7% (5) P. aeruginosa, 17.4% (4) co-infection associating these agents and 8.7% (2) presented with H. influenza. P. aeruginosa resistant to ciprofloxacin – 2 cases (8.7%) (one associated with gentamicin and other piperacillin/tazobactam). H. influenza – 2 cases (8.7%) (resistant to erythromycin and other plus piperacillin/tazobactam). Two cases (8.7%) of co-infection with P. aeruginosa resistant to carbapenem and ciprofloxacin and other to gentamicin and ciprofloxacin. There are more exacerbations in patients with sputum culture positive ($p = 0.011$) and with history of bacterial colonization ($p = 0.001$).
Conclusions: MRSA and P. aeruginosa are the most common bacteria in exacerbations, all co-infections revealed these species.

Keywords: *Non-cystic fibrosis bronchiectasis. Exacerbations.*

PC 131. NEBULIZED HYPERTONIC SALINE SOLUTION FOR THE TREATMENT OF NON-CYSTIC FIBROSIS BRONCHIECTASIS: THE EXPERIENCE OF A PULMONOLOGY DEPARTMENT

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Introduction: In patients with bronchiectasis, mucociliary clearance is impaired due to structural changes, airway dehydration, and excessive volume and viscosity of airway secretions. The use of hypertonic saline (HS) associated with respiratory physiotherapy techniques allows the drainage of secretions to be optimized in those patients.
Objectives: To analyze patients with non-cystic fibrosis bronchiectasis (BNFQ) treated with SSH and to evaluate their tolerance to this treatment.
Methods: Retrospective observational study of patients with non-cystic fibrosis bronchiectasis treated with HS who did challenge test between January 2017 and July 2018. Demographic, clinical and microbiological data of the patients were analyzed.
Results: Of the 22 patients included in the study, 1 was excluded due to withdrawal from the consultation. The median age of the patients was 54 years (minimum age: 20 years; maximum age 87 years) and 12 patients (57.1%) were female. Postinfection etiology was assumed in 6 patients (28.6%), followed by primary ciliary dyskinesia in 4 patients (19%), associated with asthma in 2 patients (9.5%) and other etiologies in 2 patients (9.5%). 7 patients (33.3%) met criteria for chronic bacterial infection; The bacteria identified in those patients were: Pseudomonas aeruginosa (n = 6), Haemophilus influenzae (n = 1) and Klebsiella pneumoniae (n = 1). According to the E-FACED score, bronchiectasis were classified as severe (n = 2; 9.5%), moderate (n = 4; 19%) and mild (n = 15; 71.4%). 2 patients (9.5%) were receiving inhaled antibiotic therapy and 1 patient (4.8%) was receiving azithromycin. All patients had bronchorrhea as a reason for the onset of HS, and 11 patients (52.4%) also had frequent exacerbations. Patients did HS challenge testing before starting such treatment and the result was negative in all. The mean duration of treatment with

SSH was 12.6 months (± 8.7). 5 patients (23.8%) had discontinued treatment due to adverse effects (dyspnea and sepsis (n = 3), wheezing (n = 1) and haemoptysis (n = 1)) after a median of 6 months (0-15) treatment. In addition, 3 patients discontinued treatment due to no clinical benefit after a median of 3 months (1-10) of treatment. Regarding the group that had discontinued treatment for adverse effects, there were no statistically significant differences in baseline FEV1% (after bronchodilation) (p = 0.760) or in the percentage change in FEV1 within SSH challenge test (p = 0.746) compared with the group that have continued the treatment. In patients with at least 12 months of treatment with SSH and frequent exacerbations (n = 3; 14.3%) the median exacerbations decreased from 3 (3-7) to 2 (1-3). The mortality rate was 14.3% (n = 3).
Conclusions: Postinfection etiology was the most frequent in our study. The size of the sample limits the statistical analysis regarding the impact of SSH treatment on the number of exacerbations. Although all patients had a negative SSH challenge test, it was found that 23.8% of patients had discontinued treatment for adverse effects, and no significant differences could be identified in the analyzed variables comparing to the group of patients that have continued the treatment.

Keywords: *Bronchiectasis. Hypertonic saline solution.*

PC 132. UTILITY OF NASAL NITRIC OXIDE IN PRIMARY CILIARY DYSKINESIA SCREENING: A CENTER EXPERIENCE

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Introduction: Primary ciliary dyskinesia (PCD) is a rare autosomal recessive disorder characterized by ciliary dysfunction, resulting in chronic otosinopulmonary infections. It is estimated to affect 1 in 10,000 people. There is no screening test for the general population. The best approach is to combine compatible symptoms with testing at specialized centers. PICADAR is a questionnaire that combines clinical features and compatible events. Electron microscopy, videomicroscopy and genetic study are expensive and time consuming. In 1994 it was found that in PCD nasal nitric oxide (nNO) values were decreased. Today nNO measurement is a very sensitive and specific screening tool. It is painless, fast and inexpensive.
Methods: At the Bronchiectasis Appointment of the Pulmonology Service of Santa Maria Hospital, about 30% of patients have no etiological diagnosis identified. Videomicroscopy, electron microscopy and genotyping have been used for some years in patients with suspected PCD, mostly in children. With the recent availability of an nNO analyzer, we wanted to evaluate the underdiagnosis rate among adults with diffuse bronchiectasis with history compatible with PCD who underwent the systematic application of an etiological diagnostic algorithm. We analyzed the results of 9 consecutive patients whose nNO was measured with the Niox Vero® device using the closed palate technique.
Results: Of the 9 patients, 7 were women, aged 23 to 51 years (mean 34 ± 9 years). Five (56%) had a low nNO value (between 3 nL/min and 63.45 nL/min - average 27.48 ± 22.9 nL/min), compatible with PCD. The average value of those with normal nNO was 254.7 ± 87.1 nL/min (between 152.4 and 363.6 nL/min). They were followed on average for 4 ± 3.7 years in Pulmonology appointments. Although patients with higher PICADAR had lower nNO, no patient scored higher than 7, considered the diagnostic cut-off. It seems to us that this score alone is not sensitive enough to select which adults with bronchiectasis should be submitted to nNO measurement. Regarding the clinic, almost all had chronic sputum, but only 2 had a history of perinatal respiratory distress and only 1 had a situs anomaly. From a functional point of view, patients with PCD-compatible nNO value had lower mean FEV1 (64% vs 109%).
Conclusions: nNO measurement is an important tool for screening patients with bronchiectasis and features compatible with PCD; select who should proceed to more complex tests; and as an integral part of the diagnostic in case of clinical suspicion of PCD. The evaluation of the results of complementary exams should take into account the clinical context, be multidimensional and made in a multidisciplinary meeting, which is only possible in a specialized center. Our study found that more than half of the sample was found to be compatible with PCD, which reveals a high underdiagnosis rate. It is our goal to extend the use of this diagnostic method to more and more patients so that, with the identification of PCD, we can expand our understanding of the disease, improve therapeutic care and establish effective family planning.

Keywords: *Nitric oxide. Primary ciliary dyskinesia. Bronchiectasis.*

PC 133. NONINVASIVE VENTILATION FOR PREVENTION OF POST-EXTUBATION RESPIRATORY FAILURE IN CRITICALLY ILL PATIENTS

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Introduction: The periextubation period represents a crucial moment in the management of critically ill patients. Extubation failure, defined as the need for reintubation within 2–7 days after a planned extubation, is associated with prolonged mechanical ventilation, increased incidence of ventilator-associated pneumonia, longer intensive care unit and hospital stays, and increased mortality. It is therefore essential to identify patients at high risk of postextubation acute respiratory failure (ARF) in order to choose an appropriate strategy of respiratory support able to improve their outcome. Additional methods of non-invasive respiratory support, such as non-invasive ventilation (NIV) and high-flow nasal therapy, can be used to avoid reintubation. However, the role of NIV immediately after extubation in hypoxic patients remains unclear.
Objectives: Our aim was to identify clinical characteristics and comorbidities of critically ill patients that undergone oxygen therapy or NIV in post-extubation. Our second aim was to access whether application of NIV, immediately after extubation, is effective in preventing post-extubation respiratory failure. Primary outcome was the need for reintubation according to standardized criteria. Secondary outcomes were intensive care unit (ICU) and hospital mortality, as well as time spent at ICU.
Methods: We performed a retrospective analysis of patients admitted at ICU from Hospital Santo António, between 1 January and 31 July 2018. Clinical characteristics, co-morbidities, cause of admission, weaning strategy (oxygen therapy versus NIV) and clinical outcome were reviewed. Comparison between the 2 groups was conducted using the Fisher´s exact test for categorical variables and the Mann-Whitney U test for continuous variables. The statistical analyses were performed using SPSS, and differences between the 2 groups were considered significant at $p < 0.05$.
Results: We included 153 patients with 64.0 (IQR 53.5-76.0) years old and 52.4% male. The main cause of admission was septic shock (n = 36, 23.5%), followed by postoperative abdominal surgery (n = 24, 12.6%) with a mean APACHE II score of 47.98 ± 14.98. About 13.1% of the patients were obese with a diagnosis of obstructive sleep apnea in 2.6%; 15.7% had a diagnosis of congestive heart failure and 8.9% of COPD. NIV was performed after extubation in high-risk patients for ARF (n = 14, 9.2%). Compared with the oxygen therapy during weaning, the institution of NIV resulted in significantly more days of stay at ICU [NIV group: median 9.0 days (CI 6.43-20.71) versus oxygen group: median 5.0 days (CI 6.85-10.21), p = 0.015], however there was no differences in mortality at ICU (p = 0.462) or 30 day mortality rate (p = 0.129). Furthermore, the incidence of re-intubation was not different between the two groups (p = 0.101).
Conclusions: NIV efficacy has been proved especially in a selected population of patients with acute hypercapnic respiratory failure.

In this study, we showed that NIV was a safe procedure, with no inferiority when compared with oxygen therapy during weaning, even in patients admitted with hypoxic ARF or with no past history of chronic hypercapnic respiratory failure.

Keywords: *Non invasive ventilation. Extubation. Acute respiratory failure.*

PC 134. PULMONARY TROMBOEMBOLISM ASSOCIATED WITH MTHFR AND PAI-1 GENE MUTATIONS: A CASE REPORT

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Introduction: Thrombophilia is defined as a predisposition to thrombosis and may be associated with inherited or acquired causes. Acquired causes include neoplasms, hormone therapy, immobilization, surgery, and immune diseases such as antiphospholipid antibody syndrome. Regarding genetic factors, that can be identified in 60% of venous thromboembolism cases (VTE), Leiden factor V is the main cause of hereditary thrombophilia, and others such as prothrombin 20210A, antithrombin III and protein C and S may be involved. The association between the presence of MTHFR allelic variants (C677T and A1298C) and the increased risk of VTE is not fully understood. However, an increase in homocysteine levels has been demonstrated in carriers of the MTHFR C677T variant. Another allelic variant that seems to be associated is PAI-1 4G, however the increased risk is not entirely clear either, but an association between this variant and the increased occurrence of venous thrombosis in the internal organs, namely the portal vein, has been described. The combined association of MTHFR and PAI-1 mutations has also been described in a patient with isolated renal venous thrombosis, demonstrating that combining these two mutations may increase the likelihood of thromboembolic events.
Case report: We report the case of a 37-year-old non-smoking woman with a personal history of obesity, under oral contraceptive therapy and family history of death by pulmonary thromboembolism (father). She was admitted due to syncope and one week of symptoms of dyspnea and thoracalgia with pleuritic characteristics. Tachycardia was present and blood gas analysis showed hypoxemia and hypocapnia. Blood analysis showed D-dimers of 4.2 mg/l, troponin of 29 ng/l and NT-proBNP 1,748 pg/ml. Chest computed tomography (CT) revealed extensive bilateral pulmonary embolism, dilated pulmonary artery and right ventricle, and nonspecific pseudonodular densifications, which could be infarcts. The echocardiogram showed an exuberant dilatation of the right cavities with septal bulging, but with conserved global systolic function, showing no indication for urgent fibrinolysis. She started anticoagulation, with good clinical and gasometric evolution. The thrombophilias study showed the detection of predisposing genetic factors with the identification of homozygous for MTHFR C677T polymorphism and heterozygous for PAI-1 4G polymorphism. She then underwent venous doppler of the lower limbs which demonstrated recanalization of the thrombosed left popliteal vein and repeated echocardiogram and chest CT that normalized. She maintained anticoagulation with rivaroxaban with clinical stability and no new thromboembolic events.
Discussion: This case reports a rare association of thromboembolic phenomena and hereditary thrombophilia with the allelic variants MTHFR C677T and PAI-1 4G, demonstrating the efficacy of rivaroxaban therapy. The literature reporting this association is scarce, demonstrating that this combination may increase the likelihood of thromboembolic events.

Keywords: *Pulmonary embolism. Deep vein thrombosis. MTHFR C677T. PAI-1 4G.*

PC 135. MICROSCOPIC POLYANGIITIS WITH DIFFUSE ALVEOLAR HEMORRHAGE: A LONG ICU JOURNEY

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Centro Hospitalar Universitário do Algarve.

Case report: 62 years old male, smoker (60 pack-years), went to the emergency department with a 5-day course of progressive dyspnea, fever, cough and mucous sputum, occasionally hemoptoic. Physical examination: febrile, hypertensive, tachycardic, pulse oximetry 91% in room air. Laboratory results: Hb 5.1 g/dL, MCV 102 fL, MCH 34 pg, WBC 9.9 × 10^9/L (L: 0.67, N: 8.9, B: 0.03, M: 0.26, E: 0 × 10^9/L), CRP 119.5 mg/L, creatinine 4.82 mg/dL. Chest X-ray and CT scan: exuberant bilateral interstitial-alveolar infiltrate, centrifugal. Admitted to the Intensive Care Unit (ICU), submitted to orotracheal intubation for significant hemoptysis. Due to acute kidney failure continuous venous hemodiafiltration was started. Bronchoscopy: diffuse towel hemorrhage. Bronchoalveolar lavage (BAL) with macroscopic appearance sequentially more hematic. Fundoscopy: bilateral retinal vasculitis. Serum anti-neutrophil cytoplasm MPO anti-body: 542 UA/mL. The diagnosis was microscopic polyangiitis with pulmonary and kidney involvement, so we started the treatment (3rd ICU day) with methylprednisolone (1 g/day for 5 days), followed by cyclophosphamide 1,500 mg (750 mg/m^2), then a maintenance dose of prednisolone (60 mg/day). On the 10th had fever and decreased paO2/fiO2. BAL was repeated and was positive for multidrug-resistant Pseudomonas aeruginosa in cultures. This late ventilator-associated pneumonia was treated with Ceftolozane/Tazobactam and Gentamicin, according to the antibiotic susceptibility testing. Due to clinical worsening in a immunossupressed patient, Linezolide and Anidulafungine were later added empirically, with resolution of the condition. After suspending sedation, there was an important behavioral change, with episodes of irritability and aggressiveness, ending in self-extubation on day 28, with no need for reintubation. CAM-ICU was applied, revealing the presence of delirium. Dexmedetomidine was initiated with improvement of the symptomatology. On day 29 a second cycle of cyclophosphamide 1,500 mg was given, with no complications. The patient maintained indication for renal replacement therapy and paraparesia in the context of critical care polyneuropathy. Hospitalization was further prolonged in the surgery ward due to perforated ischemic cholecystitis with biliary peritonitis. Submitted to cholecystectomy and multiple antibiotics, the immunosuppressive treatment was stopped since the second cycle and 1 month later the patient started episodes of dyspnea and hemoptoic sputum, suggesting reactivation of the vasculitis.
Discussion: Interstitial lung diseases are complex and their diagnosis must be accurately addressed in the ICU. In this case, the rapid onset and life-threatening lung manifestation of a systemic vasculitis led to an investigation where rapid diagnosis and early directed therapy were determinant for the prognosis of the patient. Even so, the hospitalization was prolonged by successive intercurrences, raising an already interesting case to a true challenge of intensive care setting.

Keywords: *Microscopic polyangiitis. Diffuse alveolar hemorrhage.*

PC 136. RASMUSSEN'S PSEUDOANEURYSM. AN IMPENDING BLEEDING EMERGENCY

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Centro Hospitalar Universitário do Algarve.

Case report: White male, 37 years old, smoker (20 pack-years), presented in the emergency department with a 4 months course of cough, purulent sputum, weight loss (not quantified), and hemoptoic sputum in the past 2 days. At admission hemodynamically sta-

ble, eupneic at rest, pulmonary auscultation with rhonchi in both apex. Laboratory results: Hb 10.7g/dL, MCV 73 fL, MCH 23.3 pg, WBC 19.6 × 10^9/L (N: 14.1, L:2.5, B:0, M:1.9, E: 0.9 × 10^9/L), Platelets 681x109/L, CRP 161 mg/L. Blood gas test (room air): pH 7.46, pCO2: 38.8 mmHg, pO2 73.2 mmHg, HCO3: 27.20 mmol/L, O2Sat: 95% Chest X-ray: bilateral infiltrate with apparent cavitation in the right upper field. Admitted in the Pulmonology department in a respiratory isolation room, sputum direct examination showed acid-fast bacilli, CT scan showed extense disease with multiple large cavitations, mostly at right, and therapy with HRZE plus Levofloxacine was started. The patient maintained hemoptysis and continued lowering of the hemoglobin (6.5 g/dL), despite therapy with aminocaproic acid. In the 6th day from admission he started with tachycardia and hypotension and was transferred to the ICU, starting therapy with tranexamic acid and controlling the hemoptysis. After 2 days without therapy and any blood loss, he had a massive hemoptysis (500 mL), controlled with aminocaproic acid and morfine. Thoracic angyo-CT scan was performed showing a pseudoaneurysm in the right inferior lobe (segment 6). The patient was transferred to the intervention radiology department in another center and submitted to selective bronchic arteries angiography, where the bleeding vessels where identified and embolitazion with 200 ug polyvinyl alcohol (PVA) particles was performed. On the next day, back in our ICU, the patient had another massive hemoptysis with abundant blood loss and desaturation (68%) despite tranexamic acid therapy, so he was intubated and connected to mechanic ventilation. Bronchoscopy showed active bleeding from the middle lobe bronchus and local hemostasis was performed with cold 0.9% saline and adrenaline. Initially with difficult ventilation (pH 7.06, PaCO2 88 mmHg, PaO2/FiO2: 76.1), optimized with curarization, the patient was transferred again to the intervention radiology department of another center, this time submitted to embolization with ethylene vinyl alcohol (EVOH) by CT guided transthoracic puncture. The patient didn't experience any more hemoptysis and was discharged, continuing the anti-tuberculosis therapy in the ambulatory.

Discussion: Rasmussen's pseudoaneurysm is an uncommon complication of pulmonary tuberculosis with cavitation that may lead to life threatening massive hemoptysis. Standing before such emergency, every measure must be taken to contain the bleeding and protect the airway, stabilizing the patient until resolution of the primary lesion is possible. In this case, despite two sudden episodes of major bleeding, the patient was kept alive and recovered from a very severe disease with relative little sequels.

Keywords: *Rasmussen. Pseudoaneurysm. Tuberculosis. Hemoptysis.*

PC 137. BRONCHOALVEOLAR LAVAGE FOR MICROBIOLOGICAL DIAGNOSIS OF PNEUMONIA IN ICU: DOES TIMING MATTERS?

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Introduction: The role of flexible bronchoscopy (FB) in the diagnosis of pneumonia in patients under invasive mechanical ventilation (IMV) is not clearly defined neither the ideal timing to collect bronchoalveolar lavage (BAL).

Objectives: To evaluate the relevance of invasive colecting respiratory samples with FB in patients with pneumonia under IMV and the timing of the procedure.

Methods: Retrospective study of general ICU patients, aged ≥ 18 years, with clinical and radiological diagnosis of pneumonia, from January 2017 to December 2018, submitted to BAL with 150 ml NaCl 0.9%. We compared the microbiologic results, considering the timing between orotraqueal entubation and the FB: ≤ 48h (Group 1) and > 48h (Group 2). Exclusion criteria: tuberculosis diagnosis at the admission, non-infectious motive for FB. Statistical analysis was performed in SPSS v24.

Results: 62 FB were performed, 49 met the inclusion criteria. Mean patient age was 65.4; 69% were male gender. Diagnosis in ICU admission: medical 36 (73.5%), surgical 6 (12.2%), trauma 7 (14.3%). Average severity scores: SAPS II 49, APACHE II 24. Group 1: 22 procedures and Group 2: 27. BAL had positive cultures in 24 (49%) samples, Group 1: 9 (40.9%), Group 2: 15 (55.6%) (p = 0.3). The mean ventilation days was similar in both Groups: 1 - 12.7 days and 2 – 12.9 days. The mean time of antibiotic at BAL day was 2.6 days; 15 patients (30.6%) had no antibiotic.

Conclusions: This study revealed that BAL did the diagnosis in 49% of FB performed, with higher accuracy when performed in patients with > 48h of MV, although not statistically significant.

Keywords: *Bronchoalveolar lavage. Pneumonia. Bronchoscopy.*

PC 138. COMMUNITY-ACQUIRED PNEUMONIA ON THE ICU: A 4-YEAR RETROSPECTIVE

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Introduction: Community-acquired pneumonia (CAP) is a serious health problem, linked to high mortality. There are several severity scores available, such as the Pneumonia Severity Index (PSI), IDSA (Infectious Diseases Society of America)/ATS (American Thoracic Society) severe pneumonia criteria and CURB-65.

Objectives: This study aimed to investigate the prognostic factors of CAP, including the three scores mentioned.

Methods: A retrospective analysis of the patients with CAP admitted in a central hospital ICU between 01/2015 and 12/2018 was conducted. Patient characteristics, vital signs, laboratory and image findings were evaluated.

Results: 52 patients were considered, with a mean age of 61.0 years and a male predominance (n = 32; 61.5%). 19.2% (n = 10) of the patients presented a history of alcoholism. The most described symptom was dyspnea (80.8%; n = 42), followed by cough (59.6%; n = 31). The mean ICU length stay was 8.0 days. 7 patients (13.5%) died during the ICU stay and 6 (11.5%) died on the follow-up. The mean CURB65 value was 3.0 and the mean PSI 125.5. They presented a mean of 3.5 minor criteria of IDSA/ATS and 81.6% presented the two major criteria. The PSI score was statistically higher on the group of patients that died on the ICU admission (p = 0.04) unlike the CURB-65 and IDSA/ATS minor criteria. Individually, the history of alcoholism (p = 0.006) and a lower pH (p = 0.019) were associated with mortality.

Conclusions: This CAP population admitted to ICU showed the relevance of PSI, and the alcoholism and the lower pH as isolated predictors of mortality. Critically ill patients with CAP are an extreme example of this pathology. The identification of the patients with higher risk of mortality it's crucial for optimization of the treatments and reduction of mortality rates.

Keywords: *Community-acquired pneumonia. Severity scores. Mortality.*

PC 139. PNEUMONIA ON ADMISSION IN A CRITICAL CARE UNIT: A RETROSPECTIVE ANALYSIS OF ONE YEAR

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Objectives: To characterize the population with community acquired pneumonia or hospital acquired pneumonia, present on the

admission in a Critical Care Unit (CCU), during a period of one year (from June 2018 to May 2019).
Methods: Only patients with microbiologic agent identification were considered, with samples collected previous to or at the CCU admission.
Results: During this period, a total 349 patients were admitted in the CCU. Of these, 70 had pneumonia diagnosis at admission, based on clinical and imagological criteria. Fifty were male (71.43%). The mean age was 60.03 ± 16.65 years. According to their origin, the patients were mostly sent from the Emergency Room (37.14%) and from Hospital Wards (34.29%). Concerning to comorbidities, 20 patients (28.57%) had chronic respiratory disease, namely COPD in 85.00% of those. Thirty-three patients (47.14%) had immunosuppressive conditions. The APACHE II mean was 21.21 ± 9.13 and SAPS II mean was 49.87 ± 18.15. Five patients (7.14%) were submitted to non-invasive ventilation with a mean utilization time of 2.00 ± 2.00 days and 69 (98.57%) to invasive ventilation with a 7.76 ± 9.18 mean time. About bronchial secretions microbiology, 93 agents were isolated, being the most frequent: methicillin-susceptible Staphylococcus aureus – 18, Streptococcus pneumoniae – 17, Haemophilus influenzae – 15, Escherichia coli – 8, Klebsiella pneumoniae – 6, Pseudomonas aeruginosa – 5, Enterobacter aerogenes – 3, Moraxella catarrhalis – 3, Streptococcus pyogenes – 3, Enterobacter cloacae – 2, Proteus mirabilis – 2, Citrobacter freundii – 2. In some cases, more than one agent was founded. Twelve blood cultures (17.14%) were concomitantly positive. Observing the sensibility of the isolated microorganisms, 27 (29.03%) were multidrug-resistant organisms. Most patients had been under various antibiotics. After the empiric antibiotic initiation, in 29 patients (41.42%), a de-escalation according to antibiotic susceptibility testing was possible. The mean CCU hospitalization time was 8.89 ± 9.28 days. During the CCU permanence, a 40.00% mortality was registered. Of the patients who were discharged from the CCU to other wards, a 33.33% mortality was observed.
Conclusions: This work allowed to characterize the patient' with admission pneumonia diagnosis in one CCU, with agent isolation, namely according to comorbidities and gravity. The authors point out the importance of etiologic agent documentation in antibiotic guidance.

Keywords: *Pneumonia. Critical care unit.*

PC 140. NON-INVASIVE VENTILATION IN WEANING PROCESS (NON-INVASIVE VENTILATION AS PROPHYLACTIC AND FACILITATION TECHNIQUE)

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Introduction: Non-invasive ventilation (NIV) has been used as an adjuvant in weaning process, as prophylactic rationale (consolidation and prevention of failure and need for reintubation) or as facilitator of ventilatory reautonomization (earlier extubation). NIV application in these scenarios has shown to be effective in reducing reintubation in specific patient groups (acute exacerbation of chronic respiratory failure, heart failure). The prognostic impact of reintubation and/or prolongation of invasive ventilatory support supports the need to recognize patients who may benefit from NIV in the ventilatory reautonomization process.
Objectives: to characterize the use of NIV in ventilatory weaning process in a general intensive care unit (GICU); identify predisposing factors of benefit in the use of NIV in ventilatory weaning.
Methods: retrospective observational study, including patients undergoing NIV in the process of consolidating ventilatory weaning in the 2017 annual period. Statistical analysis used the Statistical Package for Social Sciences program (version 25.0, IBM Corporation, USA).
Results: NIV use in the ventilatory weaning process occurred in 13.7% of the total GICU admissions (55/401). Patients allocated to this rationale of care had a median age of 70.0 years (P25-75, 61.0-77.0 years), with male gender predominance (72.7%). The most frequent admission typology was medical (90.9%). The most frequent reasons for admission were septic shock (41.8% [respiratory source, 27.3%; abdominal source, 14.5%]) and acute exacerbation of chronic obstructive pulmonary disease (COPD) (10.9%). Chronic respiratory disease was identified in 27.3% of patients. The diagnosis of heart failure was present in 36.4% of patients. The severity stratification, based on Simplified Acute Physiology Score (SAPS) II, had an average value of 51.2 (95%CI, 47.4-55.1). The mean time of invasive mechanical ventilatory support was 7.1 days (95%CI, 5.4-8.8 days). The main reasons for NIV allocation in the ventilatory reautonomization process were the recognition of COPD (27.3%) and heart failure (20.0%) scenarios. Type 2 respiratory failure of unknown etiology represented 18.2% of the cases. The reintubation rate was 16.4%. The reintubation event was not statistically related to any of the factors analysed (age, SAPS II, intubation time). The average length of stay (LOS) in the GICU was 10.0 days (95%CI, 8.3-11.7 days) and in the hospital 28.5 days (95%CI, 22.1-35.0 days). The mean intra-GICU and hospital LOS was higher in reintubated patients (intra-GICU LOS, 8.5 vs 17.8, $p < 0.001$; hospital LOS, 23.9 vs 52.2, $p = 0.031$). The readmission rate in GICU was not different from that observed in the non-included patient group (9.1% vs 6.2%, $p = 0.35$). SAPS II indexed in-hospital mortality was 0.44 (GICU global indexed in-hospital mortality 0.73).
Conclusions: NIV in the ventilatory weaning process is basal to the GICU process of care, being particularly relevant in cases of acute chronic respiratory failure and heart failure. Data for patients not allocated to NIV (extubation to spontaneous ventilation) are under review.

Keywords: *Non-invasive ventilation. Weaning.*

PC 141. COMPLICATIONS AND SAFETY IN THERAPEUTIC BRONCHOSCOPY IN MALIGNANT CENTRAL AIRWAY OBSTRUCTION: A REAL-LIFE EXPERIENCE

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Introduction: Therapeutic bronchoscopy (TB) for malignant central airway obstruction (mCAO) is considered a palliative treatment for symptomatic relief. However, its performance is not free of complications and may even precipitate a tragic outcome.
Objectives: To find out whether there are predictors of non-fatal complications and procedure related death of TB performance for mCAO.
Methods: Retrospective unicentre study including all patients submitted to TB due to significant and symptomatic mCAO, from January 2008 to December 2018. Significant mCAO was defined as reducing airway to 50% or less of the normal lumen. Data related to patient and lesion characteristics, endobronchial procedure and outcome were collected. Primary end-point (PE) was non-fatal procedure related complications occurrence. Secondary end-point was a composite outcome of intraprocedural death and death on the first 24h after the procedure.
Results: Sixty-five patients were included: 42 (64.6%) male, mean age 61.8 ± 12.9 years, who had 81 procedures: 65 (80.2%) first TB and 16 (19.8%) redo TB. Previous to TB, 76.5% patients referred dyspnoea (38.3% at rest and 38.3% on exertion), 13.6% haemoptysis and 13.6% patients were diagnosed with mCAO due to lung metastasis from a non-lung cancer. Procedure was considered emergent in 12.3% cases and urgent in 22.7%. The degree of stenosis was divided into 50-69% (21%), 70-89% (26%) or > 90% (53%). Successful airway bronchoscopic reopening was achieved in 58% cases. Proce-

dure non-fatal related complications were present in 18.5% (n = 15) cases: 8.6% non-haemorrhagic haemodynamic instability, 6.2% haemorrhagic haemodynamic instability, 6.2% cases of laceration of airway wall and 2.5% of pneumothorax with subcutaneous emphysema. Metastatic disease was significantly associated with complicated procedure (p = 0.027) and successful airway bronchoscopic reopening was significantly associated with free of complication procedures (p = 0.032). In multivariate logistic regression, 3 independent predictors of PE were identified. Male gender (OR 0.097, 95%CI 0.018-0.533) and elective procedure (OR 0.105, 95%CI 0.021-0.524) were protective factors while mCAO > 90% (OR 6.372, 95%CI 1.023-39.709) was a risk factor to PE occurrence. Secondary outcome was observed in 7.4% of cases (n = 6). It was significantly associated with emergent procedures (p = 0.024) and presence of dyspnea at rest (p = 0.010) and hemoptysis (p = 0.031) previous to intervention. All patients had mCAO > 90% (p = 0.028). No independent predictors were identified.
Conclusions: In our study, the incidence of non-fatal complications was significant but procedure related death was low. We identified several determinants and predictors that possibly influence their occurrence; being aware of them may help us improving our daily practice and procedure outcomes.

Keywords: *Airway obstruction. Therapeutic bronchoscopy. Complications. Death.*

PC 142. CLOSURE OF TRACHEOESOPHAGEAL FISTULA BY AMPLATZER OCCLUDER: FIRST CASE REPORTED IN PORTUGAL

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CHVNG/E.

Introduction: The onset of a tracheoesophageal fistula can have various causes and often induces cough, dysphagia, aspirations of food content leading to recurrent respiratory infections and malnutrition. The treatment of choice is surgical, with over-the-scope esophageal clips (OTSC) or esophageal/tracheal prostheses being an alternative in patients without surgical indication. Some cases of usage of Amplatzer Occluder (nitrile devices used for interauricular communications closure) have been described to treat this condition.
Case report: Female patient, 67 years old, smoker. Personal history of COPD, stroke, hypertension, depression and sequelae of pulmonary tuberculosis. History of a car accident 45 years ago requiring prolonged mechanical ventilation and tracheostomy, that was subsequently closed. Usually medicated with Indacaterol + Glycopyrronium Bromide, Furosemide, Spironolactone, Indapamide + Amlodipine, Mirtazapine, Lorazepam and Diazepam. Since 45 years ago, she reported frequent choking, dry cough and recurrent respiratory infections requiring several hospitalizations. In 2016, she had two hospitalizations for respiratory infections that led to a larger study, which revealed the presence of a tracheoesophageal fistula in the posterior wall of the trachea, 5 cm from the carina, initially documented by bronchofibroscopy (BFC). The initial management of tracheoesophageal fistula was done by OTSC via upper digestive endoscopy. Due to recurrence of the fistula, the patient underwent two more attempts to close the fistula with OTSC, always with relapse. In May 2019, the patient went to the emergency department due to the aggravation of choking episodes, dyspnea, cough and vomiting while eating, and was hospitalized for study. During hospitalization, it was observed by BFC a dimensional increase of the fistula, and the patient started nasogastric tube feeding and refused any surgical treatment. Given the lack of response to the OTSC and the patient refusal for surgical treatment, it was proposed to use Amplatzer Occluder that the patient accepted. The device was placed under fluoroscopic control and directly visualization by the esophageal and tracheal strands. The guidewire was passed through the esophagus to the fistula and then removed through the tracheal slope with bronchofibroscopic biopsy forceps. The 8 mm Amplatzer Occluder was placed by the guidewire of the tracheal strand with sequential opening of the device initially in the esophageal strand and then in the tracheal strand, and the correct placement of the device was verified. Since then the patient has begun oral feeding again without further choking episodes or respiratory infections. It will still be reevaluated endoscopically.
Discussion: Tracheoesophageal fistulas may be refractory to usual endoscopic treatments and are a major cause of morbidity for the patient. In patients where surgery is not an option, it is important to consider new treatment possibilities such as the placement of Amplatzer Occluder which has shown good results although there are still few cases described.

Keywords: *Tracheoesophageal fistula. Amplatzer.*

PC 143. CLINICAL UTILITY AND SAFETY OF EUS-B ON THE APPROACH OF MEDIASTINAL AND PULMONARY LESIONS

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Introduction: Successful transesophageal and gastric use of the EBUS scope (EUS-B) was first reported in 2007. EUS-B makes a more complete assessment of the mediastinum possible when added to EBUS-TBNA. It provides nearly complete access to all relevant lymph nodes for staging lung cancer; permits the diagnosis of para-esophageal mediastinal and lung lesions which cannot be accessed through the tracheo-bronchial tree; permits access to the lower mediastinal lymph node stations (e.g. stations 8 e 9) and sub-diaphragmatic lymph nodes and may offer an easier alternative for puncturing challenging lymph nodes in comparison to EBUS (e.g. stations 2L and 4L).
Objectives: To determine the impact of EUS-B, isolated or combined with EBUS, on the approach of para-esophageal mediastinal and lung lesions.
Methods: A retrospective, single center study, included patients with mediastinal lesions and lung lesions undergoing EUS-B from January 2017 to August 2019 at Instituto Português de Oncologia de Coimbra. The procedures were performed in one session by a single operator (pulmonologist). The sensivity of EUS-B were assessed.
Results: One hundred twenty-two patients were included, with a male predominance (n = 77, 63.1%) and a median age of 65.8 ± 9.4 years. Sixty-eight (55.7%) patients performed isolated EUS-B and 54 (44.3%) was performed EBUS plus EUS-B. In 70 (57.4%) cases the procedure was performed under conscious sedation and nasal intubation. Of the total, only 105 (86.1%) underwent diagnostic puncture: 72 (68.6%) for suspected lung cancer (diagnosis and/or staging); 21 (20.0%) for isolated mediastinal adenopathies and 12 (11.4%) for suspected metastases from extrathoracic primary tumors. The most frequent target lesions were station 7 (n = 52, 49.5%) followed by 4L (n = 42, 40%). The procedure was positive in 53 (50.5%) patients; the most frequent diagnosis was lung cancer (n = 41), with a predominance of adenocarcinoma followed by small cell lung cancer (n = 9), carcinoma NOS (n = 5), squamous cell carcinoma (n = 3) and pleomorphic carcinoma (n = 1). The overall sensibility was 88.4%. No major complications were registered.
Conclusions: EUS-B is a feasible and safe technique, of added value in combination with EBUS in difficult to reach nodal stations and well tolerated when performed isolated for diagnosis purpose in patients with metastatic disease or para-esophageal mediastinal and lung lesions or unfit for endobronchial procedure.

Keywords: *EUS-B. Endoscopic techniques.*

PC 144. FIBEROPTIC BRONCHOSCOPY IN PLEURAL EFFUSION: IS IT WORTH IT?

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Objectives: To evaluate utility of fiberoptic bronchoscopy in patients with pleural effusion through microbiological, cytopathological and histopathological results and to understand the diagnostic yield of the procedure in these patients.
Methods: Retrospective analysis of patients with pleural effusion who underwent fiberoptic bronchoscopy at Pulmonology Department of Coimbra's University Hospital from January to December of 2014.
Results: 19 patients (13 male and 6 female), aged between 35 and 88 years old, mean age of 71 years old, were identified. A bronchial aspirate was performed in all procedures. Endobronchial lesions or mucosal infiltration were found in 8 patients who were submitted to bronchial biopsy (n = 8, 42.1%). Bronchial washings were performed in 5 patients (2.3%), bronchial brushings in 4 patients (21.1%) and bronchoalveolar lavage in two (10.5%). Bronchial aspirate culture was negative or polymicrobial in 12 patients (63.2%). The main agent found in these cultures was multidrug-resistant Staphylococcus aureus (n = 3.15.8%). In 4 cases (21.1%) other agents were found, namely, Serratia marcescens, Candida albicans, Klebsiella pneumoniae and multidrug-resistant Enterobacter aerogenes. Bronchial washings/bronchoalveolar lavage cultures performed in 7 cases were negative or polymicrobial in 4 (57.1%) and positive in 3 with two multidrug-resistant Staphylococcus aureus and one Candida albicans identification. Mycobacterium agents were not found in any of the samples. In the majority of cases cytopathological analysis was conducted (n = 17, 89.5%), with all cases showing inflammatory cells and fibrin except for one where cells with moderate atypia were found. Histopathological findings were diagnostic in two cases (25%): well-differentiated epidermoid carcinoma and breast carcinoma metastasis. In 3 cases (37.5%) nonspecific bronchial inflammation was found and in the remaining 3 cases other results were obtained: epidermoid metaplasia, basal epithelium cells hiperplasia and indeterminate. Overall, in 26.3% of the cases (n = 5) a etiology for the pleural effusion was obtained through this procedure.
Conclusions: The studied population although small, shows the variety of samples obtained through fiberoptic bronchoscopy. This technique shows some utility in pleural effusion especially in association with pleural procedures.

Keywords: *Pleural. Effusion. Fiberoptic. Bronchoscopy.*

PC 145. PLEURODESIS ON MALIGNANT PLEURAL EFFUSION: TWO DIFFERENT TECHNIQUES ON A RETROSPECTIVE STUDY

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Introduction: Malignant pleural effusion is an important burden of malignant disease. Retrospective analysis of all pleurodesis performed between 2015 and 2017 at the Pneumology Service of Hospital Garcia de Orta.
Objectives: To describe one center experience on pleurodesis in malignant pleural effusion, the success rate and the main complications associated with both techniques (talc slurry or thoracoscopy) and to perform a comparative analysis between them. It was also performed a literature review on the main indications, complications and efficacy of pleurodesis on malignant pleural effusions.
Methods: We collected demographic and clinical data, site and histology of the primary tumor and pleural fluid characteristics. Primary outcomes were the effectiveness of pleurodesis defined as the lack of recurrence of pleural effusion, and mortality after pleurodesis. 61 patients were included in the study, with a slight predominance of women (52%) and a median age of 68 years old. The most common site of the primary tumor was the lung (38%) followed by the breast (28%) and gastrointestinal (13%), with the most common histology being lung adenocarcinoma (33%) followed by infiltrating ductal carcinoma (21%). In the vast majority of patients, pleurodesis was made by talc slurry (77%) and, in 23% of the patients, the technique was thoracoscopic talc poudrage with tube thoracostomy. Pleurodesis success rates were as follow: 48% had complete success, 29% had partial success, 23% had failed pleurodesis. The efficacy was similar with the two techniques (79% for talc slurry, 71% for thoracoscopic talc poudrage). There was a tendency for females to have a higher risk of suffering from pleural effusion relapse post pleurodesis interventions (32%). The only complication found was empyema (8.1%), in all cases post talc-slurry. We found a 67% survival at 30-day post- pleurodesis.
Conclusions: Our study is concordant with the reviewed literature emphasizing pleurodesis as a safe procedure in selected patients, without significant differences on efficacy between the two techniques. Pleurodesis enabled an adequate symptoms control with a low rate of complications. According to the authors, the simplicity of the technique and the less resources involved, support the choice of pleurodesis made by talc slurry as the first option.

Keywords: *Pleurodesis. Malignant pleural effusion. Thoracoscopy. Efficacy. Complications.*

PC 146. TRANSBRONCHIAL CRYOBIOPSY IN DIFFUSE PARENCHYMAL LUNG DISEASE: RETROSPECTIVE ANALYSIS OF 24 CASES

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Introduction: In the diagnostic evaluation of interstitial lung disease (ILD), the recommended approach is with a multidisciplinary team who can relate clinical, radiological and pathological data. Occasionally, the diagnosis remains doubtful even when this process is followed. In these cases, a sample of the lung parenchyma is necessary to lead to a possible diagnosis. The transbronchial cryobiopsy (TBC) arises as a promising and less invasive alternative to the surgical lung biopsy (SLB), and is acquiring an emerging role in the interstitial lung disease diagnostic process.
Objectives: Evaluate the diagnostic yield of the transbronchial cryobiopsy, most frequent pathologies and complications of this procedure, in the assessment of patients with suspected interstitial lung disease.
Methods: This was a retrospective analysis including patients with clinical and radiological traits of the interstitial lung disease, who had undergone transbronchial cryobiopsy in Faro's Unit of Algarve Hospital University Center, from April 2018 to August 2019. The procedures were performed with a videobronchoscope, using a cryoprobe for the collection of lung parenchyma specimens. Several data from the patients and the procedure was analyzed, including diagnostic yield and complications.
Results: Criobiopsy specimens from a total of 24 patients were included. The mean age was 59.2 ± 11 years, 16 patients (67%) were male. In each procedure, the average of samples obtained was 3 (range, 1 to 5). A diagnosis was achieved in 16 patients (75%). The most frequent diagnosis was chronic hypersensitivity pneumonitis (6 patients, 25%), followed by chronic interstitial pneumonitis (5 patients, 21%). Other diagnosis found were non-necrotizing granulomatous disease (4 patients, 17%), sarcoidosis (1 patient, 4%) and pneumonia by Klebsiella pneumoniae (1 patient, 4%). The complications derived from the procedure were moderate hemorrhage (6 patients, 25%) and pneumothorax (1 patient, 4%). There were no severe complications.

Conclusions: The results sustain the idea that transbronchial cryobiopsy is a safe and useful technique in the diagnosis of interstitial lung disease, and this procedure should always be considered in the diagnostic process.

Keywords: *Cryobiopsy. Diffuse parenchymal lung disease. Bronchoscopy.*

PC 147. A CASE OF BRONCHIAL DIEULAFOY DISEASE

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Introduction: Dieulafoy's disease is defined by atypical, dilated arteries in the submucosa with a high risk of bleeding. This disease is related most times with the gastrointestinal organs, but it's described for other organs, including the lung. Dieulafoy's disease of the bronchus is an uncommon disease, with less than 40 reports in the literature, that manifests as life-threatening massive hemoptysis.
Case report: We present a case of a 59-year-old man, with no relevant past medical history, that was admitted at a hospital because of hemoptysis. No other symptoms were presented. His laboratory studies (coagulation, inflammatory and autoimmune markers) were normal and his computed tomography pulmonary angiography showed presence of blood in the lumen of the right bronchial tree and hazy condensation at the lower right lobe. A bronchoscopy was performed that showed remains of old blood, mainly at the right, and a submucous serpiginous tubular lesion at the lateral segment of the inferior right lobar bronchus. That lesion was under visualization when it started spontaneously to bleed profusely. The hemorrhage was of difficult control, but after treatment with applying cold saline, adrenaline and a fogarty balloon it ceased leaving a clot from the right bronchi to the carina. About two hours after the bronchoscopy, the patient had massive hemoptysis with change in the state of consciousness and desaturation enforcing orotracheal intubation selective to the left bronchial tree and realization of a pulmonary arteriogram with embolization of anomalous artery. The patient had a good recuperation and didn´t show any recurrence after 1 year of follow-up.
Discussion: In this case, the fast identification, the multidisciplinary cooperation, and a proper guidance have led to a successful end. Episodes of massive hemoptysis are serious situations and in about 25% of cases the cause it's not identified. The visualization of these vascular lesions by videobroncofibroscopy is conditioned by their location and the presence of superficial clot. If bronchial Dieulafoy lesions are suspected, caution is essential and biopsies avoided because can bring fatal complications.

Keywords: *Dieulafoy's disease. Hemoptysis.*

PC 148. CONGENITAL SUBGLOTTIC STENOSIS: CONCERNING ADULT EFFORT DYSPNEA

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Introduction: Subglottic stenosis is the partial or complete reduction of airway caliber. It is classified according to etiology (congenital or acquired), degree of obstruction and extent. Congenital subglottic stenosis is secondary to inadequate lumen recanalization during embryogenesis and accounts for 5% of subglottic stenosis cases. Congenital stenosis is subdivided into two main types: membranous and cartilaginous. Typical clinical manifestations are progressive dyspnea, stridor and wheezing. The clinical spectrum of congenital subglottic stenosis is variable, including patients with exuberant symptoms from birth, symptoms triggered after infectious complications or physical effort and asymptomatic patients (random diagnosis - in the context of intubation in unrelated surgery).
Case report: Female, 48 years old, non-smoker, with no relevant personal history, presented with progressive worsening dyspnea in the last 2 years, becoming incapacitating. Subsequent appearance of dry cough and stridor. In the respiratory functional study, it was highlighted the flattening of the expiratory branch without changes in the inspiratory curve, compatible with variable intrathoracic upper airway obstruction. The thoracic CT showed a fine-caliber accessory bronchus supplying the right upper lobe originating from the subcarinal trachea. Bronchofibroscopy was performed and a subglottic membrane, that prevented the passage of the fibroscope, was observed. A rigid bronchoscopy was proposed, and a subglottic pink membrane with a 4 mm orifice was visualized, as well as an anatomical variation of a fine-caliber accessory bronchus for the right upper lobe emerged from the distal trachea. In the last year, she performed photocoagulation and three dilations, resulting in symptomatic but transient improvement. The revised thoracic CT showed relatively concentric soft tissue thickening of the infraglottic gait of the larynx and the cervical trachea extending to the first tracheal rings, and subglottic stenosis leading to a 2/3 decrease in lumen. Due to the recurrence character with progressively shorter intervals between dilations, he performed laryngotracheoplasty with costal cartilage and tracheostomy followed by cricotracheal resection. The histology of the operative specimen demonstrated chronic inflammation and fibrosis of the chorion. According to the clinic, laboratory, imaging and histological diagnostic investigation excluded acquired forms of stenosis, and it was admitted to be a case of congenital stenosis, which was less commonly symptomatic late in the patient's life. Also note that currently the patient has regular clinical evaluation in consultation of Pulmonology.
Discussion: Subglottic stenosis is a complex condition capable of conditioning a significant limitation on quality of life (either due to symptomatology or morbidity associated with multiple therapeutic interventions) and its approach should be multidisciplinary (Otorhinolaryngology, Cardio-Thoracic Surgery and Pulmonology) thus allowing better guidance and treatment. The therapeutic approach depends on the severity of the stenosis, symptomatology and the patient's expected goals and includes: expectant attitude; endoscopic and surgical approach. The evaluation and treatment of this pathology is based on invasive exams and complex surgical interventions with associated important complications and a not negligible recurrence rate. Thus, the treatment of subglottic stenosis remains a real challenge today.

Keywords: *Subglottic stenosis. Congenital. Effort dyspnea. Therapeutic challenge.*

PC 149. ASPIRATED FOREIGN BODIES IN THE TRACHEOBRONCHIAL TREE: THE BEATRIZ ÂNGELO HOSPITAL INTERVENTION PNEUMOLOGY UNIT EXPERIENCE

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Introduction: Foreign body aspiration is a serious condition and can be potentially life threatening. Severity depends on the localization and extent of airway obstruction. Foreign bodies aspiration can occur at any age, being more frequent at age extremes. In adults, foreign bodies aspiration are associated with accidental situations or altered state of consciousness. Broncofibroscopy is the method of choice for diagnosing the presence of foreign bodies in the airway, and rigid bronchofibroscopy the method of choice for its removal.

Objectives: To review the casuistic of the removed foreign bodies, in the Interventional Pulmonology Unit of the Beatriz Ângelo Hospital between February 2012 and September 2019. To emphasize the importance of a multidisciplinary team in conducting these examinations.
Methods: Patients undergoing bronchofibroscopy and rigid bronchoscopy with suspected foreign body aspiration from February 2012 to September 2019 were included. We retrospectively assessed demographic characteristics, foreign body type, location, method of removal, type of anesthesia, complications, and human resources needed. The role of the multidisciplinary team was reviewed.
Results: Nineteen endoscopic examinations were performed on patients suspected of foreign body aspiration (mean age 58 years, 63.2% male) of which 15 were videobronchofibroscopy and 4 rigid bronchoscopy. All were performed with anesthetic support (13 under deep sedation and 6 under general anesthesia). The location of foreign bodies was in 100% of the cases in the right bronchial tree and the removal technique of choice was the use of foreign body forceps. There were no immediate complications resulting from the technique. In all patients (n = 19), an initial approach was performed by the nurse and doctor, with prior preparation of the material necessary to perform the procedure safely. In the examination room, the nursing team verified the correct equipment/material functioning and disinfection/sterilization, and in all patients (n = 19) a surgical safety checklist was applied. In all procedures (n = 19), 1 pulmonologist, 1 anesthetist and 2 nurses were present (one providing the instruments/material for the procedure to be performed safely and the other supporting the anesthesiologist for drug preparation/administration). There was a dedicated area for patients after the exam, involving surveillance by a nurse, ensuring the safe recovery of the state of consciousness and discharge schedule. This was also true for the 19 users in our sample.
Conclusions: Removing foreign bodies from the bronchial tree is a procedure of significant complexity that should only be done by experienced teams in the field. The presence of a multidisciplinary team ensures that it is carried out safely and effectively, as we confirmed with our sample results. Although rigid bronchoscopy is considered the "gold standard" in the removal of foreign bodies, in this sample there was a predominance of the use of videobronchofibroscopy, with equal efficacy and safety, which is in accordance with the most recent literature.

Keywords: *Nursing care. Foreign bodies. Bronchofibroscopy. Rigid bronchoscopy. Sedation. General anesthesia.*

PC 150. THE DIAGNOSTIC CHALLENGE: A CASE REPORT

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Introduction: The differential diagnosis of lung masses includes infectious, inflammatory and neoplastic causes. When considering oncologic disease, in addition to primitive lung neoplasms, lymphoproliferative diseases should be thought of. Pulmonological techniques are crucial to the diagnosis.
Case report: Female, 45 years old, non-smoker, educational assistant. Right breast fibroadenoma. No medication. Went to the emergency department (ED) with a dry cough, fever, night sweats, asthenia and weight loss of 10 kg in 4 months. At admission, 39 ºC, normotensive, HR 120 bpm, eupneic at room air, SpO2 98%, pale, at pulmonary auscultation with decreased breath sounds in the right apex. No palpable adenopathies. Analytically, Hb 8.0 g/dL, Htc 26%, VGFM 69 fL, HGM 21 pg, leukocytosis 36,100/µl, 86.4% neutrophils, platelets 983,000/µl, PCR 16.5 mg/dL. Chest X-ray showed condensation of the right upper lobe (RUL). Thoracic-abdominal-pelvic CT scan showed obstructive pneumonia, with a heterogeneous mass, lobulated 97 mm in the RUL, hepatic and mammary nodules and hilar, mediastinal and celiac adenopathies. Started empirical antibiotic therapy with amoxicillin/clavulanic acid and azithromycin. Videobronchofibroscopy (BFC): inflammatory lesions of the right bronchial tree, distal biopsies were made and did not reveal atypia. After clinical improvement, she was discharged against medical advice, without performing transthoracic aspiration biopsy (BATT). The patient returned to the ED after 15 days, with right thoracalgia, night sweats, and fever. She maintained the imaging and analytical changes. Started empirical Levofloxacin. She underwent a new BFC, with inflammation from the lower 1/3 of the trachea, right main bronchus and upper lobar. Distal biopsies were performed, and revealed bronchial mucosa with fibrinoleukocyte exudate, without dysplasia or atypia. Submitted to BATT, the anatomopathological evaluation showed active chronic inflammatory infiltrate with lymphoid aggregates. Thoracic-abdominal-pelvic CT re-evaluation showed maintenance of the previously described alterations and hepatomegaly, hepatic hilum, gastric and retroperitoneal adenopathies. She presented with dyspnea and severe pain complaints in the lumbar region. On objective examination, with left supraclavicular and inguinal adenopathies, breath sounds decrease in right hemithorax. Gasometric evaluation at room air: pH 7.42; paCO2 50; paO2 54 mmHg; SO2 85.7%. Analytically, maintained high inflammatory parameters. Antibiotic therapy was stopped and started on corticosteroid therapy. Imaging reevaluation revealed right pleural effusion, adjacent atelectasis and volumetric stability of the LSD mass. The patient underwent ultrasound-guided thoracentesis and pleural biopsies. Pleural fluid revealed an exudate, with negative cytological and microbiological studies. Histological evaluation of the biopsies identified chronic inflammatory infiltrate without signs of malignancy. She presented a progressive decrease in inflammatory parameters and remained stable. After that, she underwent a new BATT whose findings were identical to the previous ones. Inguinal ganglion biopsy revealed B cell lymphoma, with intermediate features between diffuse large cell lymphoma and classic Hodgkin's lymphoma, CD20+, CD79a+;PAX5+; BCL6+; CD30+; CD10-; CD2-; ALK- and EBER-. Started R-CHOEP chemotherapy cycle.
Discussion: Primary and secondary lymphoproliferative disease involvement was considered. However, the multiple pneumological techniques performed did not allow the diagnosis. Only the systemic progression of the disease, after excision of peripheral adenopathy, allowed to define the etiology of the chest mass. This case is rare because of the histological type classified as "grey zone".

Keywords: *Lymphoproliferative disorders. Grey zone lymphoma. Pulmonary lymphoma.*

PC 151. NEGATIVE PREDICTIVE OF EBUS FOR N2 IN LUNG CANCER

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Introduction: Endobronchial ultrasound (EBUS) has been proving its value as an important minimally invasive technique in lung cancer evaluation. In patients who are surgical candidates, mediastinal staging with N2 characterization is fundamental.
Objectives: To analyze the negative predictive value (NPV) of EBUS for N2 disease in lung cancer patients who are surgical candidates.
Methods: A retrospective analysis of patients who performed EBUS between January 2015 and June 2019 in Hospital Beatriz Ângelo was performed. Among these, those who performed EBUS because of lung cancer and subsequently underwent surgery were selected. These were characterized in terms of demographic and radiology data (computed tomography [CT] and positron emission tomography [PET]), diagnosis and treatment.
Results: 218 EBUS were performed with 127 (58%) in lung cancer patients. Among these, 21 patients subsequently underwent sur-

gery. A mean age of 62 ± 10.9 years and a predominance of male gender (76.2%) were observed. Transbronchial needle aspirations were performed in 18 patients with 32 punctured nodes (mean 1.77 punctured nodes per patient). The most frequent punctured nodes were station 7 (n = 15, 46.9%) and 4R (n = 11, 34.3%). Mean node diameter (by EBUS) of punctured nodes was 12.6 ± 6.5 mm and of nonpunctured nodes was 4.5 ± 1.3 mm (p value < 0.001). Among the 3 patients with N0 staging by EBUS and N2 by surgery, lung resection with lymph node dissection was performed in 2 and mediastinoscopy in 1. In our sample, EBUS NPV for N2 was 80%. One of the 3 patients had a station 5 positive, not accessible by EBUS. Excluding this patient, EBUS NPV for N2 was 86.6%.
Conclusions: EBUS is a minimally invasive lung cancer mediastinal staging technique with a high NPV for N2. Therefore, it prevents futile surgeries and associated risks. The small sample size is a limitation of this study.

Keywords: *EBUS. Lung cancer. Mediastinal staging.*

PC 152. FOREIGN BODY ASPIRATION AFTER HIGH-SPEED CAR CRASH

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Introduction: Foreign body aspiration is a possible complication in trauma patients, although it is often neglected. Dental parts are the most frequently described foreign bodies in this context, particularly after maxillofacial trauma.
Case report: The authors report the case of a previously autonomous 64-year-old male patient with no relevant medical or surgical personal history. He was admitted to the Emergency Department after a high-speed car crash, during which he suffered a frontal collision with a heavy vehicle and was incarcerated in his vehicle until the arrival of the prehospital emergency team. On initial observation in the Emergency Room, the patient had a permeable airway, was tachypneic, with bilateral thoracic expansion, with 99% SpO2 under 50% FiO2, tachycardic, normotensive after 2 liters of fluids (120/70 mmHg), collaborative and oriented. Pulmonary auscultation was normal. The patient had blunt cut wounds in the right supraciliary and temporal regions, as well as multiple abrasion wounds on the chest. Radiographs of the long bones were performed, which revealed a distal fracture of the right radius and of the left femur and tíbia. Computed tomography (CT) of the skull did not reveal any alterations. CT of the spine did not show any fractures or dislocations. CT of the thorax, abdomen and pelvis excluded pneumothorax or pleural effusion, as well as post-traumatic injuries to solid abdominopelvic organs, but revealed two left rib fractures and two pericentimetric hyperdense images at the right main bronchus and right lower lobe bronchus suggestive of foreign bodies, as well as bilateral posterobasal alveolar opacities suggestive of aspiration. The patient was admitted to the operating room for surgical treatment of the femoral fracture, followed by immobilization of the remaining fractures. There was a good overall clinical evolution, although the patient complained of persistent non-productive cough in the postoperative period. On the fourth day after admission, he suffered an intense coughing attack with spontaneous exteriorization of a vitreous foreign body, associated with small-volume hemoptysis. A CT of the chest was repeated, which showed persistence of the hyperdense image at the right lower lobe bronchus level, but now an absence of the image in the right main bronchus. The patient underwent flexible bronchoscopy, which revealed a foreign body housed at the emergence of the right basal pyramid, about 1 cm in diameter, compatible with a car windshield fragment with normal adjacent mucosa. It was removed with biopsy forceps without any complications. In the following days, the cough complaints were resolved.
Discussion: This case is especially interesting because of the unusual endoscopic and radiological images, but also to emphasize the little importance that was initially attributed to expressive changes on the chest CT, due to the patient's instability and the urgency of the initial surgical approach. This is a situation which, in this case, was easily resolved using flexible bronchoscopy, but that may be more complex if its resolution is further delayed.

Keywords: *Foreign body. Trauma. Flexible bronchoscopy.*

PC 153. BIOLOGICAL QUALITY: THE IMPORTANCE OF THE NUMBER OF CONTROLS

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Introduction: Biological Quality Control (BioQC) is an integral part of quality control in the Lung Function Laboratory (LFR). According to the literature this control should be performed regularly from measurements of the respiratory function of at least 2 subjects (biological controls - BioC) and to determine the stability of respiratory function a minimum of 10 measurements should be obtained.
Objectives: Verify the reproducibility level of the values obtained by the BioC, in order to ensure the accuracy of the results obtained in the flung function tests performed at the LFR of Hospital Vila Franca de Xira.
Methods: To establish the normal range of the two BioC, ten spirometry tests were performed daily at the same time of day with the Masterscreen Body® equipment, meeting the ATS/ERS 2005 acceptability and reproducibility criteria. BioC1 (female, 28 years old, body mass index (BMI) 20.45 kg/m^2) and BioC2 (male, 44 years old, BMI 30.06 kg/m^2). The following parameters were considered for analysis: FVC and FEV1. To obtain the coefficient of variation (CV), the mean and standard deviation (SD) of the obtained values were calculated. Precision of the values of each BioC was verified considering acceptable a CV below 3%. SD was used to define upper limit (LS) and lower limit (LI). The mean, LS and LI were recorded on a control chart (CC). Subsequently, FEV1 and FVC were obtained fortnightly, recorded in CC and interpreted according to Westgard rules. The results of descriptive statistics of the CV are presented as the mean and SD, obtained through the statistical program SPSS® v24.
Results: Normal range: BioC1 (n = 10): CV (%) CVF = 3.86 ± 0.08; CV (%) FEV1 = 3.58 ± 0.06; BioC2 (n = 10): CV (%) CVF = 5.19 ± 0.07; CV (%) FEV1 = 4.25 ± 0.05. BioQC testing: BioC1 (n = 19): CV (%) CVF = 3.81 ± 0.09; CV (%) FEV1 = 3.43 ± 0.09; BioC2 (n = 20): CV (%) CVF = 5.12 ± 0.06; CV (%) FEV1 = 4.22 ± 0.05.
Conclusions: FVC and FEV1 values of BioC2 were always within acceptable limits, while in BioC1 the values were out of control (OOC), especially FEV1. After checking the circuit of the equipment, we admit that these values were a result of the instability of the BioC1 lung function despite being a healthy, asymptomatic non-smoking individual, with no previous history of respiratory disease, and BioC1 was replaced. This result underlines the importance of including at least two BioC in order to avoid false positive results in biological quality control.

Keywords: *Biological quality control. Spirometry.*

PC 154. WHEN PULMONARY FUNCTION TESTS DO NOT FULFILL QUALITY CRITERIA: AN UNUSUAL CASE

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Introduction: The pulmonary function tests (PFT) are a matter of importance and diagnostic orientation of the different spectra of respiratory diseases, as well as major way to determinate their

evolution. Interpretation of their data is very important, although they do not allow the definitive diagnosis (with rare exceptions).
Case report: An 81-year-old Caucasian male resident in Torres Vedras (Portugal) was referred for general pulmonology consultation following imaging findings. Treated as a non-smoking patient with a clinical history of childhood typhoid fever, paroxysmal AF, NYHAA class II chronic heart failure, and presumed presumptive diagnosis of severe sleep apnea (by his general physician), who had been under nocturnal NIV for less than 6 months. At initial observation, mMRC 3 is shown, with progressive scheduling in the last 12 months, with productive cough (mucoid) without predominance of time (usual pattern for more than 10 years), with weight loss associated with 27 kg in the last 12 months. Reference still for asthenia and adynamia, but without anorexia allegedly perceived by the patient. There was a 3-month-old PF with standard restrictive grave, normal Tiffenau index, but with technical additions that can be oriented to a patient's collaboration deficit test. It also presents a previous blood gas evaluation, which shows 55 mmHg PaCo2 compensated hypercapnia, without associated hypoxemia. Imaging findings consist of two pulmonary nodules of the right upper lobe, with a larger diameter of 1.2 cm on its major axis, with ground glass in the surrounding lung tissue. PET SCAN was also performed, which result concluded "without metabolic changes - except as physiological expected". He was hospitalized for etiological study of the clinical picture, and the validation of PFT, in line with hypercapnia aimed at a possible neuromuscular disease, having been documented by electromyographic study with definitive neurophysiological pattern for lateral amyotrophic sclerosis.
Discussion: As the PFT are of equal magnitude to the diagnostic orientation of lung diseases and diseases with pulmonary involvement, they can still be valuable even when their quality criteria is dubious.

Keywords: *Pulmonary function tests.*

PC 155. CORRELATION OF 6-MINUTE WALK TEST WITH RESPIRATORY FUNCTIONAL PARAMETERS IN COPD PATIENTS

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Introduction: The 6-minute walk test (6MWT) is a simple, submaximal test that allows functional capacity to be assessed in patients with chronic respiratory disease such as chronic obstructive pulmonary disease (COPD). Its ability to assess response to certain treatments and its prognostic value make this test essential in evaluating COPD patients. Some studies have also shown correlation between 6MWT results and patients' spirometric values.
Objectives: Our aim was to analyze the correlation between the distance walked in the 6MWT (meters and percentage of the predicted value) and the respiratory functional parameters of COPD patients.
Methods: Retrospective observational study of COPD patients who have performed 6MWT between Jan-2019 and Jun-2019 in the lung function laboratory. Demographic, anthropometric, clinical and functional data were analyzed. The correlation between the distance walked in the 6MWT (meters and percentage of the predicted value) and the FEV1 and DLCO was analyzed.
Results: 111 patients were included in the study. The mean age of the patients was 66.64 years (± 9.04) and most were male (n = 92; 82.90%). Most patients were former smokers (n = 70; 63.10%) or smokers (n = 32; 28.8%). The average body mass index (BMI) was 26.19 (± 4.37). According to the GOLD classification, 23 patients (20.70%) were from group A, 37 patients (33.30%) from group B, 11 patients (9.9%) from group C and 30 patients (27%) were from group D. Regarding respiratory functional parameters, the mean FEV1 (after bronchodilation) was 1.48 L (± 0.56), the mean TLC was 6.83 L (± 1.12), the mean RV was 3.59 L (± 0.96), the mean IC/TLC ratio was 0.35 (± 0.82) and the mean DLCO was 58.53 (± 17.36). The average distance walked in the 6MWT was 461.44 m (± 77.19) and 78.74% (± 12.58). A weak and statistically significant correlation was found between the percentage of the predicted distance walked in 6MWT and FEV1 ($r = 0.362$; $p < 0.001$) and DLCO ($r = 0.368$; $p < 0.001$). There was also a weak and statistically significant correlation between the distance walked in the 6MWT in meters and the FEV1 ($r = 0.342$; $p = 0.001$) and the DLCO ($r = 0.274$; $p = 0.007$).
Conclusions: In our study, the distance walked in the 6MWT, either in meters or as a percentage of the predicted value, had a weak and statistically significant correlation with the functional parameters assessed (FEV1 and DLCO).

Keywords: *COPD. 6MWT.*

PC 156. THE ROLE OF CONDUCTANCE IN BRONCHODILATION TEST

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Introduction: According to the ATS/ERS the bronchodilator response is defined as the absolute and percentage change in the initial forced expiratory volume in one second (FEV1) and/or the forced vital capacity (FVC) of at least 200 mL and 12% compared to baseline. However, other pulmonary parameters have been associated with the reversibility of the airflow following bronchodilator therapy, namely the resistance and the conductance.
Objectives: To evaluate the bronchodilator response through the percent change in conductance.
Methods: Retrospective analysis of 593 bronchodilation (BD) plethysmographs performed in the service between January 1st 2018 and June 30th 2019 in adults. Functional respiratory parameters, clinical information and demographic data were recorded, and 182 plethysmographs were excluded for non-compelling with the inclusion criteria. Statistical analysis was performed using STATA and the PROBIT model.
Results: From the 411 analyzed plethysmographs, 18.73% (n = 77) had positive BD. The average age of the patients was 63.08 ± 14.31 years, with 53.28% (n = 219) being male. COPD was the prominent diagnosis (24.57%, n = 101), followed by interstitial lung disease (18.25%, n = 75) and asthma (17.03%, n = 70). 12.65% (n = 52) of the patients were smokers, 35.28% (n = 145) ex-smokers and 52.07% (n = 214) non-smokers. The mean BMI value was 28.84 ± 5.77 Kg/m^2 ranging from 14.24 to 53.42 Kg/m^2. In the total population, the mean value of percent change in conductance was 24.26 ± 33.45% ranging from -45 to 170%, and the mean value of percent change in resistance was -11.48 ± 25.12% ranging from -81 to 78%, thus only the conductance displayed a positive and statistically significant correlation with a BD positive test. When separately analyzed, the group with positive BD presented a two-fold higher average value of percent change in conductance ((41.77 ± 37.13, [-25.143] vs 20.22 ± 31.23 [-45.170]), meaning that the higher the percent change in conductance, the higher the probability of positive BD. However that probability never exceeded 50% of average probability, nor was it statistically significant for any of the values present in the sample.
Conclusions: The percent change in conductance does not play a significant role in bronchodilator response.

Keywords: *Bronchodilator response. Conductance.*

PC 157. NASAL HIGH FLOW THERAPY: A REALITY AT HOME?

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Introduction: Nasal high-flow therapy represents an important advance in alternatives for noninvasive ventilatory support in patients

with respiratory failure. Initially developed in the neonatal population in intensive care units and emergency services, it has been gaining space in the adult patient area. Several studies have contributed to the presentation of the benefits of its use not only in the management of acute respiratory failure, but also in chronic respiratory failure, particularly in COPD patients. However, there is a lack of evidence in the home environment.
Case reports: Clinical case 1: female, 56 years old, BMI = 29 kg/m^2;. Diagnosis of CKD in the context of ideopathic pulmonary fibrosis and lung neoplasia with left lower lobe lobectomy in 2011. Initiates home high nasal flow therapy in October 2018: with 30-35 lpm flow, 34 ºC temperature, oxygen output at 15 lpm, to maintain 60% FiO2 and teaching and adaptation of oximetry. On monitoring visits, the patient presented adherent, reporting high comfort due to the decrease in dyspnea. Totally dependent on therapy with mean adherence of 24 h/day. He presented episodes of acute and hospitalization and resolution of the condition through the readjustment of equipment parameters. In June 2019, in consultation with the assistant Pneumologist, Hypercapnic Respiratory Failure was identified, so ST bilevel therapy with adjuvant oxygen therapy at 15 lpm was initiated during the night, maintaining high nasal flow during the daytime. Clinical case 2: male, 63 years old, BMI = 25 kg/m^2. Diagnosis of COPD and pulmonary hypertension. Start of LTOT in 2012 with several hospitalizations: pneumothorax in 2016 and respiratory infection in May 2019. Adapted to high-flow nasal therapy, with 20 lpm flow, 31º temperature and oxygen output at 10 lpm to obtain FiO2 of 59% is discharged to home 2 days after with teaching and adaptation of oximetry. The user maintained autonomy in the readjustment of parameters by medical indication, reporting a clear improvement in quality of life, better quality of sleep and remission of tiredness/cephalias after awakening. Average adherence was 10 hours/day, including the night period. When the high nasal flow is not being used, the patient undergoes oxygen therapy between 8-10 lpm with a venturi mask, using the oximeter autonomously to change between therapies.
Discussion: The use of high flow therapy at home environment is recent but its results are predictive of success. An adequate articulation between patient/caregiver, CRD health professional and attending physician is of utmost importance for the promotion and maintenance of therapeutic efficacy. In this way, we will be able to guarantee the main objectives of the therapy, namely the patient's comfort and autonomy.

Keywords: *Respiratory insufficiency. Home respiratory therapies. High nasal flow. Self-management.*

PC 158. ALPHA-1-ANTITRYPSIN DEFICIENCY: IS PI*ZZ GENOTYPE THE ONLY VILLAIN?

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Introduction: Several mutations in SERPINA1 gene can lead to alpha-1 antitrypsin (A1AT) deficiency and a wide spectrum of disease. Carriers of Z allele have hepatic accumulation of protein, leading to liver disease, and little amounts of circulating A1AT, leading to lung emphysema. Mmalton (Mm) is a rare mutation affecting M allele and is associated with increased risk of liver and lung disease.
Objectives: To compare demographic, clinical and lung function characteristics between Pi*ZZ and Pi*ZMm genotype patients.
Methods: A retrospective multicenter study was conducted comparing all adult Pi*ZMm and Pi*ZZ patients followed in the outpatient clinic of three Portuguese hospitals in 2018. Of the 66 patients included, 59.1% were males, with a mean age of 52.6 ± 13.9 years, 52 had Pi*ZZ and 14 Pi*ZMm genotype.
Results: Obstruction was detected in 64.3% of ZMm and in 55.8% of ZZ patients (p = 0.567). No statistically significant differences were found between groups concerning the mean dosage of A1AT (23.1 ± 6.6 vs 23.2 ± 6.4 mg/dL, p = 0.940) and FEV1% (80.8 ± 40.4% vs 71.3 ± 39.9%, p = 0.439). With regards to smoking history, there were statistically significant differences in FEV1% of ZZ patients, between smokers/former smokers and non-smokers (53.8 ± 33.2% vs 107.9 ± 27.3%, p < 0.001), while there were no differences for the same comparison in ZMm patients' group (p = 0.275).
Conclusions: In this study, having Pi*ZMm genotype has similar clinical outcomes, with respect to lung disease, as being homozygous for Z allele, highlighting the need of identifying other rare A1AT genotypes besides Pi*ZZ patients. Differences between actual/former smokers in Pi*ZZ patients alert, once again, for the synergic effect of tobacco smoke and A1AT deficiency in pulmonary function decline.

Keywords: *Alpha-1-antitrypsin deficiency. COPD.*

PC 159. ALPHA-1 ANTITRYPSIN DEFICIENCY ASSOCIATED WITH THE MMALTON/MPALERMO VARIANT. GENOTYPES AND CLINICAL VARIABILITY IN A PORTUGUESE POPULATION

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Introduction: Alpha-1 antitrypsin deficiency (AATD) is a common inherited disease. Apart from the two major deficient variants (PI Z, PI S), there are rarer variants with clinical significance, such as the PI Mmalton (Mm)/Mpalermo (Mpa) variant. Like the PI Z, these variants produce a misfolded protein, which polymerizes in the hepatocyte, leading to reduced AAT blood levels and predisposing the patient to both pulmonary and hepatic disease.
Objectives: Characterization of the individuals with AATD, carriers of the PI Mmalton/Mpalermo (Phe52del) variant.
Methods: Retrospective review and clinical characterization of patients with this variant, identified between 2007 and 2018 in 4 centers in Portugal.
Results: From the 73 patients identified, 58.9% were male and 35.6% were smokers/former smokers. In this cohort, 46.6% were PI*MMm/Mpa, 20.5% were PI*ZMm/Mpa, 17.8% were PI*SMm/Mpa and 15.1% Mm/MpaMm/Mpa. The mean AAT plasma level was 52.7 mg/dL. Patients carrying a Z allele or homozygous for the Mm/Mpa variant, presented a more severe deficiency (23.0 and 23.9 mg/dL respectively). Family screening, respiratory symptoms and liver disease led to the diagnosis in 49.3%, 32.9% and 9.6% of the patients, respectively. Pulmonary disease was diagnosed in 46.5% of the patients and hepatic disease was present in 22.4%.
Conclusions: The clinical manifestations in patients with the PI Mmalton/Mpalermo variant are heterogeneous. In this sample, a significant proportion of patients already had pulmonary or hepatic disease at diagnosis, which support the need for a greater awareness about this variant among clinicians.

Keywords: *Alpha-1 antitrypsin. Alpha-1 antitrypsin deficiency. COPD. Cirrhosis.*

PC 160. AN INITIAL GROUP APPOINTMENT IN SMOKING CESSATION: A LIGHT AHEAD?

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Introduction: Smoking is the leading cause of preventable deaths in the world. Although health professionals have the duty to alert and refer patients to Smoking Cessation, the waiting list for Smoking

Cessation Appointment, often exceeds human resources and health services infrastructures.
Methods: To the first group appointment were summoned the maximum number of patients that could be scheduled within 2 weeks. This appointment was performed in a training room, where questionnaires were fulfilled and a PowerPoint presentation was made that clarified the purpose and methodology of the Smoking Cessation programme. In the end, individual appointments were scheduled. Patients took with them a leaflet to record smoking habits and pertinent information. The authors compare the number of appointments and the waiting list at the end of 2017 versus the end of 2018, the year in which this group appointment was introduced.
Results: Between 2017 and 2018 there was an increase in the number of patients summoned for first appointments (87 to 192), an increase in the number of consultations made (from 44 to 101), a decrease (41.2%) in the number of patients in the waiting list from 148 to 61 and a decrease in average time on the waiting list (from 334.3 to 162.9). At the end of May 2019 the number of patients in waiting list was 43, from the end of 2018 to May 2019 the number of days on the waiting list went from 162.9 to 73.7.
Conclusions: The implementation of a first smoking cessation group appointment allowed a greater number of patients to be contacted and to reduce the waiting list, making the waiting time more adequate to the specificities of this consultation.

Keywords: *Smoking cessation. Smoking. Group appointment.*

PC 161. KNOWLEDGE AND SMOKING MANAGEMENT BY HOSPITAL MEDICAL RESIDENTS

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Introduction: Smoking is the main evitable cause of morbility and mortality. An appropriate approach by health professionals is fundamental to smoking cessation.
Objectives: To evaluate the importance attributed to smoking, previous training and need for future training, practical knowledge and smoking management by hospital medical residents.
Methods: Anonymous, voluntary "online" survey distributed to hospital medical residents.
Results: 83 medical residents answered the survey. Mean age was 25 years old, 60% were female, 76% were specialty residents (SR) and the remaining were general residents. On SR group, the commonest specialties were Internal Medicine (19%), Pulmonology (16%), General Surgery (13%), Pediatrics, Medical Oncology and Psychiatry (6% each), Orthopedics and Anesthesiology (5% each). 74% were non-smokers and 10% were ex-smokers. Smoking importance to disorders in their field was considered essential by 21% of the residents, very important to 45% and important by 27%. All residents agreed on the need to health professionals always inquire their patients' smoking habits. When asked about their previous training in this area, 67% considered to have knowledge on smoking cessation, although 68% felt the need for more training is this area. In fact, previous training was considered insufficient to allow them to: evaluate smokers dependency level (54%), evaluate smokers motivation to smoking cessation (49%), "5 A's" brief approach to smokers (66%), approach ambivalent smokers or those who do not intend to stop smoking (64%). It is also important to report that 48% dos the residents did not consider that their previous training has allowed them to identify patients who should be referenced to specialized intervention and 75% revealed that it has not also prepared them to prescribe and monitor pharmacological intervention. Half of the residents had already referenced patients to smoking cessation consultation. The majority of the residents (80%) had previous training on smoking cessation at college, and 25% had also at high school. Only 13.3% had post-graduated training in smoking during specialty training, and the same amount had done so during general residency. When asked about the format of eventual future training on smoking, the most suggested formats were practical workshop with consultation simulation (38%), combined training composed by "e-learning" plus presential lecture (27%), presential theoretical training (16%) and training exclusively on "e-learning" format (12%).
Conclusions: Survey results show that residents consider smoking as having a strong impact on their patients and that there is a need to invest in post-graduated training, in order to expand knowledge and improve smoking cessation management.

Keywords: *Smoking. Smoking cessation.*

PC 162. MEDIASTINAL MYELOLIPOMA. A CASE REPORT

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Introduction: Myelolipomas are benign, rare tumors of mesenchymal origin, consisting of adipose and hematopoietic tissue, usually encapsulated, with preferential location in the adrenal glands. The incidence of extra-adrenal myelolipomas is rare, most often in the retroperitoneal region. Although usually asymptomatic, constituting findings in complementary exams, they can reach large dimensions, with potential to cause compression of adjacent structures. In addition, presentation and localization may simulate aggressive tumors such as liposarcomas.
Case report: We present the case of a male patient, 70 years old, non-smoker, former mining worker, with pathological history of hereditary spherocytosis and benign prostatic hyperplasia. She had a nonproductive cough, dyspnea on moderate exertion, and back pain. Chest CT revealed a 4.6 × 2.2 cm hypodense nodular image, located in the right postero- inferior paravertebral topography, with regular borders. In the imaging review at 3 months there was a dimensional increase to 5.2 × 3 cm. He then underwent CT-guided transthoracic biopsy, whose pathological examination revealed ectopic bone marrow, which may correspond to myelolipoma, without signs of malignancy. Given the dimensional increase and the risk of compression of nervous and vascular structures, the lesion was surgically excised by thoracotomy, and the anatomopathological examination of the surgical specimen confirmed the presence of myelolipoma. Clinical improvement was found, with resolution of back pain.
Discussion: Thoracic myelolipomas constitute only about 3% of these tumors, mostly in the posterior mediastinum and generally require no treatment, and clinical and imaging surveillance is indicated. Surgical removal is the treatment of choice, recommended for large myelolipomas or at risk of compression of adjacent structures.

Keywords: *Benign tumor. Myelolipoma. Thoracic surgery.*

PC 163. SPONTANEOUS PULMONARY (LINGULA) TORSION. REPORT OF A RARE CASE

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Introduction: Pulmonary torsion results from the rotation of a pulmonary lobe (or whole lung) around its bronchovascular pedicle. The degree of rotation is variable (usually 180º) and may cause an ischemic process of the involved area. This is a rare event, with an incidence of 0.089-0.4%, whereby most reported cases follow pulmonary surgery, namely lobectomy. It occurs less frequently as a complication of minimal-invasive procedures such as video-assisted thoracic surgery (VATS), or after large-volume thoracentesis or pneumothorax. It rarely occurs spontaneously in the native lung

with no known structural pathology. In chest X-rays, the affected lobe is often opacified, with the hilum in an inadequate position and may present a reticular pattern, reflecting lesional or perilesional congestion. Chest CT allow the characterization of the lesion and plays an important role in the differential diagnosis (endobronchial obstruction, infarction, infection or even neoplasia). The optimal therapeutic approach is controversial and depends on the viability of the affected lung, but surgical intervention is usually needed as lung torsion may result in a surgical emergency scenario.
Case report: We report the case of a 60-year-old active smoker with a history of hypertension and COPD, on bronchodilator and antihypertensive treatment, admitted to the Pulmonology Department in the context of COPD exacerbation. During hospitalization, the patient underwent chest X-ray, which revealed a left upper lobe (LUL) mass. Subsequently, the patient underwent a thoracic CT, which described an area of spiculated contours, with 40 mm in the LUL extending from the pleural surface to the hilum, without adenomegaly. Due to the suspicion of a neoplasic process, patient was submitted to PET-CT that showed 18-FDG uptake in the described lesion, without uptake at the ganglion level. The patient was submitted to bronchofibroscopy that did not show endobronchial morphostructural alterations and with subsequent histology and cytology negative for neoplastic cells. He was then proposed to transthoracic biopsy of the lesion, also without evidence of neoplastic cells. Finally, the case was discussed with the Thoracic Department and the patient was proposed and accepted for surgery with extemporaneous examination. During surgery, the imagological described lesion was not identified, but instead, an atelectatic process of the lingula with associated torsion was identified resolved with lesion de-rotation and release with adhesion lysis and subsequent decortication. Normal re-expansion of the atelectasic lung was observed. Pleural surgical biopsy revealed chronic pleuritis with angiogenesis but no neoplasic cells where identified. The diagnosis of spontaneous torsion of the lingula was established and the patient followed up for consultation, having normalized sustained imaging.
Discussion: This paper reports an interesting case of spontaneous pulmonary torsion of the lingula, whose knowledge should be part of the Pulmonologist's repertoire not only for the potential clinical severity, sometimes requiring urgent surgical intervention when it comes to an acute presentation, but also for the differential diagnosis involved. Cases such as this one highlights the importance of multidisciplinary dialogue in the evaluation, interpretation and resolution of less common situations or when evolution does not follow the estimated course.

Keywords: *Pulmonary torsion. Lingula. Neoplasia.*

PC 164. ANTERIOR MEDIASTINAL MASSES AND THE ROLE OF MRI

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Centro Hospitalar Universitário Lisboa Norte (CHULN).

Introduction: There are different types of mediastinal masses that can be characterized on imaging techniques. The diagnosis can be established by the location of the lesion, age and imaging findings. Computed tomography (CT) and magnetic resonance imaging (MRI) are important to identify these masses and help us narrow the differential diagnosis. While CT is widely used for the initial evaluation of these masses, the results are often indeterminate. MRI is gaining importance in the characterization of mediastinal lesions, the site of origin and the involvement of adjacent structures, helping in the assessment of preoperative relationships, even though it is not used very often. We present four case reports of the most common anterior mediastinal masses, comparing thorax CT and MRI findings, and providing clues to the correct diagnosis. All the lesions were confirmed by histopathologic examination.
Case reports: Case 1. A 39 year-old-woman presented on chest CT an anterior mediastinal solid mass with lobulated contours, heterogeneous with central areas of hypodensity. A surgical biopsy was made disclosing a thymoma and a MRI was requested to assess preoperative relationships. She was submitted to mass resection, with histological confirmation of thymoma. Case 2. A 23-year-old man, evacuated for clarification of mediastinal mass, presented thoracalgia, fatigue and fever with a year of evolution. CT showed an anterior and left superior mediastinal solid mass, lobulated contour, with contrast enhancement, and some areas of hypodensity within the lesion. MRI showed an anterior mediastinal mass with hypersignal in T2-weighted sequences, central area with hyposignal and lake of contrast enhancement. A biopsy was made confirming the diagnosis of T-Lymphoblastic lymphoma. Case 3. A 42-year-old woman performed a chest CT showing a bulky anterior mediastinal mass that extended from the thoracic inlet up to the right atrial appendage. Due to vascular compression, an MRI was required to access the cleavage plane and confirm the surgical indication for resection. Histological exam confirmed mediastinal goiter. Case 4. A 21-year-old woman with left thoracalgia with 15 days of evolution performed a chest CT that showed a bulky antero-left lateral mediastinal mass. The MRI displayed an encapsulated anterior mediastinum mass with irregular thickened walls, multilobulated with thickened septa and heterogeneous content. With suppression of fat there was a loss of signal demonstrating fat or sebum content, highly suggestive of teratoma. The histological exam demonstrated a mature teratoma.
Discussion: Although CT is considered the imaging modality of choice, MRI has been increasingly used due to its excellent tissue characterization, the ability to differentiate between solid and cystic masses, its superior delineation of the relationship with adjacent structures, the lack of ionizing radiation and the possibility to be performed in patients with poor renal function or with contrast allergy. MRI can be used to achieve a clinical diagnosis, help stage and manage these lesions, reducing unnecessary procedures and can also be used in patient follow-up.

Keywords: *Anterior mediastinal masses. Magnetic resonance imaging. Thymoma. Lymphoma. Mediastinal goitre. Teratoma.*

PC 165. DESMOID TUMOR. A RARE CASE OF A GIANT CHEST MASS

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Introduction: Desmoid tumor also called aggressive fibromatosis is a rare tumor representing around 3% of all soft tissue neoplasms. In spite of benign, without metastatic potential, it is locally aggressive. Most of them arise sporadically, however, 5 to 15% are associated with a familial adenomatous polyposis. They affect most commonly females, between the ages of 15 to 60. The clinical presentation is variable depending on its location and growth rate. Treatment should be aggressive and consists of surgical resection with widely negative margins. When irresectable, radiotherapy may be required. It has high rates of local recurrence (about 65%) even after complete excision.
Case report: A 19-year-old female from São Tomé, with history of iron deficiency anemia, went to the urgency room with nonspecific epigastric pain in the previous 2 days, without any other gastrointestinal symptoms associated and progressive fatigue. She denied dyspnea, cough, sputum or chest pain. The clinical examination showed a marked decrease of pulmonary murmur in the lower 3/4 of the left hemithorax, without adventitious sounds. The blood tests had a microcytic hypochromic anemia requiring blood transfusion, without other alterations. Chest radiography revealed a large, well-defined opacity, occupying almost all the left hemithorax. She underwent thoracic CT, which revealed a heterogeneous mass occupy-

ing the left thoracic space, with unidentified origin, sizing about 133 × 92 mm, obliterating almost all of the left lung, conditioning contralateral deviation of the mediastinum. The complementary study from the follow up highlights: normal upper digestive endoscopy; functional ventilatory study with a restrictive syndrome (FVC 35.6% and FEV1 33.1); transthoracic biopsy with nonspecific histology of collagen/fibroblast proliferation. The patient underwent surgical resection. Intraoperatively was found a giant, hard-encapsulated mass, occupying the lower 2/3 of the entire left thoracic cavity, which compressed the entire left lower lobe. The pathological study of the mass revealed a mesenchymal tumor with immunohistochemical features of desmoid fibromatosis. After surgery she had a complete pulmonary expansion, with symptomatologic improvement.
Discussion: Desmoid fibromatosis is a slow-growing tumor with insidious clinical presentation and might even be asymptomatic. However, it is highly aggressive and can invade and compress neurovascular structures or surrounding organs, like the lung, compromising its integrity and function. The complete surgical excision is highly complex due to its enormous dimensions, and may be necessary a chest wall reconstruction. It has a high local recurrence rate, being essential a careful vigilance. Despite its benign classification, it represents an important cause of morbidity and mortality in the differential diagnosis of a chest mass.

Keywords: *Thoracic mass. Desmoid tumor. Aggressive fibromatosis.*

PC 166. AN ELASTIC PLEURAL FLUID: WHAT CAN IT BE?

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Introduction: Thoracentesis is one of the first steps in the approach of a pleural effusion, allowing the analysis of different characteristics of pleural fluid. Although non-specific, the macroscopic features of pleural fluid may help identify the etiology of the effusion.
Case report: 51-year-old female, ex-smoker with history of controlled hypertension. Professional exposure to asbestos while working in the production of asbestos coated gloves. Previously asymptomatic, in February 2019 patient describes progressive dyspnea, leading to the realization of a chest radiography that documented a massive right pleural effusion. Thoracic CT confirmed a right pleural effusion causing contralateral deviation of mediastinal structures, compression of the superior vena cava and atelectasis of lung parenchyma, also showing a rounded pleural thickening in the right costal-mediastinal region with irregular contrast-enhancement. In order to evaluate the fluid and manage patient's symptoms, thoracentesis was performed with extraction of 1,100 cc of a clear, odorless, dense, almost elastic, citric yellow pleural fluid. Samples were sent to analysis, however, due to fluid's high density, biochemical or cytological evaluation wasn't possible. Due to high suspicion of malignancy, patient underwent medical thoracoscopy, reporting diffuse nodularity of the visceral, parietal and diaphragmatic pleura where multiple biopsies were performed. Additionally, it is important to mention the presence of a large pleural mass in the upper hemithorax in the anterior medial location. PET scan showed an extensive area of hypermetabolism (SUV maximum 14) in coincident location with the pleural mass previously described on thoracic CT and visualized on thoracoscopy, as well as other foci of hypermetabolism in the costal and mediastinal pleura, with no signs of extra pleural disease. Anatomopathological results were compatible with epithelioid mesothelioma. Two weeks after the procedure patient was reassessed and there was no evidence of fluid reaccumulating. She is now under treatment and follow-up by to the oncology team.
Discussion: Mesothelioma is the leading cause of primary pleural neoplasia. Exposure to asbestos is associated with a significant risk increase, with prior exposure being documented in 70% of the diagnosed mesotheliomas. Since the 1980s the use of asbestos has been decreasing and in 2005 the European Union banned its use, however, given the long latency observed in this pathology, in Europe a peak incidence of mesothelioma is predicted to 2020. Hyaluronic acid (HA) is a glycosaminoglycan widely distributed through the epithelial tissue, particularly in the pleura, where it decreases the friction between lung and chest cavity. In mesothelioma an increase in the production of HA is described, and its accumulation confers a viscous, almost elastic consistency to the pleural fluid, as seen in this patient. This case serves as an alert for a rare pathology, but that shouldn't be forgotten, mainly in areas of asbestos exposure, showing that a pleural fluid with these characteristics can point to the diagnosis of mesothelioma. However, histological analysis is still the gold standard for mesothelioma diagnosis, and medical thoracoscopy increases the diagnostic yield to 98% when compared to 26% of thoracentesis or 39% of the combination of cytological and closed pleural biopsy.

Keywords: *Pleural effusion. Hyaluronic acid. Mesothelioma. Medical thoracoscopy.*

PC 167. PNEUMOTHORAX AFTER CT-GUIDED TRANSTHORACIC NEEDLE BIOPSY. EVALUATION OF RADIOLOGIC CONTROL PROTOCOL

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Introduction: Pneumothorax is the most common complication of computed tomography (CT) guided transthoracic needle biopsy (TTNB). The British Thoracic Society recommends surveillance and chest radiograph 1 hour after biopsy, but protocols vary in different institutions.
Objectives: Evaluate need to perform a second radiologic control at 4 hours and need to do both inspiratory and expiratory chest radiographs.
Methods: Retrospective study of TTNB performed between January and September 2018 at the radiology Department of Hospital Center Vila Nova de Gaia/Espinho, Portugal.
Results: 115 patients performed TTNB, 71.3% were male and 81.2% had smoking habits, with a mean age of 66 (± 12) years-old. Nodules were mainly solid (87%) and peripheral (56.1%), with a mean 22.2 (± 16.1) mm of biggest diameter. In 79.1% a histological diagnosis was obtained, oncologic in the majority (68.1%). Concerning the material, in most cases coaxial (68.8%) and 18G needle (92%) were used. Complication with pneumothorax occurred in 17 patients (14.8%), but only one needed chest drain insertion with admission to the ward. In the others, CT-guided exsufflation was performed or an expectant attitude was taken (8 cases each). Every normal chest radiograph 1 hour after biopsy remained normal at the forth hour. In 3 cases inspiratory radiograph was normal despite evidence of pneumothorax in expiratory incidence. The occurrence of pneumothorax was higher in the right lung (82.4% vs 17.6%, p = 0.010) and 47.1% of the patients with pneumothorax had previous emphysema. No other characteristic of the patient or procedure was associated with occurrence of pneumothorax.
Conclusions: Data obtained suggest that a second radiologic control is no longer required if the first one is normal. Furthermore, if in order to reduce costs and radiation exposure we need to select only one incidence, it should be expiratory chest radiograph. There were no definitive results about factors that increase risk of pneumothorax, suggesting it should be evaluated for each patient individually.

Keywords: *Transthoracic needle biopsy. Pneumothorax. Radiologic control.*

PC 168. CHEST TUBE DWELL TIME IN SECONDARY PNEUMOTHORAX

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Introduction: A Secondary Pneumothorax (SP) is defined as the presence of air in the pleural space, that occurs as a complication of underlying lung disease. According to size and symptoms, treatment usually includes a chest tube insertion.
Objectives: Analyse the population of hospitalized patients in the Pulmonology department of Hospital Egas Moniz, in Lisbon, from 2011 to 2018, with a diagnosis of SP, according to chest tube dwell time.
Methods: Patients were divided into a prolonged chest tube duration (PD) group and a non-prolonged (NPD) group, based on the average chest tube dwell time (8 days). The Light Index (LI) and the British Thoracic Society (BTS) guidelines were used to assess the size of the pneumothorax. Patients with no chest x-ray available or with pleural effusion were excluded.
Results: This study evaluated 56 patients with SP, 16 in the PD group and the remaining 40 in the NPD group. Those with PD had a larger average size of pneumothorax according to LI (70% vs 46.6%; $p = 0.001$). A greater percentage of patients with a large pneumothorax was also noticed, according to LI and BTS guidelines ($p < 0.001$). A significantly higher percentage of patients with Respiratory Failure (RF) and persistent pneumothorax with surgical indication was also noticed in this group (44% vs 8% and 31% vs 10%, respectively). Although not statistically significant, those with PD were older (51 vs 41 years) and had a larger average size according to BTS (4.5 vs 2.5 cm).
Conclusions: The PD subjects tended to have larger pneumothoraxes and a higher percentage of patients with RF and persistent pneumothorax with surgical indication. These findings may provide information for better chest tube management, including the need to consider an earlier surgical intervention.

Keywords: *Secondary pneumothorax. Chest tube dwell time. Size. Light index. BTS. Surgical intervention.*

PC 169. RARE CAUSES OF BENIGN EXUDATIVE PLEURAL EFFUSION: 5 CLINICAL CASES

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Introduction: Pleural infection, heart failure and malignant pleural effusions, are the most common causes of pleural effusions. However, there are other less common causes in which accurate and timely recognition is essential for correct clinical orientation. The benign causes of pleural effusion are broad, diverse, some uncommon and poorly understood. An individualized approach is fundamental. The analysis of pleural fluid is primordial, often requiring pleuroscopic inspection and obtaining histopathological material. Finally, should be integrated all the available information.
Case reports: Case 1: male, 63 years old, current smoker, exposed to asbestos who showed with small neutrophilic serohematic exudative pleural effusion. Thoracoscopy showed hypervascularization, fibrin and adhesions. Pleural biopsies were negative for mesothelioma, showing "nonspecific chronic pleuritis". After further study and integration of results he was diagnosed with benign asbestos pleural effusion. Case 2: female, 80 years old, milky exudative pleural effusion, with elevation of triglycerides (chylothorax). Pleuroscopy with hypervascularization and lipomatous elevation areas of the mucosa. Pleural biopsies with non-specific inflammatory changes. Patient underwent pacemaker placement previously. Thoraco-Abdominal CT showed alterations in the vascularization of the IV hepatic segment, collateral vascularization through the thoracoabdominal wall, with drainage to the inferior vena cava, suggestive of "hot-spot-sign" evocative of superior vena cava (SVC) thrombosis. There was a reduction in SVC caliber and azygos vein engorgement. Clinical integration indicated for the diagnosis of chylothorax secondary to SVC thrombosis following the placement of pacemaker electrocatheters. Case 3: female, 55 years-old, eosinophilic serohematic exudative pleural effusion and peripheral hypereosinophilia (maximum value: 10.0×10^9/L). Without relevant epidemiological elements, negative parasitological study and without use of imputable drugs for eosinophilia. Thoracoscopy showed pleural hypervascularization with a nodular area, and biopsies showed eosinophilic pleuritis without malignant infiltration. After discussion and complementary hematological study she was diagnosed with chronic eosinophilic pleuritis secondary to idiopathic hypereosinophilic syndrome. Case 4: male, 66 years with mononuclear exudative pleural effusion. Thoracoscopy with septations and pleural thickening and biopsies evidencing a nonspecific pleuritis. On admission he developed migratory oligoarthritis, auricular chondritis and episcleritis/keratitis. In collaboration with Rheumatology, the diagnosis of pleural effusion secondary to relapsing polychondritis was sealed. Case 5: female, 38-year-old, current smoker with seropositive rheumatoid arthritis, had a small septated pleural effusion, coinciding with worsening joint activity. She had a lymphocyte exudative pleural fluid and pleural/serum rheumatoid factor ratio of 3.6. Thoracoscopy showed a complex pleural space, septated and with pleural thickening. Pleural histology showed nonspecific chronic fibrinous pleuritis. It was assumed the diagnosis of rheumatoid pleurisy.
Discussion: In contrast to malignant pleural effusions with clear and actualized guidelines, the causes of non-infectious benign exudative pleural effusions maintain a very dependent approach on observational studies and case reports. The lack of quality evidence and guidelines motivate difficulties with diagnostic classification and therapeutic orientation. We emphasize the importance of extending the analytical panel in the study of the fluid, the value of thoracoscopy after an inconclusive preliminary approach (greater safety in malignancy exclusion), and the correlation with occupational history, comorbidities, chronic medication, and immune/autoimmune study.

Keywords: *Pleural effusion. Thoracoscopy. Asbesto. Rheumatoid arthritis. Chylothorax.*

PC 170. SPONTANEOUS PNEUMOMEDIASTINUM: DIFFERENT FACES, SAME FRAME

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Introduction: Spontaneous pneumomediastinum (i.e. not due to trauma, surgery or medical-thoracic procedure) is a rare, generally benign entity for which predisposing and/or triggering factors are often unknown. Its presentation is nonspecific, and may present with dyspnea and chest pain, but also, less commonly, be clinically weak. Two clinical cases are presented.
Case reports: Case 1: A 35-year-old male patient, non-smoker, without risk inhalation exposure, with a history of bronchial hyperreactivity in the context of respiratory infection who underwent bronchial asthma during a clinical acute study. Chest High Resolution (HRCT) in an outpatient clinic, in which extensive pneumomediastinum was identified. Afterwards, she was hospitalized and resolved with conservative measures (bronchodilation, rest and low-output oxygen therapy). Case 2: a 80-year-old male patient, with history of colon cancer since 2016, with hepatic (thermoablation target) and pulmonary metastasis in 2019 (6 mm lobe nodule) submitted to wedge resection on 05/2019, without complications.

Still under chemotherapy, he resorted to the emergency department on 08/2019 for dysphonia and sudden edema of the face and neck, without accompanying pain or cardiorespiratory complaints. Thoracic HRCT revealed extensive pneumomediastinum and subcutaneous emphysema at the cervical, thoracic and abdominal walls. Under conservative treatment, presented resolution of the picture.
Discussion: We present the clinical cases mentioned above due to the rarity of the condition in question, the evidenced clinical-imaging dissociation and the distinct pathologies in its genesis. As a generally benign prognostic condition, conservative treatment is often the best approach, which has been confirmed in both cases.

Keywords: *Pneumomediastinum. Clinical-imaging dissociation.*

PC 171. BACTERIAL PLEURAL PLAQUES BY DIAPHRAGMATIC TRANSLOCATION: A THORACOSCOPIC FINDING

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Centro Hospitalar de Leiria.

Introduction: Empyema consists of pus in the pleural space and is usually a complication of pneumonia. We herein report an unusual case of empyema arising from a pancreaticopleural fistula. This rare entity occurs due to a disruption of the pancreatic duct, with fluid leakage into the retroperitoneum which fistulates to the pleural cavity.
Case report: The present case report is about a 76-year-old man with history of pancreatic ductal adenocarcinoma, submitted to distal pancreatectomy with splenectomy. He was admitted to the emergency department 2 months after surgery due to dyspnea at rest and fever. Thoracic X-ray revealed a moderate left-sided pleural effusion. Thoracocentesis was performed, followed by chest tube insertion, as a result of purulent fluid. Analysis was consistent with amylase-rich exudate, cytology did not detect malignant cells and microbiological examination was negative. Thoracic and abdominal computed tomography revealed left-sided pleural effusion and atelectasis, with correct placement of chest tube and a subphrenic collection surrounding the pancreatic region (followed by abdominal drain insertion). Empirical antimicrobial therapy with ceftazidime plus gentamicin was completed, pleural and abdominal drainage was well succeeded and the patient was discharged with remaining abdominal drainage. However, 10 days after he presented with fever and pleuritic pain. Chest/abdominal CT-scan showed small to moderate pleural effusion, pleural thickening and abdominal collection with decreased volume compared with the last CT, although still communicating with an adjacent pancreatic small collection (abdominal drain was correctly placed). Thoracocentesis was attempted but unsuccessful. Medical thoracoscopy was performed, revealing purulent fluid (aspiration of 300 ml), pleural plaques and thickening of visceral and parietal pleura. Pleural cavity cleansing was made with physiological saline solution and pleural biopsies were made. Histology was negative and microbiology revealed Klebsiella oxytoca, the same pathogen isolated in the abdominal fluid. Targeted antibiotic therapy was started and pleural lavages via chest tube were done during hospitalization. The patient's clinical and radiological status improved gradually and pleural drain was removed after 10 days. He was discharged under cotrimoxazol and abdominal pigtail drain. At follow-up consultation 2 months later the patient was asymptomatic and CT scan did not show significant alterations.
Discussion: Pancreaticopleural fistula is a rare complication of pancreatic ductal adenocarcinoma. Typical presentation consists in a left sided exudative pleural effusion with elevated amylase levels. Empyema may occur, as in the present case. Even though pneumonia is the most common cause of this pathology, not all of empyemas have thoracic etiology. Medical thoracoscopy is a safe and minimally invasive procedure that plays an important role in differential diagnosis of pleural effusions and in the management of some empyemas.

Keywords: *Empyema. Pancreaticopleural fistula.*

PC 172. ACUTE ONSET OF PLEURAL EFFUSION IN TERMINAL HEPATIC INSUFFICIENCY: DO NOT FORGET TUBERCULOSIS!

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Hospital Prof. Dr. Fernando Fonseca, Amadora.

Introduction: The onset of a right pleural effusion in a patient with terminal hepatic insufficiency leads clinical judgement towards the presence of a hepatic hydrothorax. Its diagnosis includes exclusion of alternative causes. The authors present a case that highlights the importance of not underappreciating any diagnostic hypothesis.
Case report: A 40-year-old male patient with ethanolic hepatic cirrhosis CHILD C and MELD 21, elected for hepatic transplant. He is admitted in the Gastroenterology ward with sepsis due to inguinal abscess and hepatic decompensation, with isolation of MSSA in the pus. After treatment of the hepatic decompensation, he had moderate ascites and oedema in the lower limbs, in a daily variable degree. No clinical or radiologic sign of respiratory distress was ever recorded. At 24th day of admission, dyspnoea, fatigue and episodes of bronchospasm were noted. The thoracic X-ray shows cardiomegaly and obliteration of right costophrenic sulcus. Clinical laboratory results highlighted leucocyte count 2×10^9/L with neutropenia 1.6×10^9/L, increases in the coagulation profile, bilirubin 5.2 mg/dL, total proteins 5.52 g/dL, creatinine 0.59 g/dL and RCP 3.36 mg/dL. Due to worsening of the complaints, he repeats the X-ray ten days later, which showed a total opacification of the right hemithorax, suggestive of being a new-onset pleural effusion. The patient is referred to the Pulmonology Department. A thoracocentesis with drainage of 3,000 cc of serohematic fluid is made, and results revealed: 1,694 cells/uL, lymphocytic predominance, ADA 45 U/L and Light criteria for exudate. Bacilloscopy and bacteria cultures were negative; mycobacterial cultures were being processed. The cytology was inconclusive. Considering the lymphocytic predominant exudate effusion, the main diagnostic hypothesis were cancer or hepatic hydrothorax, possibly infected. A few days later, the patient starts treatment for a spontaneous bacterial peritonitis, with negative bacterial cultures, bacilloscopy and Mycobacterium tuberculosis PCR of the ascitic fluid. A thoracic CT excluded pleural disease, mediastinal and left lung lesions; the right lung was collapsed due to the effusion. The effusion relapses rapidly, and a new diagnostic thoracocentesis with pleural biopsies is repeated 15 days after the first one; the effusion remained a lymphocytic exudate, with ADA 43 U/L. The new bacilloscopy and the mycobacterial cultures of the first thoracocentesis were negative, and in the biopsy giant multinucleate cells, sketching non necrotizing epithelioid granulomas were identified. However, cultural exams of the second thoracocentesis were positive for mycobacterium tuberculosis complex, and a diagnosis of pleural tuberculosis was made.
Discussion: A pleural effusion in terminal hepatic insufficiency may be a diagnostic challenge. The multiple infectious complications, the long hospital stays, and progression of disease may mistakenly narrow clinical thinking. We shall always consider the most common causes of pleural effusion in the general population, proceeding with diagnostic work-up according to what we find.

Keywords: *Pleural tuberculosis. Hepatic hydrothorax. Unilateral pleural effusion.*

PC 173. RECURRENT PLEURAL EFFUSION: WHEN THE ETIOLOGY IS NOT EVIDENT

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Centro Hospitalar Universitário Lisboa Norte.

Introduction: Pleural effusion (PE) can have several etiologies and its recurrence is often a diagnostic challenge. Multiple Myeloma (MM) accounts for approximately 10% of hematologic malignancies and only 6% of patients develop PE during the course of the disease. The etiology is usually multifactorial, namely post-infectious, in the context of heart failure secondary to amyloidosis, pulmonary embolism, renal failure, hypoalbuminemia, second malignancy, reactive effusion or infiltration by plasma cells, which occurs in less than 1% of cases.
Case report: We present the case of a 51-year-old bricklayer, active smoker (35UMA) with no known pathology. History of 1 month of evolution of dry cough, fever of 38ºC and right thoracalgia, without respiratory failure, having been medicated with empirical antibiotic therapy for respiratory infection. He went to the emergency department for maintenance of right thoracalgia, at costal margin level, with pleuritic characteristics. Analytically without elevation of acute phase parameters. Chest X-ray with right pleural effusion and obliteration of the left costophrenic sinus. Evaluated at a pulmonology consultation, he denied constitutional symptoms, night sweats, hemoptysis, or other respiratory symptoms, maintaining intense right thoracic pain. Objective examination with pulmonary auscultation with decreased right base vesicular murmur and decreased vocal vibration transmission at this level, with no other changes. Thoracic CT scan with infracentimetric mediastinal adenopathy, band atelectasis of the anterior segment of the right upper lobe, extensive bilateral pleural effusions, larger on the right and right and left costal artery fractures and L1 vertebral body collapse. Ecoguided diagnostic and evacuator thoracocentesis with serofibrinous fluid with pH 7.4, glucose 83 mg/dl, exudate criteria, lymphocyte predominance 86%, ADA 18 IU/L, negative cultures. Pleural fluid and pleural biopsies negative for neoplasia. Videobronchofibroscopy without alterations, bronchial lavage negative for neoplastic cells, but with bacteriological isolation of Haemophilus influenzae, so he did directed antibiotic therapy. After recurrence of the right pleural effusion one month later, he underwent thoracentesis with serofibrinous fluid output without isolation of neoplastic cells. Analytically hemoglobin 10 g/dL, no leukocytosis, C-reactive protein 3.77 mg/dL, renal function, liver, albumin, ionogram, D-dimers, NT-proBNP, tumor markers (CEA, CYFRA 21, alpha-fetoprotein, PSA) within normality with the exception of NSE 26.9 ug/L and beta2-microglobulin elevation 4.67 mg/dL. Autoimmune study without changes. Protein electrophoresis with peak gamma presence at 2.4 g/dL. Abdominal fat biopsy with negative amyloid test. Myelogram with 32% plasma cells with immunophenotyping in agreement with multiple myeloma and bone biopsy that confirmed the diagnosis. In this context, PE associated with MM was assumed after an infectious condition, from which the investigation led to the final diagnosis.
Discussion: PE is an uncommon manifestation of MM and may appear at diagnosis or after initiation of chemotherapy. This case shows the importance of clinical and imaging re-evaluation of patients after respiratory infection, especially when complaints suggestive of pleural involvement persist and also the fundamental role of a complete analytical study in the diagnosis of recurrent pleural effusion, which in this case allowed to reach the final diagnosis.

Keywords: *Recurrent pleural effusion. Multiple myeloma.*

PC 174. MALIGNANT PLEURAL EFFUSION: THE IMPORTANCE OF PH AS PROGNOSTIC MARKER

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Introduction: The management of patients with malignant pleural effusions (MPE) remains an important clinical challenge. Considering the expense, discomfort and sometimes need for hospital stay of pleurodesis, patients with poor prognosis may elect to undergo other less invasive palliative measures. PH in pleural fluid has not yet been approved for prognostic assessment in MPE.
Objectives: Access the relation between pH of pleural fluid in the MPE with the median survival of the patients.
Methods: We conducted a retrospective study with evaluation of all patients with MPE diagnosis that underwent thoracentesis in our department between June 2015 and December 2018. Only patients with pH measured immediate after first thoracentesis were included. MPE diagnosis was defined by the presence of malignant cells in pleural fluid on cytologic examination or pleural biopsy. All malignancies were included. The cut-off value defined was 7.32 for pH as this corresponded to the mean value of the exams performed. The software IBM SPSS Statistics 25 provided data analysis for descriptive statistics. Kaplan-Meier curves were used to analyse overall survival after first thoracentesis and generalized Wilcoxon test to compare survival between groups. The results are presented in mean (± standard deviation) or median [25 percentile-75 percentile].
Results: Sixty-two patients were included in the study. The median overall survival in months was 2.78 [1.8-9.3]. PH mean value was 7.32 (± 0.12), 25 (40.3%) of the patients had a pH inferior to the mean and 37 (59.7%) equal or superior. The group A, defined as pH less than 7.32, showed a median survival of 1.9 months [1.3-4.9]. On the other hand, group B, defined as pH equal or superior to 7.32, revealed a median survival of 4.3 months [2.5-13] ($p = 0.006$). 3 months after thoracentesis 35% of the patients in group A were alive against 60% in group B.
Conclusions: The pH evaluation at the moment of thoracentesis is almost always done in non-malignant pleural effusion but often forgotten in MPE. The prognostic value of pH has been studied for the past decades but results are still variable and their use is not approved in guidelines. Our work shows an existence relation between pH inferior to 7.32 and low median survival. This relation is explained from accumulation of end products of glycolysis in the pleural space caused by tumours in advanced stage of disease. This marker could be used for identifying patients with no benefits of performing pleurodesis.

Keywords: *Malignant pleural effusion. Survival. Prognosis. pH.*

PC 175. BILATERAL PNEUMOTHORAX IN NEUROMUSCULAR DISEASE ASSOCIATED WITH NON-INVASIVE VENTILATION AND MECHANICAL INSUFFLATION-EXSUFFLATION

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Introduction: Duchenne muscular dystrophy is a motor neuron disease that involves respiratory muscles and results in ventilator failure and increased respiratory tract infection. Mechanical ventilator support, such as non-invasive ventilation (NIV) is the primary respiratory therapy for patients with respiratory failure and neuromuscular disease (NMD), however, clinical adjuncts focusing on cough augmentation, lung inflation, and chest wall mobility are frequently used.

Case report: The authors present a case of a 35 years-old male with Duchenne muscular dystrophy using NIV-BIPAP (Trilogy®) for 24h per day and mechanical in-exsufflation (MI-E) device (Cough Assist®). The ventilator modality used was AVAPs (IPAP 26-28 cmH2O, EPAP 10, Volume 350 mL). He presents to emergency department with sudden dyspnea and low pulse oximetry. At admission he was using NIV and he presents tachypnoeic with a low pulse oximetry (SpO2 77% and had a normal blood pressure and high heart rate (117/91 mmHg, HR 124 bpm). The initial arterial blood gases showed a respiratory acidosis (pH 7.27, pCO2 51.4, pO2 47.4, HCO3 23.2, SatO2 77.3%) and the chest x-ray exhibited a bilateral pneumothorax and a right 16Fr chest drain was inserted followed by insertion of left 16Fr chest drain with partial bilateral pulmonary expansion. At the same time there was a change on ventilatory pressures, decreasing IPAP to 24-25 cmH2O and EPAP to 8 cmH2O. He performed a lung CT-scan that showed a bilateral persisting pneumothorax with some pleural bridges. At this time the chest drains was replaced by another ones connecting them to negative low suction (-10 cmH2O) with no resolution of pneumothorax. He persisted with left broncopleural fistula for 19 days and right broncopleural fistula for 32 days. During hospitalization there were several attempts to reduce positive pressure achieving the lowest pressures for AVAPS: IPAP 22-20 and EPAP 4, volume 450 mL. At discharge the patient had a residual small right apical pneumothorax that didn't worse symptoms of respiratory failure and the blood arterial gases were normal. The MI-E pressure was decreased to +20/-20 cmH2O and the patient had recommendations to use it when he had increased sputum.
Discussion: This case represents a rare potentially life-threatening complication of NIV and MI-E, with barotrauma and bilateral pneumothorax. The NIV had benefits on survival and quality of life of patients with NMD, although long term effects and complications of NIV with high pressures for long hours during several years still unclear. While the clinical utility of MI-E had been established during episodes of respiratory illness, the benefits of prophylactic use remains controversial. The authors believe that this is a controversial topic that needs more scientific research and discussion.

Keywords: *Neuromuscular disease. Non-invasive ventilation. Mechanical in-exsufflation. Pneumothorax. Barotrauma.*

PC 176. INTRAPLEURAL FIBRINOLYSIS VS VATS IN THE MANAGEMENT OF COMPLICATED PARAPNEUMONIC PLEURAL EFFUSION OR EMPYEMA

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Introduction: Parapneumonic pleural effusion (PPE) is a frequent complication of pulmonary infections. The effusion may progress with fibrin deposition, formation of septae, pleural thickening, and with the pleural fluid becoming more purulent due to bacterial growth, consequently evolving to complicated PPE or empyema (if macroscopic purulence exists). In these cases, antibiotic therapy and pleural drainage are mandatory, however, this is not always enough. There is no consensus in the literature about the best approach that allows the early and effective resolution of this condition.
Objectives: To analyse the outcomes of intrapleural fibrinolytics instillation and video-assisted thoracoscopic surgery (VATS) in the management of complicated PPE or empyema, when conventional treatment fails.
Methods: A retrospective observational study was conducted with all patients diagnosed with complicated PPE or empyema and with an unsatisfactory response to antibiotic therapy and pleural drainage, between April 2016 and May 2019. Two groups were defined according to the subsequent treatment: one group of 13 patients who received intrapleural instillation of alteplase and dornase alfa in addition to pleural drainage and intrapleural saline washes, and another group of 12 patients undergoing VATS for debridement and/or pleural decortication. Demographic data, effusion characteristics, pre-procedure antibiotic time, procedural efficacy and complications, duration of a chest drain placed, length of stay, mortality, and readmissions were recorded.
Conclusions: No procedure was superior in efficacy, complications, length of stay or safety for the treatment of complicated PPE or empyema.

Keywords: *Intrapleural fibrinolysis. VATS. Parapneumonic pleural effusion. Empyema.*

PC 177. RECURRENT BILATERAL PLEURAL EFFUSION AND PNEUMOTHORAX: A RARE CASE OF THORACIC ENDOMETRIOSIS

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Case report: A 34-year-old woman with no risk factors for lung disease, family history of lymphoma (mother) and personal history of dysmenorrhea and infertility of etiology to be clarified. Transferred to our institution on November 2017 by bilateral pleural effusion for investigation. Thoracentesis and pleural biopsies were performed with drainage of 1,000 ml of darkened serohaemorrhagic pleural fluid, whose products and cytochemical study revealed exudate characteristics with cellular predominance of vacuolated macrophages and presence of hemosiderin pigments, negative for malignant cells. Bacteriological examination of pleural fluid was negative, TB - PCR negative, histological pleura examination was incolusive on 2 occasions. Thoracic CT: 21/11/2017: "Bilateral large volume pleural effusion on the right and medium volume on the left. No condensation, pulmonary nodules, or cavitary lesions were identified, without mediastinal or hilar adenomegalies." Abdominal - pelvic CT showed a "globular uterus measuring approximately 122 × 83 × 89 mm of large, heterogeneous axes, identifying a large intramural - subserous anterior fibromyoma, with ± 67 × 66 mm and another 27 × intramural 23 mm, no evidence of adnexal masses of solid or cystic nature, unchanged breast ultrasound. Analytically Hb: 11 g/dl, HIV: negative, TB - PCR: negative, ANA, ANCA, Complements: negative, CA125: 123 (< 35). During hospitalization there was recurrence of pleural effusion coinciding with the onset of menstruation and dysmenorrhea which made suspicion of pleural endometriosis. Due to the need for exploratory thoracoscopy and diagnostic laparoscopy, it was evacuated to the Republic of South Africa. The patient underwent laparoscopy and myomatous uterus, extensive endometriosis involving the pelvic organs, and Douglas sac fundus were visualized, and also underwent videothoracoscopy and visualized pleural endometriosis at diaphragmatic pleura level confirmed by histology. Medicated with Dienogest and returned to Angola. The patient came to the emergency department on 19/10/2018 for chest pain and dyspnea. Chest X-ray revealed a large volume pneumothorax on the left with a fully collapsed lung and signs of contraction of the mediastinal structures. Pleural drainage with total reexpansion. November/2018 - Large volume pneumothorax on the left and pleural effusion on the right. Gosserelin associated with 3.6 mg. In December/2018 one week after the onset of menstruation a new episode of large volume left pneumothorax with fully collapsed lung and small right hydropneumothorax appeared. Thoracic drainage with pleurocath with re-expansion. Left pleurodesis by videothoracoscopy. July/2019- bilateral pleural effusion, left pneumothorax, right diaphragm nodules. Thoracoscopy on the right: adhesions between the lower lobe and diaphragm, dissected, visualizing multiple lesions compatible with endometriosis in the diaphragm and projecting through the diaphragm above the liver;

pleurectomy and pleural scarification performed. Total hysterectomy + annexectomy for 09/09/2019.

Keywords: *Pleural effusion.*

PC 178. CONTROVERSIES ON THORACIC DRAINAGE: SURVEY ON PNEUMOTHORAX APPROACH

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Introduction: Thoracic drainage is guided by British and American recommendations, however controversies regarding pneumothorax management persist. There is a high variability between chest physicians in points such as indication for drainage and drain size. Our objective was to evaluate the practice of pleural drainage and pneumothorax approach in a national cohort of pulmonologists.
Methods: A survey was performed to the attendants of the meeting "Comissão de Trabalho de Técnicas Endoscópicas" in June of 2019. They were read a questionnaire to evaluate their demographic characteristics, their indication for pleural drainage in five distinct clinical settings and their preferred modality (needle aspiration, small-bore chest drain or large-bore chest drain). The questionnaire was anonymous and all participants agreed with the data analysis. Fleiss' kappa statistic was used to measure the agreement between raters according to Landis and Koch.
Results: A total of 28 participants completed the questionnaire, of which: 96.4% from Pulmonology, 50.0% with more than 10 years of professional experience, 71.4% from central hospitals, 53.6% with available support from Thoracic Surgery and 82.1% with available support from Interventional Radiology in their hospital. Needle aspiration is the preferred approach in primary spontaneous pneumothorax without clinical instability (50.0%) and in iatrogenic pneumothorax (42.9%), followed by small-bore chest drain insertion (≤ 14F) (28.6% in both scenarios), large-bore chest drain insertion (17.9% and 21.4%, respectively) and observation (3.6% and 7.1%, respectively). Only 10.7% of participants opted for needle aspiration in secondary spontaneous pneumothorax without clinical instability, in which case small-bore drains are preferred (50.0%) over large-bore drains (35.7%). Most chose to insert a large-bore chest drain in cases of pneumothorax secondary to chest trauma (92.8%) and spontaneous secondary pneumothorax with clinical instability (75.0%). Overall interobserver agreement was poor (κ 0.21; 95%CI 0.18-0.24), denoting great heterogeneity in the initial approach to pneumothorax. However, there was moderate interobserver agreement in the group with 21 to 30 years of professional experience (κ 0.48; 95%CI 0.21-0.75).
Conclusions: Thoracic drainage practices in this national sample differ from British recommendations, particularly in the frequent use of large-bore chest drains. As described in the literature, interobserver agreement was poor except for the notable exception of the subgroup with more years of experience. These results suggest the need for prospective multicenter studies in Portugal on pneumothorax approach and the elaboration of a national consensus document on this subject.

Keywords: *Thoracic drainage. Pneumothorax.*

PC 179. MEDICAL THORACOSCOPY: A USEFUL BUT LIMITED RESOURCE IN A PERIPHERAL HOSPITAL

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Introduction: Medical thoracoscopy is an exam that allows the Pulmonologist to access the pleural space, with direct visualization of changes and directed diagnostic or therapeutic procedures. In our hospital, it is performed with a rigid single-door thoracoscope under general anesthesia in the ambulatory operating room. This paper aims to review the case series of the last 10 years.
Results: From July 2009 to July 2019, 57 patients underwent medical thoracoscopy, 31 (54%) males, with a mean age of 64.2 years. The most frequent comorbidities were solid organ neoplasia (25), arterial hypertension (16), heart failure (8) and COPD (6). All examinations were performed in the context of recurrent pleural effusion, 32 for diagnostic and therapeutic purposes, 16 for therapeutic purposes only and 6 for diagnosis only. The average delay from first thoracentesis to thoracoscopy was 2 months, ranging from 2 weeks to 11 months, and the average number of previous thoracenteses was 3, ranging from 1 to 12. 5 thoracoscopies weren't able to perform due to multiple pleural adhesions and incapacity for pulmonary collapse. Biopsies were performed in 44 procedures, with a conclusive diagnose in 28 (63%) of them. Lung adenocarcinoma (7), malignant mesothelioma (7) and breast cancer (4) were the most frequent diagnoses. Of the negative results, only one was diagnosed by an alternative examination (lymphoma-compatible retroperitoneal mass biopsy). Talc pleurodesis was performed in 49 exams: 32 with a good result (no relapse of the pleural effusion or symptomatology after 3 months), 11 reasonable (partial pleural effusion control and symptom resolution) and 4 poor (no pleural effusion or symptom control). One patient required drainage following thoracoscopy for collected hydropneumothorax complicated with methicillin resistant S. aureus. One needed to repeat evacuating thoracenteses. Two died in the month following thoracoscopy due to disease progression. Mild complications occurred in 11 examinations: 6 hypotension, 2 minor bleeding, 2 hypoxemia, and 1 trocar site infection.
Conclusions: Medical thoracoscopy has shown good results in the diagnosis of recurrent pleural effusions without known etiology after initial approach with inconclusive thoracentesis and blind pleural biopsies. The results of talc pleurodesis performed in the same act are also quite satisfactory. The safety of the procedure stands out, without relevant complications. In our institution, the accessibility to the space to perform thoracoscopies sometimes causes a significant delay in the diagnosis and therapy of pathologies, often oncological. The same situation requires careful selection of cases proposed for thoracoscopy and limits the expansion of this technique to other indications.

Keywords: *Thoracoscopy. Pleurodesis. Pleural effusion.*

PC 180. THE "BORN" OF A TERATOMA

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Introduction: Teratomas are benign germ cell tumors and most of them are located in the most varied sites. They are the most frequent tumors of the anterior mediastinum after thymomas and are more commonly present in young adults. They represent about 8 to 13% of tumors in this region and have a very favorable prognosis with surgical treatment. We report the case of a 19-year-old female patient who underwent resection of anterior mediastinal cystic teratoma, discovered in the etiological investigation of an empyema.
Case report: Female, 19 years old, non-smoker. 17 week pregnant surveillance in Primary Health Care. Patient started with nausea and vomiting (unusual in her pregnancy), fever and chest pain in the upper left third with pleuritic features. In the SUC, a chest X-ray showed a white lung without air bronchogram and enlargement of the mediastinum and the analytical study showed an increase in acute phase parameters. She was subsequently submitted to a thoracentesis with purulent fluid outlet, and a thoracic drainage was placed in her and was admitted to the Pulmonology Department. Empirical antibiotic

therapy was started with Amoxicillin/Clavulamic Acid 2.2 g + Clindamycin after culture harvest. Penincillin-sensitive Streptococus Anginosus was isolated and antibiotic therapy was discontinued for penincillin for 22 days. It was evaluated by gynecology/obstetrics, and the fetus was found without signs of fetal distress. From the etiological investigation realized videobobobofibroscopy: BPE reduced to an extrinsic compression slit, edema mucosa and enlarged common trunk spur. Biopsy cytology was negative; EBUS: identification of small adenopathies at the 4L, 4R and 7 stations. The larger (11L-8 mm) station was punctured and the pathological anatomy revealed a reactive pattern lymph node; Chest MRI: voluminous mass in the anterior and superior mediastinum with liquid and solid component, apparently capsulated and with mass effect on the left lung and heart. A surgical approach was discussed with the HPV Thoracic Surgery, which agreed to operate on the patient, and there were no contraindications on the part of the Obstetrics. She underwent anterior mediastinal tumor excision and left decortication by clamshell procedure for 14h. The anatomopathological result showed a mature cyst teratoma with intense foreign body inflammatory reaction and multiple calcifications. Postoperatively both the patient and the fetus were well. Of note as the only complication is upper limb paresthesias (+ right) and is currently in a motor rehabilitation program.
Discussion: Teratomas, like all mediastinal tumors, often have nonspecific symptoms, and their diagnosis is often made as imaging findings. In the case reported here, the patient presented with an empyema secondary to teratoma rupture, and from the etiological investigation a mediastinal mass was found. Since she was a young and pregnant patient with no possibility of diagnosis by less invasive means, the mass was surgically excised and revealed to be a teratoma. To facilitate preoperative diagnosis and avoid misdiagnosis of this rare disease, more cases will need to be reported.

Keywords: *Mediastinal neoplasms. Teratoma. Thoracic surgery.*

PC 181. PLEURAL EFFUSION AS A RARE MANIFESTATION OF IDIOPATHIC HYPEREOSINOPHILIC SYNDROME: A CASE REPORT

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Case report: We report the case of a 55-year-old woman, non-smoker, with a history of mild chronic anemia, vitiligo and autoimmune hypothyroidism under supplementation, that was admitted for study of moderate right pleural effusion (PE). She had progressive dyspnea for minor exertion and dry cough for one week; denied fever, constitutional symptoms, allergies, exposure to dust, air conditioning, animals, new drugs, trauma or recent surgery. At the admission she presented with leukocytosis and eosinophilia (4.46 × 10/L) and serohematic PE exudate with normal pH and glucose and 80-90% of eosinophils. The study had normal sedimentation rate and IgE, as well as the immunological study was negative. Stool parasites and Cryptosporidium parvum/Giardia lamblia were negative. Pleural fluid (PF) and bronchial aspirate cytologies were negative for malignant cells and their cultures were negative for bacteria, mycobacteria and fungi. Echocardiography didn't reveal pericardial effusion or infiltrative cardiomyopathy, endoscopy and colonoscopy were normal. Thoracic-abdominal-pelvic CT and CT angiography didn't show neoplasia, parenchymal changes or signs of embolism, however, an irregular bladder thickening was noted, but cystoscopy was normal. A medical thoracoscopy showed a nonspecific pleural nodule whose biopsies revealed eosinophilic granuloma, CD45+ and CD68+. Faced with the inconclusive study, the patient underwent an extensive haematological study, which found a deficiency of vitamin B12 and serum normality for tryptase. The peripheral blood smear showed eosinophilia without blasts. Bone marrow aspiration revealed marked myeloid hyperplasia due to eosinophilic precursors, normal undifferentiated blasts, absence of microorganisms or neoplastic cells. The karyotype was normal and the bone marrow flow cytometry detected 51% of normal eosinophils and 1.8% of blasts. Bone marrow biopsy revealed myeloid hyperplasia with predominance of the eosinophilic component. The PDGFRalfa, PDGFRbeta and FGFR1 rearrangements by FISH and BCR-ABL1 and JAK2V617F by molecular biology were negative, so the diagnosis of idiopathic hypereosinophilic syndrome (IHES) was established. During hospitalization, there was a progressive increase of eosinophilia (maximum 10 × 10^9/L) associated with high thoracic drainage. Methylprednisolone (1 mg/kg/day) was administered, with rapid resolution of PE and normalization of eosinophils count. A week after discharge, the patient presented with eosinophilia (1.92 × 10^9/L), so she started 10 mg of prednisolone daily. Currently she's asymptomatic and with normal eosinophils count, with a minimum prednisolone dose of 5 mg daily. IHES is a rare disorder characterized by a peripheral eosinophil count ≥ 1.5 × 10^9/L associated or not with organ infiltration and its diagnosis requires the exclusion of secondary causes of eosinophilia.
Discussion: The interest of this case lies in the fact that it presents solely as eosinophilic PE, without any other involvement, namely cardiac. As far as we know, only a few similar cases have been reported so far. However, eosinophilic PE without apparent cause associated with peripheral eosinophilia in the absence of other findings should make this entity a likely hypothesis. In this case, cooperation with hematology is essential for diagnostic confirmation.

Keywords: *Pleural effusion. Eosinophilia.*

PC 182. THE UNLIKELY DIAGNOSIS OF A NUT MIDLINE CARCINOMA

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Case report: We report the case of a 23-year-old girl with a history of polycystic kidney disease (PKD) and hypertension treated with enalapril, who was admitted at the Emergency Department (ED) with a 5 weeks history of chest and lumbar pain which worsens with inspiration, dyspnea for moderate exertion and fever in the last 5 days (Maximum temperature 38.5 ºC). When questioned, nausea, vomiting, cough, sputum or gastrointestinal symptoms were denied. On physical examination, she presented fever (38.2 ºC) and with decreased vesicular murmur in the lung bases. No signs of difficulty breathing were noted. The patient's abdomen was soft and depressible and lumbar wrist-percussion test resulted negative. Analytically with increased inflammatory parameters and radiologically with homogeneous opacity in the left lower third was observed, which suggests a pleural effusion. Thoracentesis was performed and revealed citrus pleural fluid (PF), exudative with predominance of neutrophils (70%) and normal pH and glucose. Antibiotic therapy was started with amoxicillin/clavulanate and azithromycin. Percutaneous pleural biopsies (PPB) were performed and a chest tube was placed. The analytical study showed progressive elevation of inflammatory parameters, alpha fetoprotein of 380.9 ng/mL (N < 8.1) and beta-HCG negative. The microbiological study of PF and PPB were negative, as well as the research of neoplastic cells. Thoraco-abdominal-pelvic CT showed a left pleural effusion and pleural mass, one of them causing invasion of the dorsal vertebral body with bone destruction. Also was identified a heterogeneous left pulmonary densification which enables the exclusion a tumoral nature. Presence of mediastinal adenopathies and hepatic nodular area compatible with metastasis. Multiple cysts compatible with PKD were observed in his kidneys. Bronchofibroscopy was normal as well as bronchial aspirate and bronchial lavage were negative for neoplastic cells. With the worsening of the left loculated effusion and suspicion of left paravertebral neoplastic lesion, she was referred to Thoracic Surgery and underwent

surgical biopsies of the pleural masses (costal grid, paravertebral and diaphragmatic) and pleurodesis. The histological result was compatible with NUT midline carcinoma. Due to the accelerated decline in general condition, uncontrolled pain and nausea, she was transferred to Palliative Care where she was submitted to chest radiotherapy for pain control, but with no benefit and therefore escalated analgesic therapy. She died 7 weeks after being admitted in the ED.
Discussion: NUT midline carcinoma is a rare neoplasm genetically defined by rearrangements in the NUT gene. It mainly affects children and young adults and is not specific to any organ or tissue, but appears preferentially in the region of the head, neck and mediastinum. It is an aggressive and invariably fatal tumor with an average survival of 9 months. At the time of diagnosis most patients are at an advanced stage and rarely resectable. Currently, there is no specific treatment, due to the small number of cases, and mostly are refractory to conventional treatments. However, molecular changes are known, which fuels research to find an appropriate and effective treatment.

Keywords: *Pleural effusion. Carcinoma.*

PC 183. A RARE HYDROTHORAX CASE IN BUDD-CHIARI SYNDROME

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Case report: A 42 years old woman, never smoker, with a relevant past medical history of polycythemia vera (PV) since 2005 (JAK-2 V617F mutation), under therapy with hydroxyurea, was admitted in the Pulmonology Department with tiredness, weight loss and night sweats. Physical examination was relevant for right lung field abolished vesicular murmur and, in the abdomen, for a 7cm below costal grid palpable hepatic board with flanks prominence. Full blood count with Hb 15.6 g/dL and Htc 46%. Chest radiography showed right hemithorax homogeneous hypotransparency, compatible with pleural effusion. Thoracentesis and pleural biopsies were performed. The pleural fluid results were compatible with an exudate with lymphocytes predominance and normal ADA; various samples had negative bacteriologic, mycobacteriologic and mycologic exams; one sample had positive direct mycobacteriologic exam and molecular test and cultural with Mycobacterium tuberculosis complex (MTC) identification; cytology was negative for neoplasic cells. The pleural biopsies showed chronic inflammatory infiltrate and reactive mesothelial hyperplasia. Chest CT, after drain colocation, showed: small right pleural effusion, with pleural leaflets thickening, conditioning inferior right lobe collapse. A bronchofibroscopy was performed and evidenced right inferior lobar bronchus external compression signs. The bronchial lavage microbiologic exams were negative, as the neoplasic cells cytology. Toward the relapsing pleural effusion presentation and the MTC isolation in one of the pleural liquid samples, first line tuberculostatic therapy was initiated, when this result was available. Was submitted to video-assisted thoracoscopic surgery with pleural biopsies, highlighting fibrous thickening, lymphoplasmacytic inflammatory infiltrate, mesothelial hyperplasia, congestion and hemorrhagic signs, without neoplasm. The microorganisms search in surgical peace and pleural liquid was negative. An abdominal ultrasound was performed, with hepatomegaly imagological documentation, without focal lesions and splenomegaly. Because ascites aggravated, was submitted to a paracentesis, standing out in the ascitic fluid a normal adenosine deaminase and a negative microbiology. As the pleural effusion and ascites remained, the non-cirrhotic portal hypertension hypothesis caused by supra-hepatic vein thrombosis was considered. So, were performed: an abdominal eco-doppler, that did not allowed to exclude thrombosis; a digestive endoscopy, not showing esophageal varices; an abdominal magnetic resonance, that revealed homogeneous hepatomegaly, splenomegaly, ascites, inferior vena cava compression and suggestive alterations of supra-hepatic veins thrombosis in Budd Chiari Syndrome (BCS) context. Therapeutic anticoagulation was initiated and, later, a transjugular intrahepatic portosystemic shunt colocation was tried. However, the permeabilization was not possible, because extensive thrombosis was present. She is now being evaluated in the hepatic transplant department.
Discussion: The BCS is a rare disease and PV is its most frequent cause (representing 10 to 40% of the cases). In its turn, JAK-2 V617F mutation is present in 40 to 60% of the patients with BCS. This syndrome clinical manifestations depends of the extension and rapidity of the venous occlusion as well as of the collateral circulation development. Hydrothorax as an initial presentation isn't frequent.

Keywords: *Hydrothorax. Budd Chiari syndrome. Polycythemia.*

PC 184. TRANSUDATIVE CHYLOTHORAX: RARE ASSOCIATION IN HEPATIC CIRRHOSIS

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Introduction: Chylothorax is a rare entity that has traumatic and non-traumatic causes. Considering non-traumatic causes, obstruction of the thoracic duct due to cancer is the most common, being diagnosed lymphoma in about 70% of cases. The fluid is generally a lymphocytic predominant exudate.
Case report: The authors present a non-smoker 80-year-old male, with known allergic asthma, sleep obstructive apnoea, obesity, arterial hypertension, diabetes mellitus, ethanolic hepatic disease, chronic renal insufficiency and cholelithiasis. He complains of progressive fatigue, anorexia, asthenia, and non quantified weight loss for about six months. He also refers increase in abdominal girth, orthopnea, nocturnal paroxysmal dyspnea and lower limbs oedema. He denied fever, cough or expectoration. An ambulatory abdominal ultrasound showed liver with reduced dimensions, splenomegaly and ascites. The clinical laboratory results showed discrete alterations of AST and ALT around 50 U/L, AF 200 U/L, and creatinine 1.25 mg/dL. The seric lipid panel did not have alterations. A thoracic X-ray reveals a right pleural effusion, so a thoracocentesis is made, draining 1,800 cc of a cloudy fluid with pH 7.04. The patient is immediately admitted to the Pulmonology Department for investigation. The laboratory results of the fluid underlined: 700 cells/uL, ADA 9 U/L, glucose 449 mg/dL, Light's criteria for a transudative effusion (proteins 2.7 g/dL, LDH 100 U/L) normal level of cholesterol and increased triglycerides of 251 mg/dL. As so, a diagnosis of a transudative chylothorax was made, and the work-up to its etiology was continued. A thoracic, abdominal and pelvic CT showed cirrhotic liver; a gallbladder with irregularity of its superior wall, in its transition with its hollow, highly suggestive of adenocarcinoma; and low volume ascites, mainly subphrenic. There was no evidence of lymphoproliferative disease nor thoracic duct traumatic lesions. Eliminating lymphoma as possible diagnosis, we considered the co-existence of hepatic hydrothorax and chylothorax in the context of cirrhosis as the likely aetiology of the transudative chylothorax. The patient was treated with a low-lipid diet enriched with medium-chain triglycerides, and diuretics were optimized. After a second thoracocentesis, in which the fluid maintained the same characteristics, the effusion did not relapse.
Discussion: There are just a few cases of transudative chylothorax reported in literature, and they are mostly associated with hepatic cirrhosis. The pathophysiology of this association is uncertain, but some authors say that is occurs due to translocation of chylous ascitic fluid through diaphragm to pleural cavity. In this particular case, the volume of ascites was small, so its composition is unknown. The gallbladder carcinoma appears to be an incidental finding, fact supported by the non relapsing effusion after optimization

of medical therapy. This case raises awareness to the importance of recognizing this association in the presence of hepatic cirrhosis.

Keywords: *Chylothorax. Transudate. Hepatic cirrhosis.*

PC 185. PREDICTORS ASSOCIATED WITH SUCCESSFUL PLEURODESIS AND SURVIVAL IN MALIGNANT PLEURAL EFFUSION

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Introduction: Malignant pleural effusion (MPD) dramatically decreases the quality of life and survival of cancer patients. There are multiple palliative approaches to drain the fluid and also to prevent relapse. Talc slurry pleurodesis remains one of the most common and effective therapeutic options in symptomatic patients with life expectancy of more than 2-3 months.
Objectives: Identify predictive factors related to the efficacy of talc slurry pleurodesis in patients with MPD.
Methods: Retrospective study of patients with malignant pleural effusion who underwent talc slurry pleurodesis over a 10-year period at the Pulmonology Department. Inclusion criteria: pleural malignancy proven by cytology and/or histology and information about biochemical parameters of pleural fluid. Efficacy was defined as no recurrence of pleural effusion. Survival was considered from the date of pleurodesis to death or the date of the last visit.
Results: A total of 29 patients with MPD undergoing pleurodesis were included. The average age was 76 ± 12 years with a male prevalence (57.1%). The group included 19 (67.9%) lung cancer patients, 3 (10.7%) with breast cancer, 2 (7.1%) with lymphoma, one (3.6%) with mesothelioma, one (3.6%) with pancreatic cancer, one (3.6%) with gastric cancer and one (3.6%) with cancer of unknown origin. Pleurodesis had a total success rate of 75% (rate of 68.4% in cases of lung cancer and 100% in other cases of cancer). Age and gender did not present a statistically significant association with the success of the technique ($p > 0.05$), however, there was a tendency for males to have higher relapse rates. Regarding pleural fluid biochemical parameters, a pH ≥ 7.3 and glucose > 60 mg/dl were associated with successful pleurodesis ($p < 0.05$). On the other hand, LDH, ADA, protein and cell count values did not show any statistically significant association ($p > 0.05$). The average total survival was 17 months (1-30) and was lower in patients in whom pleurodesis was not effective (mean 19.1 ± 8.4 vs 10.7 ± 8.3 months, respectively, $p < 0.05$).
Conclusions: As described in the literature, pleurodesis had a success rate of approximately 70%, with pleural effusion associated with lung cancer being particularly prone to relapse. Only two pleural fluid parameters were associated with the success rate of pleurodesis: pH ≥ 7.30 and glucose > 60 mg/dl. These factors must be taken into account to predict the timing of pleurodesis and the likelihood of relapse.

Keywords: *Pleurodesis. Malignant pleural effusion.*

PC 186. PULMONARY REHABILITATION ADAPTED INDEX OF SELF-EFFICACY (PRAISE) VALIDATED TO PORTUGUESE RESPIRATORY PATIENTS

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Introduction: Recent updates on Pulmonary Rehabilitation highlight the importance of patients' self-efficacy on long-term adherence to health-enhancing behaviors. Self-efficacy was defined by Albert Bandura as a personal construct of how successfully one can execute a required behavior to produce a desired outcome. Higher sense of self-efficacy has been found to be positively associated with better attendance and improvements in Pulmonary Rehabilitation and reduction in sedentary time following Pulmonary Rehabilitation in people with Chronic Obstructive Pulmonary Disease. The Pulmonary Rehabilitation Adapted Index of Self-Efficacy (PRAISE) is an adaptation of the General Self-Efficacy Scale, adding 5 new specific Pulmonary Rehabilitation items. The scale ranges from 15 to 60 with higher score indicating higher levels of Self-Efficacy.
Objectives: This study aimed to translate, culturally adapt and evaluate reliability and validity of PRAISE on Portuguese respiratory patients.
Methods: Forward-backward translation and pilot testing were performed. Content validity was assessed by a multidisciplinary panel of expert judges. To evaluate reliability and validity, 150 respiratory outpatients on Pulmonary Rehabilitation participated on a cross-sectional study. Descriptive and reliability analyses, and exploratory factorial analysis using principal axis factoring, followed by oblique factor rotation was conducted to identify construct validity. IBM® SPSS® version 22 was used to perform statistical analysis.
Results: 150 patients with a mean age of 67 years, 54% male and 83% currently on Pulmonary Rehabilitation at Hospital Pulido Valente in Lisbon participated in the study. These included mainly Chronic Obstructive Pulmonary Disease patients (46.7%) but also Bronchiectasis (20%), Interstitial Lung Disease (20%) and other respiratory diseases. Exploratory factor analysis extraction provided a 4-factor solution that cumulatively explained 52.3% of total variance (F1: 26.6%; F2: 9.7%; F3: 8.7%; F4: 7.3%). Portuguese PRAISE showed a reliability of 0.78 (Cronbach alpha). **Conclusions:** The Portuguese version of PRAISE showed adequate psychometric properties to be used as an instrument to measure self-efficacy as a patient-centered outcome on Pulmonary Rehabilitation, in accordance with international guidelines.

Keywords: *Self-efficacy. Praise. Validity. Pulmonary rehabilitation.*

PC 187. MINIMAL CLINICALLY IMPORTANT DIFFERENCE OF THE BRIEF-BESTEST IN PEOPLE WITH COPD AFTER PULMONARY REHABILITATION

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Introduction: People with chronic obstructive pulmonary disease (COPD) present worse balance and fall more than their healthy peers. Therefore, the need to integrate balance assessment and management in the rehabilitation process of these patients has been highlighted in the latest American Thoracic Society/European Respiratory Society statement. The Brief-Balance Evaluation System Test (Brief-BESTest) is a comprehensive, reliable and valid measure of balance, commonly used in people with COPD, which provides valuable information to tailor patients' balance training during pulmonary rehabilitation (PR). However, its clinical interpretability is currently limited due to the lack of cut-off points to identify clinical relevant changes. Therefore, this study aimed to establish the minimal clinically important difference (MCID) for the Brief-BESTest after a PR programme in people with COPD.
Methods: An observational prospective study, part of a larger study (3R: revitalising pulmonary rehabilitation) was conducted. Stable people with COPD completed a 12-week community-based PR programme with two weekly sessions of exercise training and one session every other week of education and psychosocial support. The following measures were collected: Brief-BESTest; 6-minute walk test (6MWT) and the modified Medical Research Council (mMRC). All measures were assessed pre and post PR. The MCID was computed using distribution- and anchor-based methods. The standard error

of measurement (SEM), 1.96SEM, 0.5*standard deviation, minimal detectable change with 95% confidence (MDC95) and Cohen's effect size were used as distribution-based methods. Anchors used were changes in the 6MWT and the mMRC, which to be used in the MCID calculation, should present a moderate correlation (≥ 0.3) with the Brief-BESTest change. Mean changes and linear regressions were computed to estimate the MCID from anchor-based methods. A quality effects models weighting 2/3 for anchor and 1/3 for distribution-based methods was used and the pooled values were obtained using META XL. Sixty-three people with COPD (68.6 ± 8.1 years old; 49 [77.8%] male; FEV1 49.3 ± 17.8%predicted) were included in the analysis. MCID based on distribution-methods varied between 2.04 and 5.64 points. Significant correlations were found between changes in the Brief-BESTest and changes in the 6MWT (r = 0.33; p = 0.008) and the mMRC (r = -0.30; p = 0.016). MCID based on anchor methods ranged between 2.44 and 3.32 points. Figure 1 shows that the MCID pooled was 3.2 points (95% Confidence Interval 1.93-4.40).
Results: An improvement of 3.2 points in the Brief-BESTest seems to be clinically meaningful in people with COPD after a 12-weeks community-based PR programme.
Conclusions: Future research using other balance measures as anchors would be useful to further validate our results. The estimated MCID of the Brief-BEST will aid health professionals to understand the effects of PR on balance performance and guide tailored interventions.

Keywords: *MCID. Balance. Pulmonary rehabilitation. COPD.*

PC 188. FATIGUE PREDICTS EXACERBATIONS IN PATIENTS WITH COPD ATTENDING TO PULMONARY REHABILITATION

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Introduction: Acute exacerbations of chronic obstructive pulmonary disease (AECOPD) are the main reason for patients' clinical decline and are challenging to predict. Pulmonary rehabilitation (PR), among many other benefits, decreases the frequency of AECOPD and improves fatigue, a burdensome and highly prevalent symptom in patients with COPD. Although, the association between fatigue, morbidity, mortality and AECOPD has been well described, the prognostic value of fatigue to detect AECOPD during PR is unknown. This study explored the prediction ability of the functional assessment of chronic illness therapy fatigue subscale (FACIT-FS) and the checklist of individual strength fatigue subscale (CIS-FS), to distinguish between patients who experienced and did not experienced AECOPD during a PR programme.
Methods: An observational prospective study, part of a larger trial (3R: revitalising pulmonary rehabilitation) was conducted. Stable patients with COPD completed a 12-weeks community-based PR programme. Fatigue was assessed prior to PR enrolment using the FACIT-FS and the CIS-FS. An AECOPD was defined as an acute worsening of respiratory symptoms which required additional therapy. The occurrence of an AECOPD during PR was self-reported and recorded by the physiotherapists during the PR. Independent t-tests were used to explore differences in fatigue scores between patients who experienced an AECOPD and those who did not. Point biserial correlation coefficient (rpb) was used to explore associations between the FACIT-FS and the CIS-FS scores and the occurrence of an AECOPD. Receiver Operating Characteristic (ROC) curves were computed to test the FACIT-FS and CIS-FS ability to predict AECOPD and the corresponding cut-off scores and likelihood ratios (LR) were determined. Fifty-three patients with COPD were included in the analysis [68.4 ± 7.6 years old; 42 (79.2%) male; FEV1 48.1 ± 17.4%predicted]. Thirteen patients (24.5%) experienced an AECOPD during PR and presented significantly higher levels of fatigue at baseline than patients with no AECOPD (FACIT-FS: 28.5 ± 7.1 vs 34.8 ± 10.3, p = 0.044; CIS-FS: 44.1 ± 8.4 vs 34.5 ± 13.2, p = 0.018). Increased fatigue at baseline was correlated with the occurrence of an AECOPD during PR (FACIT-FS, rpb = -0.28, p = 0.044; CIS-FS, rpb = 0.32, p = 0.018). FACIT-FS and CIS-FS showed good ability to discriminate between patients who experienced and did not experienced AECOPD during the PR programme (FACIT-FS: AUC = 0.71; 95%CI 0.58 to 0.85; p = 0.021; CIS-FS: AUC = 0.72; 95%CI 0.57 to 0.87; p = 0.019). Cut-off points of 32 points on the FACIT-FS and 44 points on the CIS-FS showed a 2.2 LR of identifying patients having AECOPD during PR (sensitivity = 68% and specificity = 69%).
Results: Patients scoring above (CIS-FS) or below (FACIT-FS) the established cut-off points were approximately 15% (LR≈2) more likely of having an AECOPD during PR.
Conclusions: These results highlight the need to comprehensively assess fatigue in patients with COPD, as well as to develop target interventions for its management during PR programmes. Future studies conducted with patients not enrolled in PR are needed to establish the external validity of our results.

Keywords: *Fatigue. Exacerbation. Prediction ability. Facit. Cis..*

PC 189. TELEMONITORING PHYSICAL ACTIVITY IN DAILY LIFE: INCREASED BENEFITS FOR THE PATIENT IN PULMONARY REHABILITATION

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Introduction: New information technologies are a promising tool for health services modernization and provide an enormous potential for personalized medicine in clinical practice. The Pulmonary Rehabilitation Unit from Hospital Pulido Valente has established SMARTREAB as a clinical routine for telemonitoring physical activity in daily life of chronic respiratory patients through synchronous accelerometry and oximetry. A major quality principle of such methodology has been the shared process between clinicians and the patient, analyzing objective telemonitoring data at the context of reported qualitative data.
Objectives: To illustrate case-examples of telemonitoring physical activity in daily life on chronic respiratory patients, applied on individualized patient evaluation and Pulmonary Rehabilitation.
Methods: One-year cross-sectional study of systematic telemonitoring physical activity of daily life in 100 chronic respiratory patients through SMARTREAB methodology.
Results: This methodology brought innovation and patient-service organization, with preliminary results of increased benefit in health care quality in diverse ways: individualized specific goal setting in Pulmonary Rehabilitation, routine habits reeducation with improved health in daily life, healthy physical activity habits follow-up and clinical exacerbations' early detection preventing avoidable hospitalizations.
Conclusions: Telemonitoring physical activity in daily life of a chronic respiratory patient, involving the patient in a participated analysis of the personalized objective and qualitative data, has increased benefits for the patient and his/her Pulmonary Rehabilitation.

Keywords: *Telemonitoring. Physical activity. Pulmonary rehabilitation. Personalised medicine.*

PC 190. FIRST STEPS ON HOME-BASED PULMONARY TELEREHABILITATION BY CENTRO HOSPITALAR UNIVERSITÁRIO LISBOA NORTE

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Introduction: Pulmonary Rehabilitation of Chronic Obstructive Pulmonary Patients (COPD) is scientifically recognized as the most ef-

ficient therapy improving quality of life and reducing patients' hospitalization and mortality. Nevertheless, less than 1% of these patients have access to Pulmonary Rehabilitation in Portugal, mainly provided by 24 hospital-based centres. Telemedicine applied to home-based rehabilitation has proven cost-efficacy results, being one of the most promising areas for patients' accessibility optimization.

Objectives: Pilot testing of a Home-based Pulmonary TeleRehabilitation model, empowering this therapeutic intervention through the application of new technologies at the citizens' service.

Methods: Project integrated on the Program for National Health Service Patient Circuit Improvement and aligned with the National Program for Respiratory Diseases. Pre-implementation phase with a pilot test on 5 COPD patients given clarified consent. After 1 month of educational and exercise training sessions as outpatients at the Pulmonary Rehabilitation Unit of Hospital Pulido Valente in Lisbon, patients continued exclusively as a home-based program for 2 months of exercise training with remote hospital monitoring by planned physiotherapist videocall. Patients' clinical assessment pre and post program occurred at hospital setting.

Results: Pilot testing of the Home-based Pulmonary TeleRehabilitation model was successful, with patients' high adhesion and satisfaction levels. Implemented methodology was instructive and inclusive applying new technologies and promoting self-efficacy on disease management, mainly on exercise training and physical activity in daily life plan. Questionnaires and field tests presented comparable benefits to the traditional Pulmonary Rehabilitation model.

Conclusions: The Home-based Pulmonary Rehabilitation model pilot tested provided operational validation on new technologies application at the citizens' service, with health care modernization and Pulmonary Rehabilitation service reorganization, with personal, familiar and societal disease impact levels.

Keywords: *Pulmonary rehabilitation. Telemedicine. New information technologies. COPD.*

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PE 001. LUNG MASS IN A PATIENT WITH CHRONIC LYMPHOCYTIC LYMPHOMA: A CASE REPORT

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Introduction: Chronic lymphocytic lymphoma (CLL) is the most common form of chronic lymphoproliferative disease, prevalent especially at advanced ages. These patients are at increased risk of developing second malignancies. About 2% of CLL patients develop lung cancer, with adenocarcinoma being the most common histological subtype.
Case report: We report the case of a 74-year-old male retired agronomist who has been a smoker for 15 years (40 UMA), performance status 0, with known diagnoses of hyperuricemia, essential hypertension, dyslipidemia, and benign prostatic hyperplasia, which was medicated. History of CLL diagnosed in 2018 by guided biopsy of retroperitoneal bulky adenopathic conglomerate and root of the mesentery. Thoracic CT scan with mass in the apical segment of the right upper lobe with spiculated contours, air bronchogram and slight contact with the mediastinal pleura, initially attributed to lymphoma. The patient underwent chemotherapy with good response of the supra and infradiaphragmatic adenopathic component, maintaining the thoracic mass with the same dimensions and characteristics, so he was referred to Pulmonology consultation. Patient without significant symptoms and without relevant alterations at the objective exam. Analytically without changes. Negative viral serologies. Videobronchofibroscopy without alterations, with negative cultural exams, transbronchial lung biopsies and bronchial lavage negative for neoplasia. Endobronchial echoendoscopy was performed with mass aspiration with negative cytology. The case was discussed with the assistant hematologist and given the low probability that the lesion was lymphoma infiltration and given the patient's smoking history, the suspicion of neoplastic lesion was maintained, and fluoroscopic controlled videobronchofibroscopy and transbronchial pulmonary mass biopsy were repeated and was positive for lung adenocarcinoma.
Discussion: Given the asymptomatic patient and the permanence of the lung injury, the appreciation of the antecedents, the clinical suspicion and the multidisciplinary discussion are fundamental to justify the accomplishment and eventual repetition of complementary exams until the final diagnosis is clarified. Follow-up of CLL patients should include screening for solid tumors, including lung cancer, given the increased risk of second malignancies in these patients.

Keywords: *Chronic lymphocytic lymphoma. Lung cancer. Adenocarcinoma.*

PE 002. PULMONARY NEOPLASIA: LOOKS LIKE, BUT IT ISN'T

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Introduction: Technological advances in medical field represent a valuable tool for proper diagnosis and pathological staging - namely, lung cancer. Even so, the cases of false positives and negatives are not negligible, being several the conditions capable to mimic neoplastic lesions imagiologically. We present 2 clinical cases.
Case reports: Case 1: Male patient, 60 years old, professional electrician, active smoker (35 UMA), followed by COPD under combined inhalation therapy (LAMA + LABA) who, following hospitalization for infectious respiratory acutization, underwent thoracic high-resolution computed tomography (HRCT), identifying soft tissue mass, 50 mm in diameter, in the apical segment of the right upper lobe (LSD), mediastinal adenopathy and right pleural effusion. Positron Emission Tomography (PET-CT) showed hyper-uptake with a maximum late SUV of 9.3 and videobronchofibroscopy identified enlargement to the right of the upper lobe bronchus insertion spur and thickening of the posterior segment folds. After an anatomopathological result of negative bronchial biopsies for neoplastic cells, the patient underwent control thoracic HRCT, which showed a clear imaging improvement with almost total resolution of the mass previously described in the LSD, and only residual fibrotic stria was evident. Maintaining follow-up in consultation, repeated thoracic HRCT at

6 months, showing complete imaging resolution. Case 2: A 71-year-old male former smoker (55 UMA) and retired, followed by COPD with bilateral panlobular emphysema. Due to left pneumonia, he underwent antibiotic therapy, with clinical resolution of the condition. When the imaging alteration persisted, the patient underwent thoracic HRCT, identifying an irregular area of nodular aspect with 2.5 cm in the LSD. It was PET/CT, presenting discrete uptake in the areas of LSD densification (late maximum SUV of 1.3). We opted for lesion control with repeated thoracic HRCT at 3 months, with evidence of complete resolution.
Discussion: We present the cases due to the high clinical-imaging suspicion of pulmonary neoplasia in patients with regular COPD follow-up and its atypical evolution, highlighting the importance of serial evaluations for a correct diagnostic and therapeutic approach.

Keywords: *Pulmonary injury. Imaging resolution.*

PE 003. LUNG CANCER PATHWAY MODELING: CROSS-SECTIONAL ANALYSIS THE PROCESS OF DIAGNOSIS, STAGING AND THERAPEUTIC DECISION

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Introduction: Pathway modeling of patients with suspected lung cancer, from admission in a specialized clinic to all clinical investigation, allows for an individualized analysis of each step of the present protocol, showing all possible configurations to the same system.
Objectives: Analysis of the current process in a Pulmonology Department, using mathematical simulation techniques. Modeling of the system is based in a sample of data collected in the first phase of a joint research project to optimize the process of diagnosis, staging and therapeutic decision, included in a Biomedical Engineering Masters. This model analyzes the Department as a system, predicting all possible configurations starting from the observed sample.
Methods: System modeling was based in data from a sample (2016-2017) relative to waiting times in the workflow of patients within the Pulmonology Department, until the start of first-line therapy. We used empirical distributions and defined probability distributions based on a priori observation. We applied mathematical modeling techniques for simulation of discrete events, generating fictitious patients in a sequence of 1,000 hospitals, each with 77 patients, like the initial sample and protocol. Statistical analysis of the generated scenarios was compared with the results of the base sample and with published guidelines.
Results: Starting from a sample of 77 patients, predominantly male (72.7%), with a mean age of 66 ± 12, with a mean time from admission to start of therapy of 68 days (± 55.2), we searched all possible configurations to the same system. Simulation generated a mean time from admission to the first pathological exam of 14 days. Pathology waiting times were 31 days (± 27.2), assuming a maximum of 3 biopsies as observed in the initial sample. Mean time to therapy decision was 10 days (± 17.8), adding 7 more days (± 21.6) until start of treatment. Mean time of all simulated patients was 76 days (± 51.6), significantly worse than the initial sample, at the expense of third quartile deviation and increase in maximum time (420 days). In the simulated patients, 25% had a waiting time under one month.
Conclusions: The simulation presents a conservative scenario with a worse global performance than the initial sample, with lower adherence to guidelines, but representing possible scenarios in a more realistic way. In the next steps of the research project we will optimize the process in order to improve its performance, proposing and simulating a new clinical protocol. This applied methodology can be a useful tool to analyze complex hospital systems.

Keywords: *Lung cancer. Mathematical modeling. Waiting times.*

PE 004. PULMONARY BENIGN METASTASIZING LEIOMYOMA IN A POSTMENOPAUSAL WOMAN

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Case report: We report a case of a woman, 66 years old, who was referred to our department because of a routine chest X-ray that had revealed a right nodule. She was asymptomatic at the time and examination was normal. Her known medical conditions were asthma, hypertension and she had underwent hysterectomy for benign leiomyoma 26 years previously. She has never smoked. Her laboratory analysis were normal. CT chest scan revealed a homogeneous nodule in the middle lobe. PET/CT scan demonstrated an abnormal FDG uptake in this solitary nodule, without any other significant sites of abnormal FDG uptake. Flexible bronchofibroscopy was normal, and cytological examination of the bronchial brush, bronchial washing and bronchial secretions were negative. The lesion was not accessible by transthoracic needle biopsy, so after multidisciplinary meeting the patient was referred to thoracic surgery. It was performed middle lobe resection. Histopathology report was consistent with pulmonary benign metastasizing leiomyoma from a primary benign lesion in uterus. CT chest 6 months after surgery has not any lesion and until now, in a period of 1 year follow-up, the patient keeps asymptomatic and with a normal Chest X-ray.
Discussion: Benign metastasizing leiomyoma (BML) is an extremely rare disease. Even though they have a benign histology, it is known that benign leiomyomas can metastasize to distant sites, and the lung is one of the most affected organs. Their pathogenesis remains unknown and a consensual explanation for this metastatic behavior is still lacking. Radiological tests are not specific, meaning the only way to confirm this diagnosis still remains histopathological examination. As matter of fact, in this case, the patient had a solitary nodule with abnormal FDG uptake in PET/CT scan, which could suggest a primary lung tumor. Although this benign neoplasm is even more unusual in postmenopausal women, it should be suspected in any patient with a history of hysterectomy, no matter when it happens, as our current case, of a 66-years-old woman who underwent hysterectomy for benign leiomyomas 26 years ago. There are no guidelines for BML treatment, but surgery for diagnostic and therapeutic purposes has widely performed. Concerning prognosis, BML has a favorable outcome.

Keywords: *Metastasizing leiomyoma. Pulmonar metastasis.*

PE 005. MEDIASTINAL MASS IN A YOUNG ADULT: IS THAT ALWAYS SIMPLE TO RECOGNIZE?

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Introduction: Anterior mediastinal tumors represent 50% of all mediastinal masses and include thymoma, germ cell neoplasms, thyroid disease and lymphoma. Diagnosis can be difficult; however, factors such as age, clinical examination, laboratory studies and imaging findings can help identify the disease.
Case report: An 18-year-old Mozambican man arrived at the emergency department with history of weight loss and right anterior chest pain with pleuritic features for the previous 6 months; and cough with purulent sputum, dyspnea on exertion and fever for

1 month. Upon examination, he presented with face, neck and left arm edema, with collateral venous circulation on the anterior thorax. He could not tolerate dorsal decubitus, but was eupneic at rest. He had decreased vocal fremitus, dullness to percussion, and decreased vesicular murmur in the lower third of the right hemithorax. Non-tender hepatomegaly was detected. Splenomegaly or palpable peripheral adenopathies were absent. He was admitted to the Pulmonology department. The initial blood analysis documented C-reactive protein and LDH elevation. Chest radiography (CXR) showed mediastinal enlargement and right pleural effusion. A large heterogeneous anterior-medium mediastinal mass, with significant caliber reduction of the superior venous cava and left venous brachiocephalic trunk, bilateral pleural effusion and mild pericardial effusion were seen in the chest computed tomography (CT). A diagnostic and therapeutic thoracentesis drained pleural liquid with exudate features. CT-Guided Transthoracic Needle Biopsy was then performed. The histopathological examination of the biopsy sample and the absence of bone marrow infiltration set the diagnosis of T-cell lymphoblastic lymphoma (T-LBL). He was transferred to the Hematology Department for intensive treatment, but lymphoma was radio and chemoresistant. An allogenic bone marrow transplant was proposed; yet, no donors were found in time and the patient died.

Discussion: Although thymoma is the most common primary neoplasm of the anterior mediastinum, the typical occurrence on patients over 40 years of age and the absence of Myasthenia Gravis' signs made this diagnosis less probable. Regarding age itself, germ cell tumors were probable. Lymphomas represent 20% of all mediastinal tumors in adults and 50% in children. Non-Hodgkin lymphoma is responsible for only 15-25% of the cases, with T-LBL accounting for approximately 2%, typically occurring in children and adolescents, with a male predominance. Mediastinal involvement may be associated with pleural and pericardial effusion, vena cava syndrome, as observed in our patient. We present the case of a young man with mediastinal T-LBL, with bilateral pleural effusion and superior vena cava syndrome, demonstrating how CXR, an inexpensive and easy exam, can help guide the diagnosis. Differential diagnosis of mediastinal masses should include all its causes and be guided by prevalence, location and age.

Keywords: *Mediastinal mass. T-cell lymphoblastic lymphoma. Pleural effusion. Superior vena cava syndrome.*

PE 006. PERITONEAL CARCINOMATOSIS, A RARE CONDITION IN PULMONARY ADENOCARCINOMA

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Braga Hospital.

Introduction: Lung cancer is the most common type of cancer in the world and accounts for the majority of cancer deaths. Lung adenocarcinoma is the most common type of lung cancer. Preferred metastatic sites are the liver, adrenal glands, brain and bones. Peritoneal carcinomatosis is a rare clinical event in patients with lung cancer. Clinical manifestations of these metastases are uncommon and include perforation and intestinal obstruction. These patients progress unfavorably.

Case report: Male, 58 years old, smoking 37 UMA. T4 stage pulmonary adenocarcinoma diagnosed (no PDL1 expression, no ALK translocation, no EGFR mutation, no ROS1 gene translocation) in October 2018. Positron tomography revealed: "Intense glycolytic hypermetabolism in two upper lobe masses of the left lung, slight FDG avidity in small nodules in both lungs, mediastinal-hilar adenopathy and a small right cervical adenopathy, suggesting malignant neoplastic infiltration". Decided in group consultation, perform 4 cycles of carboplatin + pemetrexed chemotherapy with reevaluation for possible radiotherapy. The reassessment CT after 3 cycles revealed signs of progression of the cancer disease. Discussed again in a group meeting and decided to conduct 2nd line treatment with docetaxel + nintedanib. He underwent revaluation CAT after the 2nd treatment cycle, which revealed stable disease, maintaining the treatment. At the 5th cycle of treatment the patient reported complaints of pain and increased waist circumference. Still drumstick fingers with altered nail texture. He underwent reassessment CT which revealed: "Signs of progression of the disease at the abdominal level, with peritoneal carcinomatosis, unmatched in the previous study." Given the complaints, the patient was hospitalized. PET repeated: "In the abdominal-pelvic region, there is intense FDG avidity in tissue densifications, some nodular, at the peritoneal/mesenteric level. These aspects are compatible with peritoneal carcinomatosis. " Discussed again at a group meeting and decided to perform 3rd line treatment with nivolumab. During the hospitalization period, the patient maintained abdominal complaints, being observed by general surgery and submitted to paracentesis with 4L ascites fluid drainage, but with no notion of symptom improvement. She presented general state degradation, presenting gait imbalance and oral loss. Requested collaboration from the palliative care team for symptomatic therapeutic optimization. The patient died in July 2019.

Discussion: This case report aims to expose a rare condition of peritoneal carcinomatosis in a patient with lung adenocarcinoma. In this clinical case, the patient presented rapid progression of the neoplastic disease and was submitted to three unsuccessful treatment lines. Peritoneal carcinomatosis is a diagnosis that should be considered in the presence of abdominal symptoms in a patient with lung adenocarcinoma.

Keywords: *Peritoneal carcinomatosis. Lung adenocarcinoma.*

PE 007. PNEUMOPERICARDIUM, A RARE COMPLICATION, IN A PATIENT WITH LUNG ADENOCARCINOMA

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Introduction: Pneumopericardium is a rare clinical condition. Possible causes include chest wall trauma, invasive pulmonary or cardiac surgical procedures, pericardial fistulae (resulting from carcinoma or suppuration), barotrauma, and pericarditis caused by gas-forming microorganisms. Clinical findings include: hypophonesis of heart sounds and Hamman's sign. Chest X-ray can confirm the diagnosis. Treatment depends on the underlying cause and is determined by clinical severity.

Case report: Patient 67 years old, smoker. History of hypertension, dyslipidemia and chronic alcoholism. He resorted to the emergency department for a month-long, slurred clinic of pleuritic pain, loss of strength and sensation in the left upper limb, productive cough and weight loss of 8 kg. From the investigation, stage IV pulmonary adenocarcinoma was diagnosed (PDL-1 expression in 78% of cells, absence of ALK gene translocation), with brain, bone, liver and ganglion metastasis. During the investigation period, the patient presented several complications, including: acute and occlusive deep venous thrombosis in the peroneal axes of the right lower limb, occlusive arterial disease in the femoropopliteal axes of the left lower limb and dysphagia for solids. Also during hospitalization, the patient reported an episode of pain related to the left shoulder, with radiation to the neck and feeling of aggravated dyspnea. He underwent an electrocardiogram that was unchanged. Analyzes with negative myocardial necrosis markers. Chest X-ray revealed hypertransparency around the cardiac silhouette, suggestive of pneumopericardium. Chest CT scan for diagnostic clarification confirming pneumopericardium due to the presence of a fistula between the neoplastic lesion and the pericardium (pericardio-bronchial fistula): Chest CT: "there is an extensive lesion in the left upper lobe, at least 7.7 cm, with pleural contact and contact with the hilum as well as the mediastinum. The lesion is partially cavitated and probably invades the me-

diastinum, with a lush pneumopericardium. It is assumed that the fistulization area is close to the hilum". The clinical case was discussed with Cardiology and Thoracic Surgery, which considered a poor prognosis situation, so conservative treatment was chosen. The patient eventually died three weeks later.
Discussion: Pneumopericardium is a serious clinical condition. In this clinical case, it is intended to portray its relationship with lung cancer. Treatment of pneumopericardium depends on the underlying cause and clinical severity. Usually the resolution is spontaneous within a few days. Pericardiocentesis or thoracic surgery may be necessary in cases of cardiac tamponade and/or hemodynamic instability. In this case, we opted for conservative treatment given the clinical stability of the patient and his poor prognosis.

Keywords: *Pneumopericardium. Lung adenocarcinoma.*

PE 008. PULMONARY MALT LYMPHOMA: 8 YEARS AFTER DIAGNOSIS

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Introduction: Primary lung Mucosa Associated Lymphoid Tissue (MALT) lymphoma is a rare malignant entity with unspecific clinical and imaging characteristics that are poorly defined in the literature and, therefore, can easily lead to a misdiagnosis.
Case report: We describe the case of a 72-year-old female patient with no relevant pathological history who had a right chest pain and asthenia with 3 weeks of evolution. During the course of the study, the patient underwent a chest X-ray showing heterogeneous, oval opacity and regular contours at the right paracardiac level. Computed tomography showed a large mass of 75 mm in diameter in the anterior segment of the middle lobe and also identified a 15 mm nodular formation of diaphragmatic location. Both lesions were PET-capturing and no involvement of regional ganglia was detected. After bronchofibroscopy, which excluded endobronchial lesion, and inconclusive transthoracic biopsies, the definitive diagnosis was only possible through surgical approach of the lesions and their immunohistochemical study, confirming a primitive MALT-type extranodal marginal zone lymphoma of the lung. The patient underwent right inferior and middle lobectomy, remaining for 8 years without evidence of disease recurrence.
Discussion: Pulmonary MALT lymphoma tends to evolve insidiously and may present as a large solid mass. The immunohistochemical diagnosis is fundamental to exclude other types of neoplasms with similar appearance but more aggressive evolution, as well as to adapt the treatment and thus contribute to a favorable prognosis in terms of long survival without relapses.

Keywords: *Primary pulmonary lymphoma. Pulmonary malt lymphoma. Survival.*

PE 009. TIME MATTERS: DELAYS IN THE PROCESS OF DIAGNOSIS, STAGING AND THERAPEUTIC DECISION IN LUNG CANCER

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Introduction: The study of the workflow of patients with suspected lung cancer, from admission to a specialized clinic to all clinical investigations, is complex and time-consuming. Delays in the process of diagnosis and staging can result in worst patient outcomes. There is no consensus about minimum recommended times for each stage of the process and there is very little data about the Portuguese situation.
Objectives: To analyze the present process in a Pulmonology Department, identifying its critical steps and comparing times in each stage with existing guidelines. These data consist in the first phase of a joint research project to optimize the process of diagnosis, staging and therapeutic decision, included in a Biomedical Engineering Masters.
Results: From a pool of 161 medical records we included 77 patients, with male predominance (56; 72.7%) and mean age of 66 ± 12 years. Mean time from admission to start of therapy was 68 days (± 55.2). Mean time to first biopsy was 12 days (± 23.7). Most patients underwent bronchoscopy (71.4%), which was conclusive in 54.6% of cases; 39 patients (50.6%) needed a second exam and 14 (18.2%) a third one. Transthoracic biopsy was most frequently performed as a second exam (13 patients) or third (5). Most frequent histology was adenocarcinoma (36; 46.8%) and 50 patients (63.7%) presented as advanced disease (stage IIIb or IV). Mean time from multidisciplinary decision to start of therapy was 14 days (± 25.6); however, there were great differences between modalities: 6 days (± 8) to chemotherapy, 5 days (± 2) to radiation therapy and 63 days (± 33) to surgery. Adherence to guidelines varied between 36.4% and 50.6% concerning total time and between 44.2% and 58.4% for time from diagnosis to start of treatment.
Conclusions: Total time of the process exceeded the main guidelines in 6 to 26 days; however, there was considerable heterogeneity and these results do not differ greatly from other published data. Time until therapy had a better performance but we found a serious obstacle in referral to surgery. Proposing an optimized workflow may shorten some critical stages and improve global performance, allowing for improvements in prognosis and in patient and multidisciplinary team's expectations.

Keywords: *Lung cancer. Waiting times. Staging.*

PE 010. SMALL CELL LUNG CARCINOMA. PROPHYLACTIC CEREBRAL IRRADIATION: LET'S PERSONALIZE?

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Introduction: The incidence of Small Cell Lung Carcinoma (SCLC) has been declining in recent years, but remains a major global public health problem. Small Cell Lung Carcinoma is characterized by its high aggressiveness and propensity for early metastasis. Patients with localized disease and complete response to systemic therapy or stable disease are candidates for Prophylactic Brain Irradiation (PCI), as about 38% end up with brain metastasis. PCI reduces the incidence of brain metastasis, increasing the survival of these patients.
Case report: Male, 76 years old, self-employed, retired (judge), former smoker, with a history of COPD and diagnosed with a SCLC, stage II-b (T2b, N0, M0). As the patient was not eligible for surgical therapy, a multidisciplinary meeting proposed concomitant chemotherapy and radiotherapy. Given the good response to therapy, PCI was performed (25 Gy dose in 10 daily fractions without saving the hippocampus). Two months after the end of PCI, the patient turned to the emergency service due to a progressive attention deficit, confusion and psychomotor slowing down. It evolved with depression of consciousness (Glasgow 10), akinetic mutism but no focal neurological deficits present. Infectious causes, brain metastasis, leptomeningeal carcinomatosis, catatonia and encephalitis were excluded with collaboration from colleagues from Neurology, Psychiatry and Radioncology. Of the exams performed, we highlight: head CT and MRI without secondary deposits; therapeutic trial with lorazepam was negative; negative anti-neuronal antibody screening; lumbar puncture without neoplastic cells or other alterations and electroencephalogram (EEG) with diffuse slow activity. Head

MRI revealed small vessel vascular disease with leukoencephalopathy, that despite of being a nonspecific pattern of changes, are changes consistent with PCI toxicity. Once other etiologies were excluded, supported by clinical history, further examination and multidisciplinary discussion of the neurocognitive toxicity of PCI became the most likely diagnostic hypothesis.
Discussion: Neurocognitive changes, in the context of PCI, are of multifactorial cause. All factors involved in its development should be considered and weighted in each patient to make the most appropriate decision (PCI vs expectant and vigilant attitude) according to risk-benefit and morbidity/mortality. This case report highlights the current discussions of the scientific community regarding the indication of PCI. Its safety has been much questioned, especially for its potential toxicity in neurocognitive functions, not questioning the associated benefits. In the previously presented patient, the neurocognitive toxicity of PCI was very important, without reversing the clinical picture initially described, resulting in the impossibility of continuing antineoplastic treatment. Based on current scientific evidence, PCI in localized CPPC disease, in response to systemic therapy or stable disease persistence, has significant gains in survival and reduced incidence of brain metastasis compared with the side effects present in most patients. The authors leave an alert that the decision to initiate ICP is judicious and personalized to each potential candidate.

Keywords: *SCLC. PCI. Neurotoxicity.*

PE 011. OBSTRUCTIVE SLEEP APNEA: RESORTS TO HEALTH CARE

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Introduction: Obstructive Sleep Apnea (OSA), with variable prevalence according to series, underdiagnosed, is predominantly associated with obesity and its comorbidities.
Objectives: To evaluate the resort to the Emergency Department (ED) and hospitalizations for cardiorespiratory causes of patients with OSA and to verify the association of symptoms with the treatment.
Methods: Retrospective study based on the analysis of patients' processes referred for Sleep Pulmonology consultation from the Inpatient Service or ED, diagnosed with OSA, between January 2017 and July 2018. Hospitalizations and resorts at ED were evaluated since 12 months before until 12 months after diagnosis. Continuous variables were expressed as mean and standard deviation and categorical variables as frequency and percentage. For the comparative analysis of continuous variables the Spearman correlation was used. For the comparative analysis of continuous and categorical variables, the Mann-Whitney U test and ANOVA were used. The significance level was defined as $p < 0.05$.
Results: 47 patients were included, of which 57.4% were male (n = 27), aged between 38 and 86 years (mean age: 68.2). Regarding comorbidities, 100% (n = 47) of the patients were overweight or obese, 89.4% (n = 42) had hypertension, 74.5% (n = 35) had dyslipidemia, 38.3% (n = 18) were diagnosed with type 2 DM and HF was present in 53.2% (n = 25) of the cases. 27.7% (n = 13) of the patients had COPD and 17% (n = 8) had asthma. Regarding symptoms, 83.8% (n = 31) reported fragmented sleep, 97.1% (n = 34) snoring, 60% (n = 21) witnessed apnea, 48.6% (n = 17) had nasal congestion and 34.4% (n = 11) morning headache. After diagnosis, 80.4% (n = 38) of the patients started treatment, and only 55.3% (n = 26) of the cases had AHI corrected. In the 12 months prior to diagnosis, 31.1% (n = 14) of patients were hospitalized at least once and 79.5% (n = 35) had at least one resort to ED. Over the next 12 months, 21.3% (n = 1) of the patients were hospitalized and 31.9% (n = 15) resorted to ED. Statistically significant associations were found between age and resorts to ED ($p = 0.023$) and hospitalizations ($p = 0.022$), between BMI and resort to ED ($p = 0.028$) and between the number of symptoms and hospitalizations in the 12 months after diagnosis ($p = 0.037$). It was also found that a greater number of attempts to adapt to CPAP is associated with a higher number of visits to the ED ($p = 0.042$) and hospitalizations ($p = 0.026$) in the 12 subsequent months.
Conclusions: As described in the literature, older age, higher BMI and more symptoms at diagnosis are associated with the need for more frequent resort to health care. In addition, better adaptation to CPAP treatment is associated with fewer emergency episodes and hospitalizations. Contrary to expectations, no statistically significant differences were found in the use of healthcare between patients who started and those who did not start treatment, probably due to the small sample size.

Keywords: *Sleep pathology. OSA. Health care.*

PE 012 OBSTRUCTIVE SLEEP APNEA IN PATIENTS WITH HEART FAILURE: WHAT ARE THE DIFFERENCES?

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Introduction: Obstructive sleep apnea syndrome (OSAS) and heart failure (HF) are common pathologies. The relationship between the two entities appears to be bidirectional, with prognostic impact, both being affected by other cardiovascular risk factors.
Objectives: To evaluate the prevalence of HF in OSAS patients and to characterize these patients.
Methods: Prospective study of patients referred to the Sleep Breathing Disorders (SBD) consultation of the University Hospital São João with suspected OSAS who performed level 3 polysomnography (PSG) and symptom based questionnaires in the first 6 months of 2019.
Results: There were 380 first SBD consultations, with confirmation of OSAS in 326 patients. The prevalence of HF in these patients was 16.6% (n = 54). Patients with OSAS and HF were mostly male (74.1%) and had a higher mean age than patients without HF (69 ± 12 vs 56 ± 12; $p = 0.000$). All patients with OSAS and HF had other cardiovascular risk factors, such as hypertension (83.3%), dyslipidemia (72.2%) and obesity (64.8%). There was a statistically significant association between the presence of more comorbidities and HF ($\chi^2 = 62.4$; $p = 0.000$). Concerning the etiology of HF, ischemic cardiomyopathy ranked first (38.9%), followed by hypertensive cardiomyopathy (24.1%) and multifactorial HF (18.5%). Most cases of HF had preserved ejection fraction (70.6%), with no association between ejection fraction and OSAS severity. The mean Epworth Sleepiness Scale (ESS) score was lower in HF patients (6.9 ± 4.4 vs 8.6 ± 5.5; $p = 0.037$). These patients also had less snoring (64.4% vs 68.1%) and more frequent complaints of nocturia (45.8% vs 36.8%), but the difference was not statistically significant. The proportion of cases of mild and severe OSAS in HF patients was identical (38.9% each), but with slightly higher mean AHI (29.2 ± 22.1/hour). Although the percentage of central apneas in PSG was higher in HF patients (8.1 ± 16 vs 3.2 ± 5.7; $p = 0.043$), this value is too low to have clinical significance. 67.8% of HF patients started treatment with positive pressure, more than those without HF ($\chi^2 = 12.96$; $p = 0.000$). There was no difference in the choice between continuous positive pressure (CPAP) or bi-level.
Conclusions: In this study, patients with OSAS and concomitant HF were older and had more comorbidities, which increases the complexity of their approach. Although the presence of HF revealed no impact on the severity of OSAS, it was associated with a higher proportion of patients in need of treatment. HF patients had less daytime sleepiness when assessed by the ESS, allowing to question the role of the questionnaire in these cases.

Keywords: *OSAS. Heart failure. Cardiovascular risk.*

PE 013. ARE ANIMALS OUR BEST FRIENDS IN THE BEDROOM?

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Introduction: Sleep-related disorders, particularly Obstructive Sleep Apnea Syndrome (OSAS), and the presence of extrinsic factors, such as pets in certain contexts, may influence sleep quality, and there has been growing interest of the scientific community on this theme over the last few years.
Objectives: To assess whether a pet in the bedroom or bed disturbs sleep.
Methods: Data were collected through a survey conducted in October 2017 and November 2018 at the Oriente metro station in Lisbon and April 2018 at the Oeiras' marina. Sleep quality and risk of OSAS were assessed using the Pittsburgh Sleep Quality Index (PSQI) and the STOP BANG questionnaire respectively. Animal-related data were collected by a questionnaire designed with the collaboration of a veterinarian.
Results: A total of 346 individuals randomly selected at the screening sites answered the survey. The mean age of the participants (70.5% women) was 48.4 years (SD 18.8) and body mass index was 21.7 kg/m^2 (SD 4.4). Of the sample, 59.8% of the individuals presented a low risk for OSAS and only 8.7% presented a high risk. In 47.4% of the participants, the quality of sleep was classified as poor. The mean score for STOP BANG was significantly higher in subjects with poor sleep quality ($p = 0.001$). In the PSQI, the mean number of sleep hours and the median of the latency time were 6.7h and 20 min, respectively. Regarding the number of mid-night awakenings per week, 22% did not wake up, 44.6% woke up more than 3 times and the remaining (33.4%) woke up 1 to 2 times a week. When asked if they had animals (dogs or cats), 49.4% answered yes. The animals slept in the bedroom in 55.5% of the sample and slept concomitantly in the bed in 78%. In the classification of the benefit of the animal sleeping in the room/bed, the majority (38.9%/40.6%) gave maximum rating. When asked if they would sleep better if the animal was not in the room/bed, 86.8% and 80% answered negatively to this question. We found a statistically significant association between having an animal and sleep quality ($p = 0.003$), that is, people who sleep with an animal have an Odds Ratio 0.49 (95%CI: 0.33-0.81), showing that sleeping with an animal may have a positive impact in sleep quality. When comparing the number of hours of sleep, the latency time and the number of night awakenings between people with and without animals in the room/bed, we did not find any statistically significant difference ($p = 0.933$; $p = 0.857$; $p = 0.280$, respectively).
Conclusions: In our country, a large proportion of the population sleeps with their animals in the bedroom. Although the scientific evidence regarding the impact of this behaviour in human sleep's quality is very scarce, in our study there seems to exist a statistically significant benefit of sleeping with domestic animals. More objective studies will be needed to evaluate the real effects of animals in the bedroom on human sleep.

Keywords: *OSAS. Animals.*

PE 014. VALUE OF APNEA-HYPOPNEA INDEX ON TYPE I POLYSOMNOGRAPHY VERSUS TYPE III POLYSOMNOGRAPHY

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Introduction: Hypopnea is defined as an oronasal airflow decrease of more than 30% for more than 10 seconds associated with an oxygen desaturation greater than or equal to 3% or associated with an arousal detected by electroencephalogram. Type III polysomnography (PSG), although indicated for the diagnosis of obstructive sleep apnea (OSA), does not allow for the detection of arousals, and for this reason, it is likely that in the same patient the apnea-hypopnea index (AHI) is lower in type III PSG when compared to type I PSG. The aim of this study is to compare, in the same patient, the oxygen desaturation index (ODI) and AHI between type III and type I PSG.
Methods: Retrospective study, which included all patients who, after performing a type III PSG, performed between January and April 2018 at the Coimbra Sleep Medicine Center a type I PSG to better characterize the clinical picture, with an interval between the two exams never exceeding one year.
Results: Included 51 patients, 54.9% male (n = 28), with a mean age (± SD) of 55.0 ± 12.9 years and mean BMI of 29.4 ± 4.5 kg/m^2. Mean interval between type III and type I PSG of 66.8 ± 40.8 days. Of these patients, 49.0% had associated cardiovascular disease, 27.5% excessive daytime sleepiness characterized by Epworth sleepiness scale ≥ 11 and 23.5% had none of these situations. 52.9% met OSA diagnostic criteria after type III PSG, increased to 70.6% after type I PSG. There was a statistically significant difference in mean AHI between the two exams, 8.8 ± 5.4/h in type III PSG vs 18.3 ± 13.8/h in type I PSG, $p < 0.001$; no difference was found in mean ODI value, 9.4 ± 5.4/h in type III PSG vs 8.5 ± 9.4/h in type I PSG, $p = 0.486$.
Conclusions: Since ODI was similar in the two exams and there was a significant difference in AHI, we can assume that the difference in AHI was essentially due to the different definition of hypopnea in these two exams. The association between arousals and cardiovascular risk is not as robust as ODI. This study comes to reinforce the need to better assess the impact of arousals as a cardiovascular risk and to question arousals as a criterion in defining hypopnea so as not to overvalue the diagnosis of OSA.

Keywords: *Type I polysomnography. Type III polysomnography. Hypopnea. Sleep.*

PE 015. SEVERE OBSTRUCTIVE SLEEP APNEA AND ORTHOGNATHIC SURGERY: A CASE OF SUCCESS

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Introduction: The first-line treatment for severe obstructive sleep apnea is CPAP. Recently, it has been reported that maxillomandibular advancement surgery can improve or eliminate obstructive sleep apnea in severe cases, however the results between studies are conflicting.
Case report: The authors describe the case of a 39-year-old man, BMI 27.1 kg/m^2, with history of arterial hypertension and anxiety and depressive syndrome. He had complaints of snoring, excessive daytime somnolence (Epworth 19/24) and witnessed apneas. He presented class II retrognathism and class III Mallampati. He performed polysomnography (PSG) that revealed a disturbance respiratory index (RDI): 79.6 events/h, compatible with the diagnosis of severe OSAS and started CPAP. Due to marked nasal obstruction, he was observed by a ENT specialist and because of the associated presence of tonsillar hypertrophy, redundant flaccid soft palate with long uvula, was submitted to septoplasty, bilateral partial inferior turbinectomy and uvulopalatopharyngoplasty. After surgery, the patient presented an improvement of diurnal somnolence (Epworth 10/24) and performed a new non-CPAP PSG that showed a RDI 27.8 events/h. After ENT surgery, the patient was referred to our Sleep Unit. PAP therapy was again proposed and despite the optimization of its parameterization and correction of adverse effects, CPAP adherence has not improved. Due to refusal of the first line treatment and due to class II retrognathism, he was referred to the Plastic and Maxillofacial Surgery Unit and was submitted to or-

tognathic surgery with bimaxillary advancements – Le Foret I and osteotomy plus bilateral sagital split osteotomy of rams of mandibula. Before surgery, the anteroposterior dimensions of airway levels (palate, tongue base and hyoid bone) were 15.5 mm, 14.8 mm and 15.7 mm, respectively. After surgery, all suffered a positive variation (2.1 mm, 1.5, and 1.1 mm, respectively). There was a significant symptomatic improvement (absence of snoring or daytime somnolence- Epworth 2/24) and a reevaluation sleep study, without CPAP, presented an AHI 1.4 events/h. The patient only reported paresthesia of the lower lip as adverse effect of surgery.
Discussion: This clinical case showed that an approach by a multidisciplinary team is essential for the therapeutic success of severe patients who can't adapt to CPAP, thus allowing a more personalized medicine.

Keywords: *Apnea. Sleep. Orthognathic surgery.*

PE 016. CHOOSING THE INTERFACE- NASAL OR ORONASAL MASK IN OBSTRUCTIVE SLEEP APNEA?

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Introduction: Obstructive sleep apnea (OSA) is a highly prevalent condition associated with obesity and specific craniofacial features, such as retrognathia. Given the increasingly recognized adverse consequences of OSA, optimizing treatment is an important goal. In moderate and severe cases, positive pressure therapy is the best treatment option. The choice of the interface is largely based on the clinician's personal experience and patient preference. However, oronasal masks may cause or exacerbate upper airway obstruction in some anatomically susceptible patients, directly by displacing posteriorly the mandible, and consequently the tongue and the soft palate.
Objectives: To evaluate the residual apnea-hypopnea index (AHI) after changing the oronasal mask to nasal mask with chin strap in OSA patients with obstructive respiratory events not completely controlled with positive pressure therapy.
Methods: We describe a case series of eight patients, previously diagnosed with OSA (alone or combined with other ventilatory conditions such as chronic obstructive pulmonary disease or obesity hypoventilation syndrome), who presented with a significant residual apnea-hypopnea index under positive pressure therapy applied by an oronasal mask. In this study, we excluded all the cases in which insufficient pressure settings or excessive air leak were suspected to be responsible for the worse results. In addition, we carefully assessed and denied other potential explanatory factors like changes in body weight or in sleeping position, as well as, alcohol or sedatives consumption.
Results: The eight patients (5 females; mean age: 72.9 ± 9.1 years; mean basal AHI: 40.6 ± 23.4 events/h) had a mean residual AHI of 13.9 ± 8.9 events/h. By changing the interface to a nasal mask associated with chin strap, the mean residual AHI was reduced to 4.4 ± 3.7 events/h. This beneficial effect was demonstrated on both ventilator modes - three subjects were under automatic continuous positive pressure (APAP) and five subjects under bilevel positive pressure (BiPAP). An additional decrease in pressure requirements on three patients on the BiPAP group, that were requiring very high values, was demonstrated. In all cases, the patients reported higher confort and a better sleep quality with the use of nasal mask.
Conclusions: We suggest that in patients with OSA, incompletely controlled by positive pressure therapy, with evidence of residual obstructive events and/or requiring high pressures to control OSA, the choice of the mask should be reviewed and considered a trial of nasal mask with chin strap.

Keywords: *OSA. Interface. Residual AHI. Oronasal. Nasal.*

PE 017. SLEEP APNEA IN CEREBRAL PALSY: AN OFTEN UNDERESTIMATED AGGRAVATING FACTOR

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Introduction: Perinatal hypoxic-ischaemic encephalopathy occurs in one to three per 1,000 live full-term births. Fifteen to 20% of affected newborns die in the postnatal period, and 25% develop severe long term sequelae, such as mental retardation, visual dysfunction, epilepsy and cerebral palsy. These patients have a higher prevalence of sleep disturbances than the general population, due to several factors. Visual impairment can suppress the normal secretion of melatonin, hindering the initiation of sleep. Nocturnal epilepsy disrupts sleep, and antiepileptic drugs diminish sleep quality. Cerebral palsy is characterized by reduced muscular tone in the upper airways, leaving them prone to collapse during sleep.
Case report: The authors present the case of a 19-year-old male patient, diagnosed with perinatal hypoxic-ischaemic encephalopathy, with the following sequelae: dyskinetic cerebral palsy, with a Gross Motor Function Classification System (GMFCS) score of V; epilepsy, well controlled under levetiracetam, with no seizures in the previous five years; and gastroesophageal reflux, treated with esomeprazole. Due to oropharyngeal dysphagia, he was fed through gastrostomy. He was admitted in the Pulmonology ward due to complaints of diurnal labored breathing and excessive sleepiness, nocturnal snoring, and apnea episodes during sleep witnessed by his mother. He presented with marked retrognathism and abundant sputum in the upper airway, which needed frequent aspiration. Breathing became significantly less labored during manual protrusion of the mandible. Polysomnography showed an apnea-hypopnea index (AHI) of 68 events/h (63 hypopneas and five apneas, mostly obstructive). It also showed long periods of desaturation, with oxygen saturation inferior to 90% during 83% of the time of study. Thus, the diagnosis of severe obstructive sleep apnea (OSA) was established. After titration during three nights, he was discharged, well adapted to nocturnal continuous positive pressure ventilation, in Auto-adjusting Positive Airway Pressure (APAP) mode, programmed for pressures between 10 and 14 cmH2O. He was reevaluated in Sleep clinic, presenting with a residual AHI of three events/h and controlled air leak. Adherence to treatment was adequate. Significant clinical improvement was achieved: increased alertness and improved humor during the day and a deeper, more peaceful sleep at night, with no snoring or apneas.
Discussion: OSA is a frequent comorbidity in patients with cerebral palsy, especially those with higher GMFCS scores. It has a significant impact on their lives and can be corrected. Dysphagia should raise suspicion of decreased tonus in the oropharynx, which increases risk of OSA. This case illustrates the gain in quality of life that can be achieved by treating OSA in such patients, bettering not only their lives, but their caretakers' as well.

Keywords: *Cerebral palsy. Obstructive sleep apnea. Non-invasive ventilation.*

PE 018. EXPLORATORY STUDY OF THE IMPACT OF HUMIDIFICATION ON THERAPEUTIC EFFICIENCY IN ADHERENT PATIENTS UNDER APAP THERAPY

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Introduction: The high pressures and flows used in PAP therapy may oppress the physiological mechanisms of upper airway and affect the respiratory system. Humidification makes this process more

physiological, improves the elimination of secretions and decreases the dryness and inflammatory response of the mucosa, decreasing the upper airway resistance.
Objectives: The aim of this study is to verify if the presence of humidification has an impact on the therapeutic efficiency in adherent patients under the APAP therapy.
Methods: Observational, retrospective and longitudinal study, held at Centro Hospitalar de São João. The sample consist in individuals with age between 35 and 85 years with diagnosis of OSAS, under APAP therapy with and without humidification, in the first phase of the treatment. Data from the first medical appointment before and after the therapy were analyzed, as well as the respective therapeutic report of the PAP equipment.
Results: The sample consists of 73 individuals distributed in two groups: the group without humidification (35 elements) and the group under humidification (38 elements). Statistically significant differences were found in the therapeutic efficacy between the groups, being this superior in the group with humidification.
Conclusions: The results of this study allow us to understand that humidification has a positive impact in the therapeutic efficiency in adherent patients under PAP therapy.

Keywords: *Ventilotherapy. Auto-CPAP. Obstructive sleep apnea syndrome. Humidification. Therapeutic efficiency.*

PE 019. RESOLUTION OF RESIDUAL CENTRAL SLEEP APNEA (CSA) AND CHEYNE-STOKES RESPIRATION (CSR) WITH SACUBITRIL-VALSARTAN THERAPY IN A SEVERE HEART FAILURE PATIENT UNDER CPAP TREATMENT

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Case report: The patient was a 67 years-old Caucasian male with severe chronic heart failure, NYHA class II-III, that was diagnosed with ischemic heart disease secondary to acute myocardial infarction (2006), with major cardiovascular risk factors. In the year 2010, a cardioverter-defibrillator was implanted, and four years after had an acute renal venous thrombosis episode and a Stage 3 kidney failure diagnose with significant right kidney hypertrophy. Echocardiogram performed in 2017, showed ischemic heart disease, apex akinesia and hypokinesia of left ventricular segments, grade 1 left ventricular diastolic dysfunction, severe left ventricular systolic impairment (LVEF = 20%), severe left ventricular dilation, moderate to severe left atrium dilation. N-terminal prohormone of brain natriuretic peptide (NT-proBNP) level 5,307 pg/mL. Pulmonary function tests performed were within normal values (FEV1 = 112.3%, FEV1/VC = 82.9%, DLCO/VA = 112.6%) and despite the absence of daytime excessive sleepiness (ESS = 4), screening for sleep disordered breathing was performed in 2017, with home respiratory polygraphy. Severe CSA was diagnosed, AHI = 35.3/h (59% of central events), ODI = 32.6/h, 55.1% snoring time, mean O2 saturation = 93%, minimum O2 saturation = 85%, T < 90% = 3.2%. Auto-CPAP (6/16 cmH20) with facial mask was initiated because adaptive servo-ventilation was contraindicated. Four days later the pressure was fixed at P90% and adjusted in the next appointment to 12 cmH20. Over 115 days of CPAP treatment, AHI was reduced from 35.3/h to 13.7/h and CSR was 28.6%, with approximately 8 hours/night compliance. There was no improvements with LVEF, NT-proBNP levels and symptoms. After medical reevaluation with a internal medicine appointment, the drug Sacubitril/Valsartan (Entresto) was prescribed to stabilize and optimize heart failure. In the next appointment the patient referred reduction of fatigue and dyspnea and there were also an immediate and sustained AHI reduction under CPAP treatment. Over 221 days under CPAP and Entresto, there were a mean AHI reduction from 13.7/h to 1.7/h, CSR mean reduction from 28.6% to 5.7%, with more than 8 hours/night compliance and 100% of CPAP use. The Echocardiogram performed after showed 2% improvement in LVEF but worse left ventricular diastolic dysfunction, right ventricular systolic function, and there were also an increase in NT-proBNP levels to 8,944 pg/ml.
Discussion: Under CPAP treatment, AHI was reduced from 35.3/h to 13.7/h and after Sacubitril/Valsartan initiation an immediate and sustained response over 221 days occurred with AHI reduction to < 5/h (mean 1.7/h) and CSR reduction from 28.6% to 5.7%. Despite initial symptom improvements and a 2% LVEF improvement, over time, progressive worsening of LV diastolic dysfunction and right ventricular systolic, and also an increase in NT-proBNP levels (from 5,307 to 8,944 pg/ml).

Keywords: *Central sleep apnea. AHI. Cheyne-stockes breathing. CPAP. Severe heart failure. Sacubritil/valsartan (Entresto). Echocardiogram. NT-proBNP.*

PE 020. BULLOUS EMPHYSEMA OR BULLOUS LUNG DISEASE?

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Introduction: Bullous lung disease is characterized by the presence of unilateral or bilateral bullae, surrounded by normal lung parenchyma. These bullae emerge from destruction, dilatation and confluence of airspaces distal to the terminal bronchioles. Bullae are bigger than 1 centimeter in diameter, and its walls are composed of compressed lung parenchyma. It is distinguished from bullous emphysema occurring with COPD (chronic obstructive pulmonary disease), the latter being characterized by the presence of centrilobular emphysema in a non-bullous parenchyma. Bullae originate in a variety of clinical and pathogenic contexts, including smoking, intravenous toxifilia, chronic destructive inflammation present in centrilobular emphysema, hereditary connective tissue disorders, traction by fibrosis or alfa-1 antitrypsin deficiency. Manifests primarily as dyspnea, and may complicate with pneumothorax, infection or bleeding. The treatment is preferentially surgical, and its outcomes are clinical improvement, improved tolerance to exercise and respiratory capacity.
Case report: The authors present the case of a 40 years old man, leukodermal, former smoker, smoking load of 24 pack-years, no history of heavy drugs abuse, suffered a spontaneous pneumothorax of the left lung by 2011. Followed in pulmonology consultation since 2016, presenting with rapid deterioration of lung architecture in relation to 2011, documented by thoracic CT (computed tomography) scan, on which one could observe complete air filling of the right hemithorax, conditioning contralateral deviation of mediastinum, and scattered microemphysema in the left lung with upper predominance, apical and paramediastinic parasseptal bullae that reach 5 centimeters. Under these circumstances it was investigated for surgical treatment. It stands out in the diagnostic examinations performed hypoxemia on arterial blood gas analysis, laboratory analysis documented normal alfa-1 antitrypsin and no alterations on serologic and connective tissue disease studies. Lung function tests (LFT) were not performed due to complication risks. Ventilation/perfusion scintigraphy documented almost total functional outbreak of the right lung, with a thin functioning parenchymal layer on the posterointernal edge, relative pulmonary perfusion on the right of 8% and on the left of 92%. It was performed resection of the right emphysematous bullae by toracotomy. The histological result revealed distal bullous emphysema. One year post-resection he presented with a remarkable evolution, a clear improvement was imagiologically documented with complete re-expansion of the right lung, maintaining small emphysematous changes. The LFTs documented no obstruction, FEV1 (forced expiratory volume in 1 second) of 3.89 liters, 101%, FVC (forced vital capacity) of 4.71 liters, 115% e DLCO (diffusing capacity for carbon monoxide) of 70%.

Discussion: This case reports a young individual with bullous destruction of lung architecture that is not proportional to that expected in the presumed diagnosis of COPD, with no other clinical context associated. It is then considered to be a bullous lung disease, which is defined as primary and rare, characterized by bullae occupying more than one third of the hemithorax, predominantly in the upper lobes, and more commonly seen in male smokers. There is not always a surgical therapy indication, which is more beneficial in younger patients with heterogenous emphysema. This is a rare case with notable results after surgical intervention.

Keywords: *Bullous emphysema. Bullous lung disease. Smoking. Resection. Thoractomy.*

PE 021. TRACHEOESOPHAGEAL FISTULA. A CASE REPORT

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Introduction: Tracheoesophageal fistulas are a pathological connection between the esophagus and the trachea, and may occur after surgical procedures, radiotherapy, chemotherapy, or airway compression. The placement of esophageal prostheses is an integral part of the risk factors for the development of tracheoesophageal fistulae, so the increase in their number of placements represents an increase in the number of associated complications. We present a case study of a tracheoesophageal fistula due to erosion of the esophageal prosthesis.
Case report: A 46-year-old, non-smoking woman with a history of stage IV non-Hogkin's lymphoma - conditioning esophageal obstruction due to extrinsic compression, requiring esophageal prosthesis placement and multiple replacements due to previous failure. The patient underwent chemotherapy and radiotherapy, and the last treatment was completed approximately one year ago. She resorted to the emergency department, 30 days after the last replacement of the esophageal prosthesis, due to dyspnea at rest and coughing during swallowing, with associated dysphagia. From the imaging evaluation performed by chest axial computed tomography (CT), tracheoesophageal fistula was documented and, therefore, submitted to esophageal prosthesis replacement and tracheal prosthesis placement. Due to multiple previous esophageal interventions, the trachea presented multiple deformities in its posterior wall, observable during videobronchofibroscopy with tracheoesophageal fistula 3 cm from the carina. In this context, she underwent rigid bronchoscopy with the placement of a 16/40 mm prosthesis. The fistula was covered and the main bronchi fully permeable. The clinical course was gradually favorable and the tracheal prosthesis was reviewed after one week without any complications.
Discussion: Tracheoesophageal fistulas are a serious complication of multiple factors, in particular from invasive esophageal procedures. In patients with esophageal prostheses, or with other risk factors associated with the possibility of formation of tracheoesophageal fistulas, it is of paramount importance to pay attention to alarm signals for early and effective intervention to resolve them.

Keywords: *Tracheoesophageal fistula. Tracheal prosthesis. Neoplasia.*

PE 022. ENDOBRONCHIC TUBERCULOSIS: AN ENDOSCOPIC TRIP

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Tuberculosis remains a global health problem. It affects millions of people each year and is a leading cause of death in developing countries. Endobronchial tuberculosis (EBTB) is defined as tracheobronchial tree tuberculous infection with microbial or histopathological evidence. The incidence of EBTB is not known, as bronchoscopy was not routinely implemented in all cases of pulmonary tuberculosis. In 1943, a study conducted at a tuberculosis sanatorium, EBTB was observed in 15% of cases by rigid bronchoscopy and in 40% of autopsy cases. Since the availability of antituberculosis therapy, the reported incidence of EBTB in patients with pulmonary TB varies widely from 6% to 54% in various studies. EBTB can affect any part of the tracheobronchial tree. The main bronchi, bilaterally superior lobar bronchi and right middle lobar bronchus are the commonly affected sites. The clinical manifestations of EBTB vary according to the location, extent of involvement or stage of the disease and may be acute or insidious onset. Symptoms may be secondary to the disease itself or related to complications of the disease such as endobronchial obstruction. Localized wheezing and decreased vesicular murmur may occur if there is stenosis from the endobronchial lesion. However, these symptoms and signs may simulate other diseases such as malignancy, bronchial asthma, foreign bodies, and recurrent pneumonia. EBTB is difficult to diagnose because the lesion is not always evident on chest X-ray often and therefore delaying treatment. Additional investigations such as chest computed tomography and bronchoscopy are often needed to diagnose and evaluate bronchial lesions such as stenosis or obstruction. Bronchoscopy is the most valuable method for establishing early diagnosis and assessing prognosis in EBTB. Ancillary procedures such as biopsy, brushing, needle aspiration, bronchoalveolar lavage, and endobronchial ultrasound may be used to establish the diagnosis and rule out any other underlying or concomitant disease, such as malignancy. Endoscopic findings range from mucosal hyperemia and edema, granulomatous elevations, irregular mucosa covered with caseous secretions, ulcerations, intraluminal mass, luminal fibrostenosis, fistula formation with suppuration of caseous material from the mediastinal or hilar ganglia. EBTB treatment is similar to pulmonary tuberculosis. Corticosteroids have been used as adjunctive therapy in the treatment of EBTB, but their role is still controversial. Corticosteroids may be useful in the early stages of EBTB, when hypersensitivity is the predominant mechanism, but in later stages they are less likely to be useful. Corticosteroids have shown improvement in clinical outcomes when used in children. The main objectives of EBTB treatment are eradication of infection and prevention of tracheobronchial stenosis. The evolution and prognosis are mainly related to the degree, extent and duration of lesions before treatment. Therefore, early diagnosis and proper treatment are required to avoid complications. The authors present as endoscopic images some cases of endobronchial tuberculosis diagnosed at the Pulmonology Unit of the Sagrada Esperança Clinic in Luanda-Angola.

Keywords: *Endobronchial TB. Tuberculosis. Bronchofibroscopy.*

PE 023. ULTRASOUND GUIDED TRANSTHORACIC NEEDLE ASPIRATORION BIOPSY. THE EXPERIENCE OF A SERVICE

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Introduction: Lung cancer is one of the leading causes of death worldwide and is increasing each day. Transthoracic Needle Aspiration Biopsy (TNAB) guided by Thoracic Ultrasound is an alternative to avoid invasive surgical procedures in the diagnosis of thoracic pathologies.
Objectives: Review the results and complications of five Ultrasound-guided TNAB performed at Hospital Santa Maria, Intervention Pulmonology Unit and to correlate their data with bronchofibroscopy biopsy results.
Methods: We evaluated a total of five patients, all with a mass (between 5-15 cm) with pleural contact visible by thoracic ultra-

sound (40% with left lower lobe mass, 40% with right lower lobe mass and 20% with right upper lobe mass). Eighty percent of the patients were male, average age was 71 years (between 57-78) and 80% were smokers or former smokers. At the time of the procedure 100% had PS 1 and no coagulation changes. All patients underwent bronchofibroscopy with collection of bronchial secretions, bronchoalveolar lavage, and bronchial biopsies before TNAB.
Results: One hundred percent of the patients had histological diagnosis by TNAB compared to zero percent by bronchofibroscopy. The most common histological type was adenocarcinoma (40%) followed by cell pavement carcinoma (20%), undifferentiated pleomorphic sarcoma (20%) and pleural fibrous tumor (20%). All examinations occurred without complications during the exam and in the first 48h.
Conclusions: This study concludes that thoracic ultrasound-guided TNAB is an excellent ally in obtaining the histological diagnosis of patients with thoracic masses. The diagnosis is made quickly, safely, with low risk of complications and low economic cost.

Keywords: *Transthoracic needle aspiration biopsy. Ultrasound. Cancer.*

PE 024. METASTATIC MELANOMA - INAUGURAL DIAGNOSIS BY EBUS-TBNA AND EUS-B

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Introduction: Endobronchial ultrasound-transbronchial needle aspiration (EBUS-TBNA) is currently a mainstay of the mediastinal and hilar staging of non-small cell lung cancer. This technique also allows the diagnosis of mediastinal and hilar involvement due to extrapulmonary primary neoplasms and infectious and inflammatory diseases. Regarding metastatic melanoma, scientific literature recognizes that the samples obtained by EBUS-TBNA are adequate for its diagnosis and/or staging. We report a clinical case in which this procedure led to the inaugural diagnosis of this neoplasm, in a clinical context primarily suspicious of metastatic primary lung cancer.
Case report: A 67-year-old male, 50 pack-years smoker, with a previous history of obesity, hypertension and diabetes mellitus and no history of oncologic disease, is referred to Oncologic Pulmonology outpatient consultation due to two-month long intermittent chest pain and involuntary weight loss. Chest CT scan showed two left lower lobe lung masses, multiple left mediastinal and hilar lymph node enlargement suspicious of malignant involvement, multiple hypodense liver nodules and lytic lesions on multiple ribs suggestive of bone metastases; 18F-FDG PET-CT scan showed hypermetabolism of these lesions (lung masses with SUVmax 16.5). No endobronchial lesions were identified through fiberoptic bronchoscopy. Considering the location of the lung parenchymal lesions, not safely accessible by transthoracic lung biopsy, and the absence of biopsy endobronchial lesions by bronchoscopy, the decision to perform diagnostic EBUS-TBNA was taken after multidisciplinary discussion of the case. Thus, EBUS-TBNA and EUS-B were performed under general anesthesia. 4L (10 mm short axis), 7 (conglomerate, 20 mm short axis) and 11L (conglomerate, 34 mm short axis) lymph node stations were identified and sampled. Rapid on-site cytological evaluation was not performed due to the unavailability of this technique in our institution. No postprocedural complications happened. In histopathological analysis, populations of markedly pleomorphic cells, with vesicular nuclei with prominent eosinophilic nucleoli and amphophilic cytoplasm, often containing brown pigment, with cell areas of necrosis, were identified in all lymph node stations; the immunohistochemical study revealed strong and diffuse immunoreactivity of neoplastic cells for S100, SOX10 and HMB45, with no immunoreactivity for CAM5.2, BerEP4, CD34, desmin and OCT4. Thus, the investigation led to the diagnosis of metastatic melanoma (mutated NRAS, BRAF wild-type) in the absence of any skin lesions compatible with primary cutaneous melanoma. Systemic palliative treatment with pembrolizumab was started, however the patient's general condition rapidly declined, which led to the discontinuation of the therapy. The patient eventually died approximately 7 weeks after the establishment of the histological diagnosis.
Discussion: Melanoma commonly has mediastinal and/or hilar lymph node metastases, which can be found in up to 55% of patients at autopsy. However, the inaugural mediastinal diagnosis of this neoplasm is rare, particularly in the absence of identifiable primary skin lesion. This case report exemplifies the clinical utility of EBUS-TBNA in the diagnosis of extrapulmonary primary neoplasms with primary or metastatic mediastinal and/or hilar involvement, namely melanoma.

Keywords: *Endobronchial ultrasound. Mediastinal and hilar ganglionic stations. Metastatic melanoma.*

PE 025. HAEMOSTATIC TAMPONADE IN THE CONTROL OF SEVERE HEMOPTYSIS ABOUT THREE CLINICAL CASES

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Introduction: Hemoptysis is a common and severe clinical symptom that when not treated in time can lead to death. Several methods are used for the treatment of acute hemorrhage such as surgery, bronchial artery embolization and bronchoscopic treatments. We describe three clinical cases of patients with severe hemoptysis, whose control was performed by rigid bronchoscopy with regenerated oxidized cellulose hemostatic tamponade (Surgicell®).
Case report: The first case concerns an 80-year-old female patient with a history of left breast cancer who had undergone chemotherapy and radiotherapy 30 years ago. The patient was referred to the emergency department with moderate hemoptysis. The chest CT scan showed changes in the left upper lobe (LUL) compatible with radial pneumonitis. Due to the increase amount of blood loss, she underwent rigid bronchoscopy with the placement of a Surgicell® tampon on the apical segment of the LUL with control of the bleeding. The second case is a 48-year-old female patient with right lower lobe bronchiectasis (RLL) sequelae to severe complicated empyema pneumonia. The patient resorted to the emergency department due to massive hemoptysis with hemodynamic compromise with the need for intubation for airway protection and necessity of using rigid bronchoscopy and placement of Surgicell® at the RLL bronchus to control the bleeding. Due to massive bleeding with difficulty in control, the patient underwent right middle and lower bilobectomy. The last case is an 18-year-old female patient with bronchiectasis in the left lower lobe (LLL) sequelae to pulmonary tuberculosis. The patient resorts to the emergency department due to moderate hemoptysis with hemodynamic stability. Videobronchofibroscopy was initially performed, which documented active and voluminous hemorrhage at the level of the left basal pyramid impossible to contain by topical measurements and was subsequently submitted to rigid bronchoscopy with Surgicell® placement. Due to extensive pulmonary destruction, the patient underwent left lower lobectomy without any complications. All patients are stable, without any new episodes of haemoptysis since the hospital discharge.
Discussion: Hemoptysis remains an important and sometimes challenging medical issue. No therapeutic form is universally superior and each case needs to be addressed. Oxidized cellulose hemostatic plugging is a safe, effective and easy-to-perform technique for controlling severe hemoptysis without removing material as it is completely resorbable. Even though this treatment is mostly used as a temporary procedure (clinical case 2 and 3) it can also be used as a definitive treatment (clinical case 1).

Keywords: *Hemoptysis. Rigid bronchoscopy. Surgicell®.*

PE 026. TRACHEAL STENOSIS AS INITIAL MANIFESTATION OF VASCULITIS

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Introduction: Granulomatous polyangiitis (GP) is a necrotizing granulomatous vasculitis that predominantly involves small and medium-sized vessels. The upper airway, lung and kidney are the most frequently involved organs. Initial signs and symptoms of GP are usually nonspecific and the time until diagnosis can be relatively prolonged. In GP, tracheobronchial involvement is less common, particularly with tracheobronchial tree stenosis, but it may be potentially severe and life-threatening.
Case report: A 49-year-old former smoker with no other relevant history presented with a 1-month history of dysphagia, bilateral otalgia, progressive worsening dyspnea, and haemoptoic sputum, with later onset of stridor. Laryngoscopy demonstrated subglottic stenosis. In this context, the patient performed chest CT scan that showed irregular and circumferential thickening of the larynx and upper trachea. Spirometry had a flow/volume curve with fixed upper airway obstruction morphology. In bronchofibroscopy, an ulcerated and irregular tracheal mucosa was observed and the biopsy revealed an inflammatory process with ulceration and granulation tissue. Initially, the suspicion of vasculitis was raised, but since the patient had no other suggestive complaints and had no alterations in the immunologic study and given several respiratory infections, it was assumed that the etiology of the stenosis was more likely to be postinfectious. Thus, she was treated with corticosteroid and antibiotic therapy and had improvement of dyspnea and stridor. Half a year later, she had an episode of dyspnea at rest and stridor, and bronchoscopy showed worsening of stenosis with a reduction of the tracheal lumen of about 90%, requiring urgent endoscopic intervention. Subsequently, the patient was followed up with repeat bronchoscopy and the stenosis remained stable. However, cutaneous lesions (purpuric) appeared in the region of the legs and buttocks, whose biopsy was compatible with leukocytoclastic vasculitis. She repeated the immunological study, this time positive for PR3-ANCA. Thus, the diagnosis of granulomatosis with polyangeitis was established, with otorhinolaryngological, cutaneous, renal and tracheal involvement. The patient started induction treatment with corticosteroids and cyclophosphamide and then maintenance treatment with azathioprine. At the time of writing, the patient was clinically stable with no evidence of tracheal stenosis, even though maintenance treatment was discontinued about a year earlier.
Discussion: Tracheal stenosis can have several causes and represents a diagnostic and treatment challenge. We present this case due to the difficulty in diagnosing vasculitis as a cause of tracheal stenosis, given the initial absence of other symptoms and alterations, namely in the immunological study. If vasculitis is suspected, the absence of changes in the immunological study should not exclude the diagnosis and prevent initiation of treatment as these changes may appear later. In this patient, the diagnosis of GP was made one year after the inaugural manifestation of tracheal stenosis, which led to a delay in treatment outset.

Keywords: *Tracheal stenosis. Vasculitis.*

PE 027. TRACHEOBRONCHOPATHIA OSTEOCHONDROPLASTICA: A RARE ENTITY

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Introduction: Tracheobronchopathia osteochondroplastica is a rare disease, characterized by the presence of small bone and cartilaginous nodules in the submucosa of the trachea and bronchi. Its etiology is not known, nor are any risk factors reported. It is often an incidental find during bronchoscopy and it presents a benign evolution. In rare cases it may symptomatic, with airway obstruction (dyspnoea and stridor) or haemoptysis.
Case report: A 79 year-old woman, with exposure to biomass fuel, and history of chromophobe renal cell carcinoma, with bilateral nephrectomy, under haemodialysis (HD) for 2 years, hypertension and hypothyroidism. She had also contact with a tuberculosis patient, several decades before. The patient complained of a 2-3 month non-productive cough and anorexia. A thoracic CT scan showed consolidative areas and a tree-in-bud pattern, mostly on the right upper lobe. There were also middle lobe and lingular atelectasis, and incipient bronchiectasis. Thus a flexible bronchoscopy and a pulmonology appointment were requested. On the bronchoscopy a tracheal diameter reduction was observed, alongside with multiple vegetative lesions on its entire circumference, except the posterior wall. These lesions were also present in the right main, intermediary and lobar bronchi. There were no lesions in the left bronchi, only abundant purulent secretions. The biopsy revealed unspecific inflammation and the microbiologic analysis was negative for mycobacteria, and a piperacillin/tazobactam, trimetoprim/sulfametoxazol and ceftazidime resistant Pseudomonas aeruginosa was identified. She was assyptomatic at the pulmonology appointment. An initial eradication attempt with high-dose quinolone as performed, without success, followed by i.v. amicacyn and ceftazidime, and finally with inhaled colistin for 3 months. In between, during and after the different antibiotic regimens the identification of Pseudomonas aeruginosa persisted, although with a variable resistance pattern. There were no exacerbations during this period and now she is under surveillance.
Discussion: This case represents the paradigm of this entity. An immunosuppressed patient which, due to complains of cough and thoracic image suggestive of pulmonary infection, undergoes a bronchoscopy, where this disease was an incidental finding. The incidence of this disease is estimated between 0.01% and 0.41%, although it may be underestimated, since it is usually asymptomatic, and identified as an incidental finding during an endoscopic exam. This case is useful to remind the benign nature of these lesions, and the need to exclude other differential diagnosis such as cancer, sarcoidosis and amyloidosis. Tracheobronchopathia osteochondroplastica does not require any treatment, except when there is airway obstruction or haemoptysis. The therapeutic strategy on this patient was limited to the eradication of Pseudomonas, which was not effective. An apparent bronchial extension of these alterations and the immunosuppressive status may have contributed to the lack of success.

Keywords: *Tracheobronchopathia osteochondroplastica. Pseudomonas aeruginosa.*

PE 028. BENIGN SUBGLOTTIC STENOSIS: A CLINICAL REPORT

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Introduction: Benign subglottic stenosis is a rare entity, mainly found in women. Delay in diagnosis and misdiagnosis are common. There are several known causes of subglottic stenosis which need to be excluded for establishment of the definitive diagnosis.
Case report: We report the case of a 73-year-old female patient with known medical history of obesity, hypertension, dyslipidaemia, depressive disorder and epilepsy. She had past history of a total hysterectomy and a bilateral anexectomy 30 years ago with post procedure complications demanding mechanical invasive ventila-

tion. Patient complained about chronic cough, episodic dyspnoea and wheezing for 8 months. There were no known triggers and she denied consumptive symptoms. Due to symptomatic worsening, patient consulted her family doctor who prescribed her with bronchodilator, diuretic and a vasodilator therapy attaining a slight improvement of her symptomatology. Blood analysis showed no modification of acute inflammatory parameters. In a follow-up consultation, pulmonary function testing was executed and the spirometry showed a suggestive pattern of upper airway obstruction. A neck and thoracic CT scan was performed, however, no relevant conclusions were found. Patient was referred to the thoracic surgery clinic and, by then, stridor was noted by the physician. Thence, patient was subjected to a flexible bronchoscopy where a membranous eccentric circumferential stenosis on the subglottic area reducing the lumen in 80% was revealed. On the interventional bronchoscopy department, airway dilatation with cold cuts and sequential debridement was achieved, retrieving 85% of lumen permeability. A day after the procedure, sudden respiratory distress and stridor motivated observation in the emergency department where flexible bronchoscopy revealed vocal cords oedema and a proximal tracheal eccentric stenosis determining a lumen permeability of 50%. It was assumed as post-procedure complication. Patient was treated with oral corticosteroid during 5 days with complete clinical resolution. Four weeks later, re-evaluation bronchoscopy showed a preserved lumen.
Discussion: Benign subglottic stenosis may arise decades after tracheal manipulation. Exclusion of a number of entities is required. This demands an adequate exhaustive diagnosis study. Re-establishment of lumen permeability is well achieved using endoscopic procedures. Nevertheless, more complex stenosis probably benefits from multidisciplinary management and may require surgical intervention.

Keywords: *Stenosis. Stridor. Interventional bronchoscopy. Endoscopic procedures.*

PE 029. A LUNG SEALED BY WEGENER GRANULOMATOSIS

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Introduction: Wegener granulomatosis is a multisystem disease of unknown cause characterized by a necrotizing granulomatous vasculitis, affecting predominantly the upper respiratory tract, lung, and kidneys. Pulmonary involvement occurs at some stage of the disease in about 80% of patients, with a wide spectrum of patterns. The classic respiratory feature is multiple pulmonary nodules which may cavitate. Concentric wall thickening is another possible manifestation and may lead to airway stenosis. The etiology of the stenosis is still unclear and difficult to determine. Bronchoscopy is a useful tool to further characterize the bronchial stenosis resulting from the disease.
Case report: 24 year old patient, male, working in private security. Non smoker. Personal history of Wegener granulomatosis with pulmonary (cavitated pulmonary nodules), nasal, renal, cardiac and immunologic manifestations. Medicated with prednisolone, torasemide, bisoprolol, Trimethoprim/sulfamethoxazole, esomeprazole, ramipril, ivabradine and rituximab every 6 months. Treated with Cyclophosphamide in 2018. Observed in a Pneumology consultation after a Chest CT-Scan revealed "condensations in both upper lobes, more evident in the left lobe, with a slight homolateral deviation of the mediastinum, suggesting a probable bilateral atelectasis" The bronchoscopy revealed a complete occlusion of both upper lobes and yellow plates in the main right bronchus posterior external wall. Several biopsies were collected which showed unspecific chronic inflammation. Afterwards, a rigid bronchoscopy was performed to collect more biopsies and to try to reopen both upper lobes. In the rigid bronchoscopy, the operators could see a complete closure of both upper lobes, with a membranous area in the center, which was punctured using a bronchoscopy probe in both upper lobes, followed by a balloon dilatation. Operators managed to progress with the bronchoscope in the left upper lobe, the same was not possible in the right upper lobe. After puncture, the distal left tree contained pus of elastic consistency in moderate quantity. There was also a concentric stenosis in the branches of both upper lobes containing granulation tissue. The patient stayed in the Hospital for monotorization and was discharged after 1 day, with a Pneumology appointment scheduled. In the follow up chest X-ray there was no significant improvement of the atelectasis in both upper lobes.
Discussion: Bronchial stenosis are possible manifestations of Wegener granulomatosis which can cause severe functional deterioration. These lesions must be researched in any case of pulmonary abnormality in the course of the disease. In this clinical case, a total occlusion was found in both upper lobes. The bronchoscopy assumed an important role not only in the diagnosis, but also in the attempt of reopening the upper lobes which, at the moment, was only possible in the proximal branches.

Keywords: *Wegener granulomatosis. Bronchoscopy. Bronchial stenosis.*

PE 030. RECURRENT RESPIRATORY PAPILLOMATOSIS IN A LARYNGECTOMIZED PATIENT

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Introduction: Recurrent respiratory papillomatosis (RRP) is a rare condition caused by human papilloma virus (HPV) characterized by the presence of benign papillomatous (wartlike) growths within the respiratory tract. Its incidence is estimated at 2 per 100,000 in adults and 4 per 100,000 in children. Bronchoscopy is the most reliable method for the diagnosis with direct visualization of lesions and collection of biopsy samples for definitive histopathological diagnosis. Authors present a case of RRP in a patient with a history of larynx epidermoid carcinoma.
Case report: Caucasian male, 53 year-old, ceramic worker, presented with haemoptysis. Former smoker (50 pack-year) on remission of larynx epidermoid carcinoma (T4N0) for 7 years (2003), after a total laryngectomy, tracheotomy and radiotherapy in follow-up with ENT specialist. He had had two previous myocardial infactions and was on aspirin, clopidogrel, carvedilol, ramipril, atorvastatin and pantoprazole. On auscultation, diffuse in- and expiratory wheezing was found. Chest X-Ray had no alterations and laboratory analysis only noted for haemoglobin level of 12.0 g/dl. Flexible bronchoscopy showed multiple tracheal polypoid formations associated with two large nodular lesions on the carina and right main bronchus resulting in significant obstruction. Rigid bronchoscopy was conducted with lesion biopsy and also neodymium yttrium aluminum garnet (Nd:YAG) lasertherapy for airway clearance. Biopsy revealed epidermoid metaplasia and squamous papilloma. Rigid bronchoscopies that followed found similar lesions and YAG laser was performed recurrently. The diagnosis of tracheal papillomatosis was assumed as repeated biopsies were negative for malignant cells and had positive p16 expression, being negative in the previous larynx epidermoid biopsies. After application of topic mitomycin, there was a decrease in the rate of papilloma recurrence as well as the need for lasertherapy. However patient died in 2018 due to myocardial infarction.
Discussion: RRP have a benign nature, however, lesions tend to grow causing severe airway obstruction and are liable to recurrence after resection. Distal spreading to the pulmonary parenchyma occurs in about 1% of cases and malignant degeneration has been described at a rate of 3-7%. Expression of p16 is correlated with highly oncogenic HPV type 16 but also associated with improved survival comparing to negative p16 epidermoid carcinomas. In this case, p16 expression showed to be focal in the papillomas (and

negative for the larynx epidermoid carcinoma), raising the challenge when sampling may be misleading for final diagnosis/prognosis. RRP is a relatively rare disease that can cause life-threatening airway compromise and being a challenge for clinicians as there is no definitive curative treatment available.

Keywords: *Recurrent respiratory papillomatosis. HPV. P16 expression. Epidermoid carcinoma.*

PE 031. GOLDEN BRONCHOALVEOLAR LAVAGE

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Introduction: Hereditary spherocytosis is a red blood cell disorder that courses with hemolytic anemia. Intravascular hemolysis leads to hyperbilirubinemia because bilirubin is one of the heme degradation products. When bilirubin enters the alveolar space it may inactivate the pulmonary surfactant. There is still not much information about these findings and changes.
Case report: A 70-year-old man, independent, non-smoker, with a history of hereditary spherocytosis, atrial fibrillation under anticoagulation, is referred to Pulmonology for imaging findings. He had a history of pneumonia diagnosed in the context of yellow-green productive cough, which resolved with empirical antibiotic therapy; later, he presented episodes of wheezing predominantly at night and reappearance of scarce yellowish productive cough. Chest CT scan revealed adenopathies in the right aorto-pulmonary and hilar window; consolidation associated with ground glass opacities in the right basal posterolateral segment, and ground glass opacities at the right upper lobe and middle lobe level, suggestive of pneumonic process; solid-shaped fusiform lesion with homogeneous enhancement in left paravertebral topography 34 × 20 mm. At the pulmonology consultation, due to maintenance of symptoms, without constitutional symptoms, crackles in the right base to pulmonary auscultation, he underwent a bronchofibroscopy that revealed "Yellowish plaques throughout the bronchial tree, predominantly in the regions of the cartilage rings. Mucous secretions, in scarce amount, scattered throughout the bronchial tree, predominantly right basal"; bronchoalveolar lavage (BAL) revealed a canary yellow liquid. Biochemical analysis showed increased bilirubin; microbiology had mixed bacterial flora; lymphocyte subpopulation count showed lymphocytic alveolitis with low CD4/CD8 ratio; the liquid cytology didn´t have hemosiderocytes, and the sample presented essentially lymphocytes. Subsequently, he underwent a transbronchial lung biopsies that showed only signs of infection. The patient underwent antibiotic therapy with improvement of symptoms. Throughout the follow-up, the patient keeps coughing and yellowish sputum, in scarce amount, but without any radiological or functional aggravation.
Discussion: With this case report we intend to highlight a rare change in BAL. Bilirubin is known to cross the alveolar-capillary barrier and it is understood that elevated serum bilirubin levels lead to jaundiced BAL staining. However, there is scarce data on bilirubin in BAL, and the cases described refer to patients with sickle cell anemia with acute pulmonary pathology, making this case even more peculiar.

Keywords: *Bronchofibroscopy. Bronchoalveolar lavage. Hyperbilirubinemia. Hereditary spherocytosis.*

PE 032. EVALUATION OF THE ROLE OF FLEXIBLE BRONCHOSCOPY IN THE MANAGEMENT OF CHRONIC COUGH

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Introduction: Chronic cough is one of the most important respiratory symptoms and a major cause of referral for evaluation by a pulmonologist. The algorithms utilised in the diagnosis of chronic cough support sequential investigations and treatment trials for the most common causes: asthma, post-nasal drip and gastro-oesophageal reflux disease (GERD). However, the role of flexible bronchoscopy (FB) in the management of chronic cough – which patients benefit most from the procedure and the best time to perform it – has not yet been fully clarified.
Objectives: To evaluate the role and clinical utility of FB in the diagnostic investigation of patients with chronic cough.
Methods: Retrospective analysis of the clinical records of patients undergoing FB with the indication of chronic cough between 2014 and 2019.
Results: A total of 46 patients underwent FB. Before the procedure, 44 (95.6%) patients had already some radiologic evaluation – 21 by chest X-ray and chest computed tomography, 17 patients by X-ray only, and 6 by chest CT only –, and 39 (84.8%) patients had performed pulmonary function tests. On visual inspection, 13 (28.3%) FB were described as normal and 33 (71.7%) were abnormal. The majority of abnormal findings were signs consistent with chronic bronchitis in 16 (48.5%) patients, bronchomalacia in 7 (21.2%) and signs of chronic bronchitis plus bronchomalacia in 5 (15.1%). Microbiologic assessment of the bronchial aspirate (BA) or the bronchoalveolar lavage (BAL) was performed in 45 patients; 5 had potentially pathogenic organisms on culture but antibiotic treatment based on antimicrobial susceptibility testing did not result in improvement in cough. Cytologic examination was performed in specimens from 45 patients; 3 had signs of inflammation and 1 signs of colonization with Actinomyces spp. In the study population, 24 individuals were eventually diagnosed with one of the three main causes of chronic cough (11 with asthma, 9 with post-nasal drip and 4 with GERD). Other diagnoses were bronchial hyperreactivity (5 patients), psychogenic cough (3), sarcoidosis (2), COPD (1) and Sjögren's syndrome (1). In 9 patients, there was no clinical information regarding the final diagnosis.
Conclusions: FB has a role in certain patients with chronic cough, especially those with unexplained persistent cough. Even when considered inconclusive/non-diagnostic, its realization allows the exclusion of potentially fatal causes. Local protocols for the diagnostic approach to chronic cough may help to select the patients who will benefit most from the examination, and to avoid it in those where it will add little diagnostic value.

Keywords: *Chronic cough. Flexible bronchoscopy. Diagnosis.*

PE 033. CT-GUIDED TRANSTHORACIC BIOPSY: RESULTS AND COMPLICATIONS

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CHUC.

Introduction: CT-guided transthoracic biopsy (CT-TTB) is often used in the diagnosis of lung masses with a reported diagnostic accuracy of 92.1%. This study aims to determine the diagnostic accuracy at the Centro Hospitalar e Universitário de Coimbra, the most prevalent diagnoses and their complications, as well as looking for predictors of diagnostic success.
Methods: Retrospective study, selected all patients who underwent a CT-TTB on nodules and masses, solid or cavitated, between January and June 2019 in a tertiary hospital.
Results: 34 CT-TTB were performed in 28 patients, 53.6% male with a mean age (± SD) of 66.2 ± 11.8 years. 29 solid nodules/masses and 5 cavitated nodules/masses. Diagnostic accuracy was 38.2% with detection of six lung adenocarcinomas, three squamous cell carcinomas, one large cell neuroendocrine carcinoma of the lung, one carcinoid, one fibroelastosis and one tuberculosis. In the remaining exams, the histological result was undetermined, not representative or normal parenchyma. No predictors of success in diagnostic accuracy were found, namely maximum SUV in 18F-FDG PET/CT (5.9 ± 6.9 vs 4.8 ±

5.7 when confirmed histological diagnosis, p = 0.621), lesion diameter (33.4 ± 25.0 vs 43.3 ± 24.9 mm, p = 0.273), distance to the lesion (60.3 ± 18.3 vs 58.9 ± 11.6 mm, p = 0.804) or age of the patient (65.1 ± 11.3 vs 68.1 ± 12.9 years, p = 0.499). The complication rate was 32.4%, with 3 patients requiring a chest tube placement for iatrogenic pneumothorax; the remaining complications were thin lamina of pneumothorax, alveolar hemorrhage and limited hemoptysis.
Conclusions: The diagnostic accuracy was lower than that described in the literature. The most frequent diagnoses were malignant neoplasia. No predictors of success in diagnostic accuracy were found. Major complication rate was 8.8%.

Keywords: *CT-guided transthoracic biopsy.*

PE 034. PARA ALÉM DA NEOPLASIA INICIAL

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Case report: A 65 year old male previously diagnosed with a lung adenocarcinoma in 2011 submitted to a lobectomy after chemotherapy and radiotherapy, develops a primary adenocarcinoma of the colon 7 years after the first diagnose, unrelated with the first neoplasm. This case shows the importance of the maintenance of the appropriate screening programs in all patients.

Keywords: *Colon adenocarcinoma.*

PE 035. A RARE FORM OF PRIMARY INTRATHORACIC TUMOUR: A CHALLENGING APPROACH

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Introduction: Solitary fibrous tumours of pleura are primary neoplasia derived from pluripotent cells of fibrous mesenchyme; their occurrence is relatively rare. Possible differential diagnoses range from primary tumours of mediastinum to pleural sarcoma and mesothelioma.
Case report: We present a clinical case of a non-smoker seventy-one-year-old female that was referenced to pulmonology department, reporting left posterior chest pain and exertion dyspnoea. Thirteen years ago, she was submitted to thyroidectomy for a multinodular goitre, being medicated accordingly since then. On physical examination, she had no external chest abnormalities. A decrease of respiratory sounds at the lower two thirds of left hemithorax was evident on pulmonary auscultation. The chest Computorized Tomography (CT) scan demonstrated a contrast-enhanced bulky mass, with extensive necrosis and sketch of calcifications, occupying most of left hemithorax; the mass conditioned partial collapse of adjacent lung and contralateral mediastinum deviation; pleural thickness and effusion coexisted. Any suspected bronchial lesions were identified on flexible bronchoscopy. Magnetic Resonance Imaging (MRI) of the chest confirmed a pleural-based, encapsulated tumour, causing compression but not direct invasion of adjacent structures. Diagnostic investigation was pursued through transthoracic cutting needle biopsy of the referred mass, whose histological examination demonstrated fibrosclerotic tissue, with foci of spindle cell density. Immunohistochemical analysis was supportive of a pleural solitary fibrous tumour. We defined a presumable solitary pleural tumour with features of connective tissue origin, low proliferative index and absence of lymphadenopathy or distant metastasis. The patient was accepted for surgical resection of tumour, which comprised the removal of a pleural nodule, the bulky mass and three mediastinal nodules. Unexpectedly, the subsequent pathological examination demonstrated a multinodular tumour with well-differentiated component "lipoma like" and high-grade sarcoma component, with foci of osteosarcoma and chondrosarcoma. A complete exeresis of tumour and pulmonary re-expansion were achieved through surgery. Regardless institution of appropriate treatment, her clinical status deteriorated, requiring hospitalization and ventilatory support. One aspect that favours a pleural origin of tumour is the fact that the mediastinum is compressed and dislocated, contrary to what occurs in the presence of a mediastinal mass.
Discussion: The surgery allowed a curative-intent treatment; the close collaboration from thoracic surgeons was of significant impact. This case illustrates an unusual form of chest neoplasm whose management is both challenging and remarkable.

Keywords: *Pleura solitary tumour sarcoma.*

PE 036. NIVOLUMAB INDUCED BULLOUS PEMPHIGOID IN THE TREATMENT OF LUNG CANCER

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Introduction: Treatment with immunologic checkpoint inhibitors has arisen in recent years as an alternative treatment or complement to chemotherapy in several cancers, including in lung cancer. With the increasing use of this kind of therapies, different toxicities have also emerged. Bullous pemphigoid it's an autoimmune dermatologic disease, extremely pruritic, characterized by the development of tense bubbles and more frequently observed in the elderly. It is a potentially severe dermatological toxicity induced by immunotherapy.
Case report: This is a case of 77 years male, ex-smoker, with excellent general status (ECOG's Performance Status of 0). He was diagnosed with a lung adenocarcinoma in August of 2017, in T2b N3 M1c (pleural metastization and in both adrenal glands) stage, with PD-L1 expression in 10% and without EGFR or ALK mutations. He was submitted to two lines of chemotherapy. After bone, lymph node and adrenal progression, the treatment with nivolumab was started in October 2018. He was treated with nivolumab with good tolerance and stable disease until the end of June of 2019, when she started having pruritus in the thorax (anterior and posterior) and lumbar region, initially isolated, without skin lesions. A few days after the onset of pruritus appeared small vesicles on forearm that sprawled to the rest of the upper limbs and back, despite being medicated with a low dose of corticoid and antihistaminic. On this point, treatment with nivolumab was postponed, with a short-term clinical evaluation scheduled. In the re-evaluation, the patient presented blisters and vesicules almost in the totality of his tegument, with several healing phases. In With the worsening of the lesions and symptomatology, the patient was referred for a dermatology urgent observation in which was performed a skin biopsy. Nivolumab was maintained suspended and the patient was medicated with a high dose of systemic corticoid. Skin biopsy confirmed the initial suspicion that we were facing a case of bullous penfioid. The lesions presented a total regression and after the reduction of the corticoid, Nivolumab was restarted.
Discussion: The present case is a grade III adverse reaction (by the CTCAE 5.0 scale), of gradual evolution and considerable impact on the patient's quality of life. Dermatological toxicity secondary to treatment with immunologic checkpoint inhibitors is most often reflected in mild adverse reactions, but in certain cases can be developed serious, life-threatening diseases as Stevens-Johnson syndrome, erythema multiforme, drug rash with Eosinophilia and Systemic Symptoms (DRESS) and Bullous pemphigoid. These reactions imply a multidisciplinary approach with the discontinuation of immunotherapy, sometimes definitively. Early detection and appropriate guidance are essential in order to minimize consequences.

Keywords: *Immunologic checkpoint inhibitors. Bullous penfioid. Cutaneous iatrogeny. Lung cancer.*

PE 037. LUNG MASS IN A SMOKING YOUNG PATIENT

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Introduction: Association of multiple myeloma with lung plasmacytoma and primary plasmacytomas of the lung are both exceedingly rare. The most typical thoracic manifestations of MM are bony involvement of the thoracic cage. Radiographs usually demonstrate hilar or mid lung mass, but peripheral lesions can occur. Sheets of plasma cells usually form a solitary nodule.
Case report: We present a case history of a 32-year-old Caucasian male admitted in our department with complaints of right hip pain for 6 months and right-sided chest pain of 2 weeks duration with intermittent moderated pain. He had no history of fever, cough, weight loss, anorexia, shortness of breath or hemoptysis. The patient was a regular smoker and an occasional drinker. His past recent medical history included a lumbar hernia surgical procedure and a metatarsal fracture. Physical observation showed no significant abnormality except pain to limb mobilization. Laboratory results revealed a white blood count of 12×10^9/L, haemoglobin of 139 g/L, creatinine of 0.082 mmol/L and c-reactive protein of 95.2 nmol/L. Urine analysis revealed traces of proteins. His chest radiograph showed a rounded and homogeneous opacity in the upper lobe of the right lung. A computed tomographic scan of the thorax confirmed the presence of a lobulated mass with a 6 cm diameter in the right apex with a contiguous invasion of the chest wall. It also showed micronodules in the upper lobe of the right lung and in the inferior left lobe. Multiple vertebral and rib osteolytic lesions were also present. Brain CT scan revealed multiple osteolytic lesions scattered around the base and skullcap. Pet-TC scan with FDG-F18 confirmed the presence of a proliferative process in the upper lung alongside multiple osteolytic lesions with low metabolic activity (3.5 SUV), not typical of lung cancer. Bronchoscopy with transbronchial biopsy was negative. Later a transthoracic needle biopsy was made, revealing the presence of atypical plasma cells, compatible with plasmacytoma. Serum immunoglobulin revealed increased IgG (292.9 µmol/L) and decreased IgM (0.144 µmol/L) and IgA (0.438 µmol/L). Tumour markers were negative, except for beta-2 microglobulin (2603.9 nmol/L). Electrophoresis showed a monoclonal spike in the gamma zone. Urinary and serum immunofixation revealed the presence of Kappa light chains. Immunohistochemical profile was positive for CD138. Bone Marrow biopsy revealed 55% plasmocytes. A diagnosis of Multiple Myeloma (MM) was made. Dexamethasone, bortezomib, thalidomide was started.
Discussion: Despite the rarity of MM presentation with pulmonary plasmacytoma, especially in young patients, this diagnostic hypothesis has been suggested (and later confirmed), based on the high measurement of total blood proteins and a PET-TC scan not compatible with a metastatic pulmonary neoplastic disease with bony involvement. Pulmonary involvement of MM is associated with rapid progression and poor prognosis, with an overall 5-year survival rate of 40%.

Keywords: *Lung mass. Chest pain. Plasmacytoma.*

PE 038. STAGE IV NON-SMALL CELL LUNG CARCINOMA (NSCLC) UNDER TYROSINE KINASE INHIBITORS (TKI) WITH PROGRESSION-FREE SURVIVAL ABOVE AVERAGE

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Introduction: Currently about 40-50% of NSCLC patients are in stage IV when diagnosed. The 5-year survival rate is only 6%, however due to new targeted therapies this number has increased. In a subset of patients with NSCLC and EGFR mutation it has been consistently shown that tyrosine kinase inhibitors such as Erlotinib, Gefitinib and Afatinib promote superior progression-free survival compared to conventional chemotherapy.
Case report: We present a 63-year-old non-smoking woman, with background of asthma, was referred to our consult with complains of right chest pleuritic pain, without cough, sputum, loss of weight or anorexia. No abnormalities were found in her physical examination. A computed tomography(CT) scan and latter a positron emission CT (PET-CT) revealed a 42-mm opacity in the apical region of right lower lobe (SUV 5.0), a 14 and 19-mm opacities in the median lobe (SUV 1.1), a 12-mm pulmonary nodule (SUV 2.4) and two 16-mm mediastinal lymphadenopathies, lower paratraqueal and subcarinal (G7 station: SUV 2.4). Bronchofibroscopy showed signs of extrinsic compression on right middle bronchus and lower lobe medial bronchus. Transbronchial biopsy revealed an adenocarcinoma poorly differenciated with genetic studies showing c.2235_2249 deletion13InsC (p.Glu746_Ala750dei) in exon 19 of EGFR gene, with negative ALK and PDL1 0%. Transbronchial needle aspiration (G7 station) was negative. It was also performed a magnetic resonance imaging of the brain which presented a 6 mm isolated superficial lesion on cortical region of the brain, posterior margin of right precentral gyrus, compatible with secondary lesion, without neurologic symptoms associated. There weren't any bone, abdominal or pelvic lesions. So the patient was diagnosed with right lung adenocarcinoma with brain metastasis on stage IVA, T4N0M1b, PS 0. Brain metastases were successfully submitted to brain radiosurgery (RS). While waiting for genetic studies, the patient started chemotherapy, Platino and Pemetrexed, completing 3 courses, with minimal changes in each lesion. With genetic results it was made a switch to Erlotinib, although due to intolerance and sustained neutropenia, it was switched to Afatinib (after 2-months). It was observed a volumetric reduction of 50% on pulmonary lesions and regression of mediastinal lymphadenophaties, within 3-months of therapy with TKI, and after 5-months, a right lung bilobectomy was performed (median and inferior lobes), ypT1aN0. Adverse effects (AE), such as grade 1 diarrhea and ocular toxicity, were noted with Afatinib that were allayed with dose reduction. After surgery we kept therapy with Afatinib until nowadays.
Discussion: It hasn't been observed any recurrence after 27 months of brain RS and 21 months of thoracic surgery. Thus, we underline the importance of an aggressive approach in oligometastatic disease, namely thoracic surgery and brain RS, which contributed to a longer than expected survival rate. Thus, we also question the extent to which therapy with TKI should be maintained since the patient has not had any visible disease for 21 months.

Keywords: *Oligometastic disease. Afatinib. NSCLC.*

PE 039. PROGRESSION FREE SURVIVAL AFTER STEREOTACTIC BODY RADIATION THERAPY: RETROSPECTIVE STUDY

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Introduction: Early-stage clinical diagnosis of lung cancer has become increasingly true, with surgical resection remaining the main therapeutic approach in the absence of contraindications. If contraindications are present stereotactic body radiation therapy (SBRT) is a good alternative, given its' safety and low risk for adverse effects. Empirical treatment with SBRT has become an eventual concern for overtreatment of potentially benign lesions in patients with multiple pulmonary co-morbidities.
Objectives: To compare progression-free progression (PFS) of patients undergoing SBRT empirically for treatment of the solitary lung nodule with those also undergoing SBRT who were diagnosed after biopsy.
Methods: We retrospectively selected the patients followed at Pulmonology consultation for solitary lung nodule that, after decision

at a multidisciplinary meeting, and regarding the diagnostic probability of lung cancer associated with radiological changes and the value of SUV on positron emission tomography (PET), underwent SBRT between January 2016 and January 2019, and documented their evolution until July 2019.
Results: We included 10 patients submitted to SBRT with a mean dose of 47 Gy (12 to 60 GY) and a mean number of 5 fractions (3 - 8). They were 90% men (N = 9), average age 74 years (min 61; max 83). All had heavy smoking habits (mean 79.4 UMA) and moderate to severe chronic obstructive pulmonary disease. Three patients had a history of nonpulmonary neoplasia. 90% (N = 9) were in stage I or II and 10% (N = 1) in stage III (T ≤ 30 mm). Average follow-up was 17 months (6-39 months). About 40% (N = 4) were diagnosed by biopsy (N = 3 - pulmonary adenocarcinoma; N = 1 - pavement-cell carcinoma), while 60% (N = 6) underwent SBRT empirically. Recurrence was observed in 2 patients. No adverse effects were in either group. PFS was compared between the group of patients who underwent SBRT empirically and those who had a histological diagnosis proven by biopsy. The Kaplan-Meier method was used. It was found that there is no statistically significant value between the two groups (mean PFS in the group without diagnosis: 23 months (95%CI: 9.45-37.66) and mean PFS in the group with diagnosis: 17 months (95%CI: 3.56-30.44, p value = 0.316)).
Conclusions: Thus there is no statistically significant difference in PFS between patients who underwent SBRT empirically and those who had a diagnosis proven by biopsy. Although the sample size is small, the results are in accordance with the results described in the literature. It is noteworthy the need to obtain a diagnosis given the possibility of performing targeted therapy in case of neoplastic recurrence.

Keywords: *Stereotactic body radiation therapy. Progression-free survival. Solitary lung nodule.*

PE 040. ANOMALOUS ORIGIN OF THE LEFT PULMONARY ARTERY FROM THE AORTA: HEMODYNAMIC AND RESPIRATORY FUNCTIONAL CONSEQUENCES

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Introduction: Congenital heart diseases include a large range of cardiovascular alterations, some of them more common and others rarer. Anomalous origin of the right pulmonary artery from the ascending aorta is a rare anomaly, but anomalous origin of the left pulmonary artery from the ascending aorta is even rarer (especially if without any other associated cardiac malformation).
Case report: We present the case of a 34 years old female patient. She had been previously diagnosed with pulmonary hypertension due to large patent ductus arteriosus). She was medicated with sildenafil but she decided to interrupt treatment and abandon follow-up appointments. Years later, after a spontaneous abortion (16 weeks) she was referred to a Pulmonary Hypertension Centre. On physical examination she had an increased pulmonary component of the second heart sound, continuous heart murmur in left sternal border, no cyanosis (saturation of upper and lower limbs was 100%), no jugular engorgement, hepatomegaly nor lower limbs edema. The performed echocardiograms (both transthoracic and transesophageal) showed an estimated systolic pulmonary artery pressure of 125 mmHg with right ventricular systolic dysfunction. The left pulmonary artery branch was not seen and a right patent ductus arteriosus was confirmed. Associated congenital cardiac defects were excluded. The thoracic computed tomography showed mosaic perfusion pattern, with distal airspace hyperinflation, suggesting ventilation/perfusion anomalies. Since pulmonary artery left branch was not visualized a cardiac magnetic resonance was performed, revealing right aortic arch and a right patent arterial duct connecting the right pulmonary artery to the descending aorta. The pulmonary artery left branch had its origin on the ascending aorta. The right side catheterization showed mean pulmonary artery pressure of 86 mmHg, and pulmonary vascular resistance of 11 Wood Units. A large persistent arterial duct to the right pulmonary artery was confirmed with persistent left to right shunt (shunt fraction 1.2). The left branch was visualized when injection was performed in the aortic root. The pulmonary function testing revealed a mild restrictive syndrome with total lung capacity (TLC) of 3.40 liters (74.5%). The forced vital capacity (FVC) was 1.62 liters (50.9%) and the forced expiratory volume in one second (FEV1) was 1.46 liters (50.3%). The FEV1/FVC ratio was 0.90. The patient also had a mild reduction in carbon monoxide diffusion capacity (DLCO): 60.5%, which became 86.7% when corrected to alveolar volume. The arterial blood gases revealed pH 7.423, carbon dioxide tension (pCO2) 34.9 mmHg, oxygen tension (pO2) 68.2 mmHg, bicarbonate 23.1 mmol/L and oxygen saturation (sO2) 95.5%.
Discussion: The present case exemplifies an extremely rare combination of congenital heart disease and its hemodynamic and respiratory functional consequences.

Keywords: *Pulmonary hypertension. Congenital heart disease. Hypoxemia.*

PE 041. WHEN LUNG AND HEART GET ENTANGLED

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Introduction: Partial anomalous pulmonary venous connection (PAPVC) is a rare congenital anomaly reported to be between 0.4-0.7%. PAPVC describes the connection of at least one pulmonary vein but not all, to the systemic venous system or right atrium. Many patients escape diagnosis until adulthood. Depending on the magnitude of the left-to-right shunting, symptoms may include exertional dyspnea, palpitations associated with atrial arrythmias, and symptoms of right-sided heart failure and pulmonary hypertension. The management of isolated PAPVC is controversial given the rarity of this anomaly, the limited data and complexity of surgical repair.
Case report: A 51-year-old Caucasian woman with a past medical history of epilepsy and depressive syndrome. Referred to pulmonology because she presented a 1-year history of productive cough with mucous sputum and progressive dyspnoea on exertion. She had no fever, weight loss or other symptoms. On examination, she had a systolic murmur II/VI audible throughout the precordium in cardiac auscultation. She had done a thoracic CT scan that revealed "asymmetric thorax, with decreased left pulmonary field and homolateral deviation mediastinum probably in relation to pleural thickening involving the costal basal pleura (...) enlargement of the pulmonary artery trunk in relation to pulmonary hypertension." As a child she had contact with a family member with tuberculosis, so she had a sputum culture for tuberculosis, that was negative. For a complementary study the patient had respiratory functional study with small airway obstruction only, arterial blood gas with hypocapnia (paCO2-29.7 mmHg and paO2-84.2 mmHg), transthoracic echocardiography with "right atrial dilatation, PSAP 36 + 3 mmHg, mild inferolateral pericardium effusion, without functional impairment and normal left heart function". Her blood tests had negative autoimmunity study and viral serologies and NTproBNP 215 pg/ml. She had a thoracic Angio-CT that revealed "congenital heart anomaly translated as an abnormal partial venous return of the right upper lobe with double drainage to the superior vena cava and left atrium, with no images suggestive of pulmonary thromboembolism". Currently, she is awaiting right cardiac catheterization to confirm the diagnosis of Pulmo-

nary Arterial Hypertension Group 1 (Associated with congenital heart disease) and assess the possibility of surgical correction.
Discussion: Anomalous pulmonary venous drainage (APVD) is the drainage of one or more pulmonary veins outside the left atrium. Its detection is critical due to the strong association with congenital heart disease as well as other cardiac and respiratory anomalies, which have significant implications for patient management. On top of volume loading to the right ventricle, APVD is one of the treatable causes of pulmonary hypertension in adults

Keywords: *Congenital heart disease. Pulmonary arterial hypertension group 1. Abnormal partial pulmonary venous return.*

PE 042. TB OR NOT TB: THAT'S THE QUESTION

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Introduction: Tuberculosis is an important public health problem, with a considerable socioeconomic impact in Portugal, a medium incidence country nowadays. Clinical picture is variable – it ranges between non-specific complaints (fever, constitutional symptoms) to organ-specific ones (cough, hemoptysis, pleuritic chest pain) and the epidemiologic context is fundamental to identify the index case. These general symptoms might be present in other pulmonary diseases, such as lung cancer.
Case report: The authors present a case of a non-smoker, 67-year-old male gardener, without any previous relevant medical history. He was observed in the emergency room for progressively worsening asthenia lasting for a week, and weight loss of 10 Kg (14%) in 3 months. On physical examination, he was hemodynamically stable, had no fever and peripheral oxygen saturation of 86% in room air. He presented superficial painless cervical adenomegaly (< 1 cm), decreased breath sounds and crackles on the base of the right lung. Blood tests showed increased inflammatory parameters and negative HIV serology. Blood gas analysis showed hypoxemia with normocapnia. The chest radiograph revealed diffuse micronodular reticular infiltrate (miliary pattern) and bilateral blunting of costophrenic angles. To better characterization of the findings of chest X-ray a CT scan was performed, revealing a large volume pericardial effusion and pleural effusion, bilateral perihilar ground glass lesions and a consolidation on the upper right lobe. Therefore, the diagnosis of complicated micronodular pneumopathy was assumed, with probable infectious (Pulmonary tuberculosis/pneumonia) or neoplasic aetiology. He was admitted for IV therapy with Amoxicillin-clavulanate and Clarithromycin. On the 5th day of admission, due to the worsening hypoxemia and fever, antituberculous therapy was empirically started. The patient underwent Pericardiocentesis, with drainage of sero-hematic fluid, which cytology was positive for Pulmonary Adenocarcinoma (CK-BerEP4, CK7 and TTF-1 positive and Calretinine, CK20 and CDX2 negative). Bronchial biopsy revealed Pulmonary Adenocarcinoma and cultures for Mycobacterium tuberculosis were negative, so antituberculous therapy was suspended. Staging study revealed osteoblastic lesions suggesting secondary involvement in several vertebrae (T3-T4, T7, L1-L4 e S2), iliac bone, costal grid and left femur. Multidisciplinary debate concluded that palliative rachis radiotherapy should be performed. Genetic study revealed EGFR exon 19 deletion, and the patient started target therapy with Osimertinib.
Discussion: The authors' aim was to highlight that, in spite of tuberculosis significant incidence in Lisbon metropolitan area, different aetiologies should be considered on the approach of a radiological miliary pattern. Therefore, it is necessary to consider atypical microorganisms, occupational diseases and malignancy.

Keywords: *Pulmonary tuberculosis. Miliary pattern. Lung adenocarcinoma.*

PE 043. CUTANEOUS ATYPICAL MYCOBACTERIOSIS IN AN IMMUNOCOMPETENT HOST: FROM CLINICAL SUSPICION TO DIAGNOSIS

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CHBV.

Introduction: Mycobacterium scrofulaceum is a non-tuberculous mycobacterium (NTM) that is ubiquitous within our environment, commonly found in soil, vegetation and water. It's an uncommon pathogen that causes disease with pulmonary or extrapulmonary involvement. Cases of cervical lymphadenitis to this agent in the pediatric population are the best described in the literature.
Case report: We present a Caucasian male patient, 41 years old, smoker, with no other relevant medical history, reporting the appearance of an indurated skin lesion, ulcerated, at the medial malleolus of the left lower limb after trauma and subsequent contact with tank water; concomitantly, he referred the appearance of multiple scaling lesions on the same limb, cutaneous xerosis and inflammatory signs on the knee and heel joints, as well as asthenia and anorexia. He was medicated with oral antifungal with very slight improvement and slow healing of the described lesion. After 7 months, new erythematous-violet papular lesions appear on the trunk. Medicated with amoxicillin/clavulanic acid and subsequently with minocycline and topical ozenoxacin, the lesion had spread to the upper limbs, some ulcerated, with necrotic background. Laboratory study, including viral serologies, revealed no changes. Chest computed tomography revealing emphysema without other changes. Skin lesion biopsy: negative bacteriological and mycobacteriological cultures; histological examination showing histiocyte-rich mixed inflammatory response, without morphological specificity - alterations were interpreted as possible cutaneous atypical mycobacteriosis. The analysis of the tank water revealed the presence of Mycobacterium scrofulaceum. Given the probable diagnosis of cutaneous atypical mycobacteriosis, a treatment regimen with azithromycin, rifampicin and ethambutol was initiated. After two weeks of treatment, there was significant improvement on the skin lesions, with flattening and progressive healing, without the appearance of new lesions.
Discussion: This patient was a diagnostic challenge that implied a high index of suspicion. Analysis of the tank water was extremely important for the diagnosis definition, since direct inoculation of Mycobacterium scrofulaceum, after trauma and contact with contaminated water, is considered as a potential mechanism of soft tissue infection. Although we have not identified this agent on the biopsied fragment collection, the histological pattern, compatible with NTM infection, and associated with a favorable clinical response after the initiation of treatment, favors a probable diagnosis of cutaneous atypical mycobacteriosis.

Keywords: *Atypical mycobacteriosis. Cutaneous mycobacteriosis. Mycobacterium scrofulaceum. Non-tubercula mycobacteria. Immunocompetent host.*

PE 044. IS THE REVERSED HALO SIGN SPECIFIC OF ORGANIZING PNEUMONIA?

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Introduction: The reversed halo sign (RHS) is defined as a focal rounded area of ground-glass opacity surrounded by a more or less complete ring of consolidation. It is a relatively rare sign and it was initially considered specific of OP however, it was subsequently described in a variety of pulmonary disease.
Case report: 53 year-old female, unemployed, with an active smoking history of 30 pack-years. She had history of arterial hyperten-

sion, diabetes mellitus type 2 and epilepsy for which she was medicated. She was referred to our pulmonology department by her general practitioner due to complaints, with 6-month duration, of chronic rhinitis and evidence of a 6 mm nodule on thoracic CT in the right upper lobe, for vigilance. A second re-evaluation CT, performed 18 months later showed, besides a stable 6 mm nodule on the right upper lobe, an heterogeneous and irregular 36 mm mass, with a central hypodense zone, surrounded by an area of consolidation, on the left upper lobe. She had no respiratory or constitutional symptoms, denied night sweats and complaints suggestive of connective tissue disease. Her husband had been treated, 6 months earlier, for a pulmonary tuberculosis but her contact screening was negative. On examination, besides a pale nasal mucosa, the general examination was unremarkable. She had no elevation of inflammatory markers on her laboratory analysis, tumour markers (CEA, CA 19.9, CA 15.3, CA 125, CYFRA-21, NSE and SCC) were normal and autoimmune antibodies (anti-CCP, ANAs and ANCAs) were also within normal values. Pulmonary function tests revealed small airway obstruction with a normal DLCO. The case was discussed in a multidisciplinary team meeting and, given the lack of symptoms, the appearance of a relatively big mass over a short period of time and the presence of the inverted halo sign, the most likely diagnosis should be Organizing Pneumonia, and initiation of corticotherapy was proposed. To confirm the diagnosis, a bronchofibroscopy with bronchoalveolar lavage (BAL) and a percutaneous CT-guided transthoracic needle biopsy of the lung were performed. The result of the lung biopsy revealed necrotic tissue and the BAL findings were nonspecific. However, bronchial secretions collected during the bronchofibroscopy isolated a Mycobacterium tuberculosis, susceptible to all first-line drugs. The patient had the final diagnosis of pulmonary tuberculosis and not organizing pneumonia, as initially suspected due to the presence of the reversed halo sign. The patient was referred to a specialized center in tuberculosis and initiated the recommended treatment for pulmonary tuberculosis with four drugs, with imagiological improvement.
Discussion: The RHS is considered an important clue to the diagnosis of organizing pneumonia in immunocompetent patients however, it mislead our multidisciplinary team into thinking that the final diagnosis was organizing pneumonia when, in fact, the patient had pulmonary tuberculosis. Thoracic CT is, nowadays, a very helpful tool in the diagnosis of several pulmonary diseases however, this case reflects the importance of diagnostic confirmation even in the presence of an image very suggestive of a particular disease.

Keywords: *Reversed halo sign. Organizing pneumonia. Tuberculosis.*

PE 045. RENAL TUBERCULOSIS AND PULMONAR INFECTION BY MYCOBACTERIUM GORDONAE

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Introduction: The high rate of co-infection of mycobacteria and HIV is widely known. Mycobacterial infection is a frequent opportunistic infection in the HIV-infected patient, but the slow growth of the bacillus and the systemic symptoms lead to diagnostic difficulties.
Case report: A 49-year-old woman from Mozambique, a domestic worker with no history or significant home medication was sent to the immunodeficiency consultation for HIV-positive serology (November 2014) requested in the context of afternoon-unquantified fever. She had CD4 + 284/mm^3 and started antiretroviral therapy (ABC/3TC and RAL) in April 2015. She maintained good medication tolerance, virologic suppression and immunological stability since July 2015. The patient started multiple episodes of sub-febrile temperatures (T: 37-37.5 ºC) in August 2015. Blood and urine cultures were performed, which were negative for mycobacteria. Thoracic-abdominal-pelvic CT scan revealed in the thoracic study small areas of ground-glass parenchymal densification predominantly in the lower lobes and rare right superior lobe micronodules. She mantained episodes of chills and night sweats with maximum temperatures of 37 ºC and started in March 2016 dry cough. A sputum sample was positive for Mycobacterium gordonae. She repeated sputum cultures in July 2016 and August 2016 which were negative for mycobacteria. IGRA test was negative. A thoracic CT was repeated in June 2016 that maintained heterogeneous parenchymal opacifications in the left inferior lobe. The patient was evaluated by Pulmonology to study imaging changes and underwent bronchofibroscopy. The direct examination and culture for mycobacteria in bronchoalveolar lavage were negative. Bronchial aspiration was positive for M. gordonae in January 2018. The patient was clinically stable and clinical vigilance was maintained. Thoracic CT was performed again in November 2018, which showed infracentimetric nodules in the right superior lobe, middle lobe and left inferior lobe, with subsequent fibrotic pleural thickening related to fibrosis zones. In the left inferior lobe there were areas of air incarceration. In November 2018 she presented with fever and underwent screening. She also strated cough with mucopurulent sputum without new isolates in sputum culture. Urine culture was positive for Isoniazid resistant Mycobacterium tuberculosis. Genitourinary tuberculosis and respiratory infection by Mycobacterium gordonae were assumed due to the worsening of the respiratory clinic, pulmonary imaging changes and previous isolation in sputum and bronchial aspirate. She started therapy with rifampicin, ethambutol, pyrazinamide and levofloxacin with good tolerance. She presented negative urine culture after one month of treatment and clinical improvement, without new episodes of fever or respiratory symptoms.
Discussion: The diagnosis of mycobacterial infection involves repeated biological samples for culture in order to identify the microorganism. Nonspecific, slow-progressing symptoms contribute to a delay and diagnostic doubts that may aggravate the underlying infection.

Keywords: *Renal tuberculosis. Mycobacterium gordonae.*

PE 046. MALABSORPTION OF ANTIMYCOBACTERIAL DRUGS: A CAUSE OF THERAPEUTIC FAILURE IN TUBERCULOSIS

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Introduction: Most patients with tuberculosis (TB) have a good response to treatment. Resistance and lack of adherence to therapy are the main causes of therapeutic failure. In patients with good adherence to directly observed therapy (DOT) and sensitivity to the antimycobacterial drugs in use, therapeutic failure may occur due to malabsorption of orally administered drugs.
Case report: Male, 21 year-old, Caucasian, copy center employee. It presents a two-month evolution, characterized by dry cough, fever, nocturnal hypersudoresis, anorexia and weight loss (8 kg), without changes in gastrointestinal transit. He denied drug, smoking, alcoholic or toxicophilic habits. History of poor height-weight progression since childhood (BMI 16.49 kg/m^2) and two episodes of renal colic. Clinical, radiological and microbiological evaluation supported the diagnosis of pulmonary, cavitated, bacilliferous TB. She started weight-adjusted oral daily antibacillary therapy with isoniazid (H) 300 mg, rifampicin (R) 600 mg, pyrazinamide (P) 1,500 mg and ethambutol (E) 1,200 mg. The medication was taken fasting and with good adherence, being supervised by the mother with whom she lives. No vomiting or diarrhea. The serological study for HIV, HCV and HVB was negative. Cultural examination of sputum confirmed Mycobacterium tuberculosis (MT) infection sensitive to all first-line antimycobacterial drugs in use. After one month of

therapy, symptoms recur in association with radiological worsening and direct examination and positive sputum culture of the fifth month. Upon direct observation of the dose at the time under the fixed combination (HR) and E, it appears that the patient chews on pills, and therapeutic failure was admitted and HRZE restarted. The antibiotic sensitivity test was repeated and showed sensitivity to all first line drugs in use. At the same time, some comorbidities that reduce drug absorption (HIV infection, hypoalbuminemia, infectious gastroenteritis, renal, hepatic or thyroid disease) have been excluded and the remaining study (noninfectious gastrointestinal diseases and cystic fibrosis) is awaiting study. Meanwhile, the patient presents clinical and radiological improvement, with three negative bacilloscopies, however, still without recovery of his usual weight (50 kg).
Discussion: Oral malabsorption of antimycobacterial rugs is one of the possible causes of therapeutic failure, although it is poorly described. In patients under TOD who show no clinical, radiological and microbiological improvement, malabsorption should be considered. Malabsorption of one or more antimycobacterial drug may justify treatment failure, disease progression, and drug resistance acquisition.

Keywords: *Malabsorption. Therapeutic failure. Tuberculosis.*

PE 047. SPECIFIC TUBERCULOSIS PRESENTATION OF TUBERCULOSIS: A CASE REPORT

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Case report: Patient aged 15 years, male, black, student, native and resident of Luanda. History of hospitalization in 2012 due to prolonged febrile syndrome and anemia with blood transfusion criterion family history of neoplasia. She started with symptoms of about 6 months of evolution characterized by unquantified weight loss, febrile sensation without predominance of time, asthenia, dry cough associated with right-sided pleuritic chest pain. He was hospitalized in January 2017 with increased dizziness and dejections. Pasty diarrhea, with TP hemoptysis, reent travels, complaints of other devices and systems. On objective examination o weight loss, with pale skin –mucosa, without signs of difficulty breathing decreased vesicular murmur in the upper 2/3 of the left hemithorax. Analytically: leukocytosis, with neutrophilia, platelet- nitrite, nitrite, proteinuria. Chest X-ray (PA) heterogeneous opacity in the upper left third (LSE), with nodular lesion outlime.Thoracic CT was requested which revealed was requeted which revealed pulmonary mass. Occupying the apical and anterior segment of the LSE measuring about 71 mm of greater axis causing a slight lateral deviation of thee trachea with no evidence of invasion of adjacent bone structures. A hyperdense speculated contorns nodule, located in the ipsilateral anterior basal segment, measuring approximately 34 mm, has pervascular and peribronchial mediastinal adenomegalies without pleural effusion the upper abdomen showed slight hepatomegaly. He started empirical antibiotic therapy with ceftriaxone and clarithromycin without improvement. To clarity lung mass, bronchofibroscopy was performed with biopsy the histological result of which was compatible with epithelioid granulomas with giant Langerhans cells with caseification necrosis. In this context he started antibacterial therapy (HRZE). However the clinical, laboratory and radiological evolution were satisfactory at the end of treatment.
Discussion: The authors present this clinical case due to its evolution and peculiar presentation. The suspicion of pulmonary tuberculosis in endemic areas is fundamental. Its prevalence justifies always considering this differential diagnosis. Early diagnosis and early initiation of treatment define the prognosis of these patients.

Keywords: *Tuberculosis. Tuberculosis presentation forms.*

PE 048. TUBERCULOSIS. CASUISTIC OF A PULMONOLOGY SERVICE

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Introduction: Tuberculosis remains one of the main infectious diseases in the 21st century, being considered a risk to public health. Despite efforts to reduce its prevalence the number of tuberculosis patients is considerable, especially in large urban centers.
Objectives: To characterize tuberculosis cases of patients in a Pulmonology Service of a Central Hospital.
Methods: Retrospective study among patients diagnosed with pulmonary and pleural tuberculosis evaluated at the Pulmonology Service of Centro Hospitalar Lisboa Ocidental from January 2011 to June 2019. Data collection through consultation of clinical files. Descriptive analysis using Microsoft Excel® 2017 and IBM SPSS Statistics v.25®.
Results: Total of 81 patients; 58% (n = 47) male; mean age 49 years (minimum 18, maximum 88 years). Regarding the origin of the patients, 79% (n = 64) were from Pulmonology outpatient clinic and 21% (n = 17) were hospitalized in Pulmonology Department. 93.8% (n = 76) had pulmonary tuberculosis, 2 of which had extrapulmonary involvement (1 had pericardial tuberculosis and 1 peritoneal tuberculosis). 6.2% patients (n = 5) had pleural involvement only. Microbiological diagnosis of pulmonary tuberculosis was obtained by sputum collection in 26.3% of cases (n = 20) and by bronchofibroscopy and bronchial secretion/bronchoalveolar lavage in 73.7% (n = 56). There were 2 cases of multi-resistant tuberculosis. The main comorbidities were chronic obstructive pulmonary disease (n = 10), asthma (n = 2), cardiovascular disease (n = 16), diabetes mellitus (n = 5), chronic kidney disease under hemodialysis (n = 2), lung cancer (n = 5), other malignancies (n = 3). Also noteworthy there were patients on systemic corticosteroid therapy due to rheumatologic disease (n = 3) and on anti-TNFα therapy due to Crohn disease (n = 2), and these two patients had been screened for latent tuberculosis. All patients were referred to the Pulmonary Diagnostic Center after diagnosis. The evolution of the number of cases diagnosed over the years was also analyzed, with 13 cases diagnosed in 2011, 11 in 2012, 8 in 2013, 12 in 2014, 8 in 2015, 12 in 2016, 6 in 2017, 7 in 2018 and 4 during the first 6 months of 2019.
Conclusions: Tuberculosis can affect individuals with widely varying clinical profiles. Rapid diagnosis is one of the ways to control the spread of this disease. Analysis of our sample shows that, despite occasional decreases in the number of cases diagnosed per year, tuberculosis is still quite prevalent and diagnosis is often only possible through invasive techniques. It is therefore crucial that the different entities, namely primary health care and hospital units, are in close contact and involved in the control of this disease.

Keywords: *Tuberculosis. Casuistic. Comorbidities.*

PE 049. PULMONARY TUBERCULOSIS: A DIFFICULT CASE TO DIAGNOSE

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Introduction: The incidence of pulmonary tuberculosis in Portugal is decreasing, however, in urban centers it is still high. Clinical presentations are varied so that clinical suspicion should be early in order to initiate the diagnostic tests and therapy rapidly, reducing the risk of transmission and drug resistance.
Case report: Male patient, 57 years old. Natural and lives in Lisbon. Former smoker (20 UMA smoking) with prior exposure to inhaled zinc oxide. We highlight the previous diagnoses of non-Hodgkin lymphoma DGCB for 19 years, submitted to CHOP, mediastinal radio-

therapy and autologous transplantation; pleurodesis in 1999 by recurrent malignant right pleural effusions. He had had two community-acquired pneumonias without an isolated agent, medicated, in the previous two months. The patient was referred to the Emergency Department for a productive cough with abundant viscous whitish sputum, with slight two-month-old evolution, associated with a feeling of fever (not quantified) in the afternoon, progressive tiredness and dyspnea for moderate exertion in the last year. He was febrile and on pulmonary auscultation had a decreased vesicular murmur in the right hemithorax with ipsilateral crackles. The patient did some complementary diagnostic tests included: absence of leukocytosis, CRP 7.36 mg/dL, serum creatinine 1.21 mg/dL and hyponatremia; partial respiratory failure (PRI); Chest X-ray with heterogeneous hypotransparency of the entire right pulmonary field, denser in the lower half, overlapping with previous examinations. The patient underwent a CT scan the previous week which revealed fibrosis of the right superior lobe (RSL) and middle lobe with homolateral parenchyma with large areas of heterogeneous ground glass; left lung with slight compensatory hyperinflation and incipient clear glass in the upper lobe. The patient was admitted for PRI, community-acquired pneumonia, acute kidney injury and mild hyponatremia. The patient presented negativity for microbiological exams (microbiological examination of sputum, blood cultures, urine culture) and antigenuries to Pneumococcus and Legionella performed. He underwent a videobronchofibroscopy (VBFC) which revealed: globally swollen and engorged mucosa with convergence of folds, enlarged spurs, reduced segmental holes preferably in the URL. Bronchial biopsies, bronchoalveolar lavage (BAL) and harvested bronchial secretions were negative for neoplastic cells. BAL had a predominance of macrophages (83%, 10% neutrophils and 8% lymphocytes). Viral serology, autoimmunity and tumor markers were also negative. Empirical antibiotic therapy with levofloxacin 750 mg was started. In view of the clinical and PRI worsening associated with URL atelectasis on chest teleradiography, a new VBFC was performed with aspiration of hematic secretions, and an organized clot was seen occluding the URL which was partially removed, keeping the posterior segment occluded. Subsequently there was a progressive clinical and imaging improvement. Microbiological results of secretions and bronchial biopsies were negative, but the BAL collected in the second VBFC was positive for multisensitive Mycobacterium tuberculosis. The patient started therapy with subsequent outpatient follow-up.
Discussion: The relevance of the case stands out because in the clinical suspicion of PT, although in the absence of imaging findings most frequently found in PT and in the absence of microbiological confirmation, this diagnosis should not be totally excluded.

***Keywords**: Pulmonary tuberculosis. Mycobacterium tuberculosis.*

PE 050. A LOOK AT RESPIRATORY DISEASES IN A PRIVATE HOSPITAL IN LUANDA-ANGOLA

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The profile of infectious and noninfectious lung diseases in Africa reflects as the predominant socio-political and economic forces. The lung, perhaps more than any other organic system, is influenced by poverty, occupation, and personal habits. A global forecast for developing countries and the coming decades, such as respiratory diseases (including infections), represents a large majority of deaths and a considerable burden of disability-adjusted life years. The 2002 Pulmonary Health Survey conducted in Cape Town allowed disease prevalence and identified complex interactions between causal factors and disease. Consistent and biologically plausible substances have been reported between smoking and susceptibility to tuberculosis and pneumonia in HIV-infected patients. These findings are relevant to both public health planners and researchers exploring disease mechanisms and possible drugs. It is estimated that 235 million people suffer from asthma, over 200 million people have chronic obstructive pulmonary disease (COPD), 65 million suffer from moderate to severe COPD, 1 to 6% of the adult population (over 100 million people) suffer from sleep-disordered breathing, 8.7 million people develop tuberculosis annually, and more than 50 million people struggle with occupational lung disease, totaling over 1 billion people with chronic respiratory disease. Nine million children under the age of 5 die each year and lung disease is the most common cause. Pneumonia is the leading cause of death in young children. Lung cancer is one of the most lethal, which kills over 1.4 million people each year. It has become quite clear that countries economic development is closely linked to the health of their citizens. Poor health, both individual and public, coupled with lack of education and a lack of a favorable policy framework, are the main impediments to a country's development and are the roots of poverty. Poor health impoverishes nations and poverty causes health problems, in part related to inadequate access to quality health care. Even more distressing is the enormous suffering that the disease causes. Those who are most disadvantaged suffer most from health problems. Tuberculosis is one of the endemics with the greatest impact on the economically active population in Angola. The country's national health policy and drug policy clearly express the still lazy position regarding this major endemic. The magnitude of pulmonary tuberculosis in Angola, as well as other respiratory diseases, is not well known, but the high number of treatment dropouts and poor treatment success make it difficult to control. Embedded in the concern about scarce data on respiratory pathology in Angola, the authors performed a filter of the ICD code-based computer system of the most frequent respiratory diseases from June 2016 to June 2019 at the Sagrada Esperança Clinic in Luanda. The results are intended to be presented in poster form at the 35th Congress of the Portuguese Society of Pulmonology.

***Keywords**: Tuberculosis Angola. Post-tuberculosis sequelae.*

PE 051. CLINICAL AND FUNCTIONAL OUTCOMES OF PATIENTS WITH SEVERE ASTHMA IN TREATMENT WITH OMALIZUMAB

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Introduction: Omalizumab is an anti-IgE monoclonal antibody indicated for the treatment of severe atopic asthma.
Objectives: To evaluate the clinical and functional outcomes of patients receiving Omalizumab.
Methods: Retrospective observational study of patients with severe asthma followed in a Pulmonology - Asthma outpatient clinic who completed 6 months of treatment with Omalizumab. Pulmonary function, FeNO (exhaled nitric oxide), chronic systemic corticosteroid therapy, peripheral eosinophils and ACT (Asthma Control Test) were evaluated at baseline and after 6 months of treatment.
Results: We included 28 patients with severe asthma, with a mean age of 46.5 ± 10.8 years and a mean BMI of 29.1 ± 6.2. Most patients were female (n = 22; 78.6%). Regarding smoking habits, 82.1% (n = 23) of the patients were non-smokers and 10.7% (n = 3) maintained active smoking. The tables attached show the comparative analysis of clinical, analytical and lung function variables before and after 6 months of treatment with Omalizumab.
Conclusions: After 6 months of treatment with Omalizumab there was a significant improvement in asthma control (assessed by ACT) and a decrease in chronic oral corticosteroid therapy, even allowing its suspension in three patients. There was also a decrease in peripheral eosinophils and an improvement in pulmonary function and FeNO (the latter without statistical significance). These data are in

agreement with what is described in the bibliography, validating their effectiveness in clinical practice.

Keywords: *Severe asthma. Omalizumab.*

PE 052. BIOLOGICAL CHANGE IN SEVERE ASTHMA. THE EXPERIENCE OF A PULMONOLOGY DEPARTMENT

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Introduction: There are several phenotypes described in severe asthma. Severe allergic asthma and severe eosinophilic asthma are distinct but often concomitant phenotypes. Severe allergic asthma is characterized by low age at diagnosis, high levels of serum immunoglobulin E (IgE) and high fractional exhaled nitric oxide (FeNO), allergen sensitization and eosinophilic inflammation. Severe eosinophilic asthma is characterized by later age at diagnosis, peripheral eosinophilia and frequent exacerbations.
Case reports: We present the four clinical cases of patients under omalizumab (anti-IgE antibody) who changed treatment to mepolizumab (anti-IL5), from the Severe Asthma appointment of CHUC Pulmonology Department's. These are 4 adult patients, 3 men and 1 woman, diagnosed with severe asthma requiring systemic corticosteroid therapy despite optimal inhaled therapy. Two patients diagnosed at childhood/teens, and 2 patients diagnosed at adult age. Three patients had allergen sensitization (all male) with high IgE values. Nasal polyposis and chronic rhinosinusitis were also present in 3 patients. All patients had peripheral blood eosinophilia. The 4 patients started omalizumab, 3 with formal indication (allergenic sensitization, frequent exacerbations and regular need for systemic corticosteroid therapy) and 1 off-label (marked clinical symptoms, frequent exacerbations and systemic corticosteroid therapy, although not allergenic). Although some patients presented clinical and functional improvement after introduction of omalizumab, all 4 patients discontinued omalizumab due to clinical worsening (maintenance of the need for systemic corticosteroid therapy, frequent exacerbations), respiratory function (FEV1 decrease) or both. All patients had eosinophilia and started mepolizumab after some time without any biological treatment (between 2 and 12 months). In the reassessment of 4-6 months (and one patient for one year) of mepolizumab treatment, there was improvement in the CARAT and ACT questionnaires (in all patients), and improved respiratory function in 3 patients (one patient is still awaiting reevaluation function after initiation of mepolizumab).
Discussion: Severe asthma phenotypes may co-exist, and sometimes it is difficult to elect the best biological treatment for each patient. Failure to achieve disease control with a biological medication should not prevent the switch to another monoclonal agent. Recently, information has emerged that simultaneous treatment with two biologics may be advantageous by acting on different but adjuvant pathophysiological mechanisms in disease control.

Keywords: *Omalizumab. Mepolizumab. Severe asthma.*

PE 053. EFFECT OF BIOLOGICAL THERAPY ON SEVERE ASTHMA PATIENTS

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Introduction: Patients with severe asthma, despite optimal therapy including bronchodilators and inhaled corticosteroids in full-dose and oral corticosteroid therapy, may exhibit severe symptoms, frequent exacerbations, and adverse effects of therapy with consequent increased morbidity and mortality.
Objectives: Evaluate the dose of oral corticosteroid therapy in patients with severe asthma before and after starting complementary biological drug therapy (omalizumab and mepolizumab).
Methods: Retrospective case study of patients on biological therapy in July 2019 at Hospital de Santa Marta.
Results: Eighteen patients were evaluated, of which 77.8% (n = 14) were female, with a mean age of 50.3 years old. Among these, 15 were under omalizumab and 3 under mepolizumab. 61.1% (n = 11) were found to be overweight and 38.9% (n = 7) were obese. The mean dose of oral corticosteroid therapy before treatment was 15.2 mg (n = 16) and after 12 months was 12.5 mg (n = 15). Decreased oral corticosteroid dose was observed in 60.0% (n = 9) of patients, of whom 55.5% (n = 4) were overweight. The number of hospitalizations for asthma exacerbations in the 12 months before and after initiation of therapy was also evaluated. The average number of hospitalizations before the beginning of biological therapy was 2.57 and 1.14 after. In cases with hospitalizations prior to initiation of treatment [38.9% (n = 7)], the number of hospitalizations decreased 85.7% (n = 6) within 12 months after (4 under omalizumab and 2 under mepolizumab). In cases without previous hospitalization, there was no record of hospitalizations in the following 12 months. Regarding pulmonary function, there was an increase of FEV1 by 50.0% (n = 8) and FEV1/FVC by 57.1% (n = 8), and a reduction of ITGV in 71.4% of the patients (n = 10). In addition, in patients in whom oral corticosteroid dose reduction was possible, FEV1 increased by 77.8% (n = 7). After initiation of biological therapy, eosinophilia reduced by 66.7% (n = 10), with a mean eosinophil count of 579 cells/µL prior to initiation of therapy and of 243 cells/µL after.
Case reports: In this group of patients, biological therapy was effective in reducing the dose of oral corticosteroid therapy and the number of hospitalizations for asthma exacerbations, as well as an improvement in respiratory function.

Keywords: *Asthma. Biological therapy. Oral corticosteroid.*

PE 054. THE IMPORTANCE OF CLINICAL SUSPICION IN THE DIAGNOSIS OF ACUTE PULMONARY EMBOLISM

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Introduction: Acute pulmonary embolism (PE) is defined as an obstruction of any branch of the pulmonary artery, and it is a major cause of mortality, morbidity and hospitalization in Europe. The clinical presentation is widely variable, and frequently the differential diagnoses are pneumonia, asthma, chronic obstructive pulmonary disease and pneumothorax. The most common symptoms are dyspnoea, pleuritic pain, syncope and haemoptysis. The Gold standard imaging exam for the diagnosis is angio-CT, but it may not be conclusive when the embolus is located at more peripheral arteries. Ventilation-perfusion pulmonary scintigraphy (V/Q) is indicated when there is a contraindication to the performance of the angio-CT or when it is not enlightening.
Case reports: A 32-year-old woman with history of congenital right aortic arch, allergic asthma and cylindrical bronchiectasis. During pulmonology consultation she reported tiredness for small efforts, with a few days of evolution. She had no notion of deterioration of basal respiratory symptoms such as cough, wheezing, thoracic oppression or dyspnoea. Without fever, sputum or recent history of infectious exacerbations. She denied palpitations, thoracalgia or syncope. The physical examination was normal. Because of the higher pro-thrombotic risk, it was performed a V/Q scintigraphy that revealed a small extension PE with a commitment of 14% of the overall pulmonary perfusion. She subsequently performed an Angio-TC that didn't present any signs of PE. However, due to the sustained symptoms, anticoagulant therapy was initiated. The patient presented significant clinical improvement, and perfusion recovery,

reassessed by scintigraphy after 6 months. A 71-year-old woman, with history of chronic lymphocytic leukaemia, that went to the emergency room with a 2 days evolution of productive cough of purulent sputum, pleuritic right thoracalgia and progressive dyspnoea. She had hypocapnia, partial respiratory insufficiency and D-dimers raise, so it was performed an angio-CT that excluded PE and showed a ground glass Glass pattern in both lungs, sparing the peri-hilar region. After complementary study, it was admitted an infectious pneumonitis and initiated antibiotic and corticotherapy. She underwent clinical and gasometric worsening, leading to the performance of a V/Q scintigraphy, which revealed a small bilateral EP compromising17% of pulmonary perfusion. The echo-doppler of the lower limbs showed a deep venous thrombosis of the left femoral vein. Anticoagulant therapy was initiated with clinical resolution.
Discussion: Pulmonary embolism can lead to death or cause chronic pulmonary impairment if not treated. Given the inspecificity of signs and symptoms, its presentation may be camouflaged by concomitant acute pulmonary conditions, such as respiratory infections, and may be mistaken for exacerbations or symptomatic poor control of baseline pathologies such as asthma. These cases also demonstrate the disagreement between the results of the V/Q scintigraphy and the CT angiography. Despite being the chosen test for the diagnosis of PE, it may present false negatives, highlighting the importance of clinical suspicion in the diagnostic algorithm.

Keywords: *Pulmonary embolism. Differential diagnosis. Ventilation-perfusion scintigraphym. Asthma.*

PE 055. CRITICAL ASTHMA SYNDROME: TWO CLINICAL CASES

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Introduction: Critical Asthma Syndrome (CAS) describes a severe acute deterioration of the asthmatic patient that may progress to respiratory failure and death. Most of these patients require admission to an Intensive Care Unit (ICU). We present two illustrative clinical cases.
Case reports: Case 1. 57-year-old woman diagnosed with allergic asthma (mite sensitization) since the age of 27, with sporadic exacerbations related to respiratory infections and no previous history of severe exacerbations, medicated with salbutamol in SOS. She is a former smoker of 20 pack year for 10 years. She presented with productive cough, myalgias and arthralgias for 12 days, which partially improved after azithromycin. Recurrence on the 9th day, she started levofloxacin without improvement and worsening with dyspnea, feeling of chest oppression and "imminent death". She visited the Emergency Department (ED) presenting with tachypnea, tachycardia, use of accessory thoracic muscles, marked bronchospasm and partial respiratory failure (P/F 180). Analytically she presented a slight elevation of inflammatory parameters; chest radiography without relevant changes. She started bronchodilator therapy, high-dose ev corticotherapy and magnesium sulfate. She was admitted to the medicine department but due to clinical worsening she was transferred to ICU. We optimized bronchodilator therapy and oxygen therapy, and maintained levofloxacin and corticotherapy at a high dose. Slow but sustained improvement of clinical, analytical and blood gas parameters were observed. Influenza virus screening, blood cultures and bacteriological examination of sputum were negative. The patient was discharged after 6 days, with weaning corticosteroid therapy and the remaining supportive therapy. Case 2. 23-year-old woman without known diagnosis of asthma, with unquantified smoking and active toxicophilic (cannabinoid) habits. She presented with mucopurulent productive cough, dyspnea, wheezing, chest tightness and fever for 3 days, which motivated a visit to the ED. The first evaluation revealed dyspnea, wheezing, use of accessory thoracic muscles and marked bronchospasm, with partial respiratory failure (P/F 62.5). She was admitted to the hospital but requested to be discharged on the next day. She returned to the ED a day later for worsening of symptoms. Analytically she presented a slight elevation of inflammatory parameters; chest radiography revealed a heterogeneous infiltrate in the left pulmonary base. Due to increased oxygenation need and eventual indication for invasive ventilation, she was admitted to our ICU. We maintained bronchodilator therapy, high-dose corticosteroid therapy, and started antibiotic therapy with amoxicillin/clavulanic acid and azithromycin as well as respiratory functional rehabilitation to help in the elimination of secretions. The patient showed progressive clinical, analytical and blood gas improvement. Bacteriological examination of sputum, blood cultures, urine antigens, influenza virus screening, Mycoplasma and Chlamydia serology were all negative. She was transferred to the Respiratory Ward after 5 days at the ICU.
Discussion: In the initial approach to CAS, it is essential to be alert to the unpredictability of clinical evolution, requiring inhaled bronchodilator therapy and systemic corticosteroid therapy at high doses. Patients refractory to initial therapy often develop respiratory failure and should be rapidly transferred to an ICU to ensure continuous monitoring, high inhaled oxygen concentrations and noninvasive or invasive ventilation when warranted.

Keywords: *Critical asthma. Respiratory failure. Respiratory intensive care.*

PE 056. BAD LUCK NEVER WALKS ALONE

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Introduction: Irritant-induced asthma (IIA) results from exposure to one or more airways irritant products. This leads to the development of respiratory symptoms. Reactive airways dysfunction syndrome (RADS) is the development of respiratory symptoms beginning in minutes or hours after a single exposure to chemical substances on high environmental concentration in patients with no previous respiratory medical history. Pulmonary function testing may or may not show airflow obstruction. Afterwards asthmatic symptoms and airway hyperresponsiveness may become persistent overtime. Therefore the term RADS means acute onset IIA.
Case report: We report a 27-year-old female patient, with no smoking habits and working as physiotherapist at a rehabilitation medical centre. There was no known medical or allergic past history. On a water aerobics session, she was accidentally exposed to high chlorine calcium concentration on the water. This event led to an episode of intense shortness of breath, wheezing and desaturation. Supplemental oxygen and bronchodilator urgent therapy was needed. By this time she was started on inhaled corticosteroids and an inhaled long-acting bronchodilator and was referenced for respiratory rehabilitation after a Pulmonology consultation where the patient complained about dyspnea and general weakness after she restarted to work. Pulmonary function testing and computed tomography were performed – no relevant data was found. The therapy was stopped and, on a subsequent appointment, she revealed a discrete although permanent symptoms improvement. Thus normal daily living was recommended. Then again she was exposed to naphtha while she was at work. A new shortness of breath and wheezing episode took place. On an emergent pulmonology consultation bilateral wheezing on pulmonary auscultation were de-

scribed. Inhaled and systemic corticosteroids therapies were started. On the reassessment, complaints of nocturnal wheezing and dyspnea episodes were registered along with rhinitis symptoms. A pulmonary function testing revaluation was performed and a mild airflow obstructive pattern was found. Bronchodilator test was positive. According to this, patient was started on budesonide/formoterol, montelukast, cetirizine and nasal momethasone. For a second time respiratory rehabilitation program was started and clinical and functional improvement was achieved. Meanwhile, the patient got pregnant and as she presented with uncontrolled asthma, a therapeutic review was required and the need for higher doses was accomplished. After delivery we attained symptom control.
Discussion: This clinical report reveals a presentation of RADS after single exposure to high chlorine calcium concentration and second exposure to a petroleum derivative which resulted on persistent respiratory symptoms and chronic treatment. Therefore, we conclude that IIA may have its beginning on single episodes of intense exposure to chemical components and the initial development of RADS.

Keywords: *Asthma. Irritant-induced asthma. RADS. Irritant.*

PE 057. CLINICAL RELEVANCE OF TH2 AND NON-TH2 PHENOTYPES FOR LATE-ONSET ASTHMA

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Introduction: Adult-onset or Late-onset asthma (LOA) has increased in recent years due to population aging. Its diagnosis is often delayed, which may account for poorer outcomes. To manage the disease effectively and because treatment options may differ, it is important for clinicians to distinguish among the clinical phenotypes Th2 and Non-Th2.
Objectives: Characterize Th2 and non-Th2 clusters of LOA patients from our outpatient asthma clinic and compare pulmonary function and frequency of exacerbations these groups.
Methods: We retrospectively collected clinical, functional and laboratorial data from all adult asthmatic patients undergoing follow-up at our asthma clinics between June and September 2016. We defined LOA as onset of asthma symptoms after 18 years old. Pregnant women, as well as patients diagnosed with asthma/COPD overlap, granulomatosis with poliangeiitis, ABPA and those under diagnostic work-up were excluded from our study. We defined LOA when symptom onset occurred after 18 years old. Th2 phenotype was assumed when patients showed evidence of Th2-mediated inflammation, defined as either an elevated peripheral eosinophil count (≥ 150 Eo/uL) or evidence of eosinophilic airway inflammation with FeNO ≥ 25 ppb. IBM SPSS v.25 was used to data statistical analysis.
Results: We included 122 patients with LOA, mainly women (n = 108 (88.7%)), mean age of 54.94 ± 12.73. Thirteen patients were excluded from cluster analysis due to lack of data. Th2 cluster (n = 90) and non-Th2 cluster (n = 19). Th2 phenotype patients showed lower body mass index and higher prevalence of rhinosinusitis. We also noticed a trend towards lower age at symptoms onset and lower frequency of air trapping in Th2 phenotype patients. The two phenotypes did not showed differences concerning lung function parameters. In non-Th2 cluster, none of the individuals have suffered exacerbations during the previous year. Yet, the frequency of exacerbations and the prevalence of severe asthma were similar between groups.
Conclusions: As previously described, Th2 phenotype for LOA is commonly associated to rhinosinusitis and non-Th2 phenotype is more frequently associated with obesity. Interestingly, we found a trend towards higher frequency of airtrapping in non-Th2 LOA patients, although not statistically significant. We would expect Th2 phenotype to be more associated with poorer lung function and higher prevalence of severe asthma. Even so, for our sample, both Th2 and non-Th2 LOA phenotypes showed relatively preserved and homogenous lung function, frequency of exacerbations and prevalence of severe asthma. The reduced sample size of non-Th2 LOA patients is doubtless a major limitation in this work, conditioning statistical significance.

Keywords: *Late onset asthma. Asthma phenotypes. Th2. Clinical features.*

PE 058. ASTHMA AND BLOOD EOSINOPHILIA: A VIEW BEYOND ASTHMA

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Introduction: Eosinophilic granulomatosis with polyangiitis is defined by an eosinophil-rich granulomatous inflammation that often involves the respiratory tract in the form of necrotizing vasculitis of small to medium vessels. In this rare autoimmune disease, associated asthma is classically severe and cortically dependent, preceding the onset of the vasculitic phase in the natural history of the disease. Currently, a diagnostic challenge remains, particularly during the eosinophilic phase of the disease, by the existence of other rare entities with common pathophysiology regarding eosinophil-mediated inflammation.
Case report: A 69-year-old man diagnosed with non-stratified obstructive ventilatory syndrome, non-smoker, receiving budesonide + formoterol two puffs twice daily for about 3 years, but noncompliant. During the last, he came several times to the ER due to bronchospasm attacks resolved after symptomatic therapy with short systemic corticoids regimens. In June 2019, new episode of acute dyspnea on small exertion, bilaterally diffuse whizzing on auscultation and analytically peripheral eosinophilia (25.1% eosinophils, 2,410 cells/L), with no further changes in blood count. Patient denied fever, asthenia, anorexia, myoarthralgia, chest or abdominal pain, de novo skin or sensory changes, drug or toxin use. No images of parenchymal condensation on chest radiograph. Given the clinical context, we conducted a directed etiological study: VS 19 mm/h; normal vitamin B12; Increased IgE (257 U/L); negative ANAs, rheumatoid factor and ANCA; HIV negative; stool's parasitological examination negative; IgE, IgG, precipitin and sputum culture for Aspergillus fumigatus were negative. HRCT: "Areas of densification in ground glass mainly at the superior poles, peripherally. Thickening of the bronchial walls and centrilobular nodules more evident in the lower lobes. No areas of pulmonary condensation. Aspects suggestive of pulmonary eosinophilic infiltration." Sinus CT: "Signs of sinusitis and/or bilateral, sphenoid and ethmoid maxillary polyposis. Hypertrophy of the lining of the inferior nasal turbinate. Filling of the maxillary ostia and frontoethmoidal recesses. Right septal deviation". Novel spirometry confirmed severe obstructive ventilatory change with positive bronchodilation test and FeNO 70. No bronchoscopy with BAL or lung biopsy were performed.
Discussion: Despite diagnostic limitations due to the absence of BFC with BAL and lung biopsy, diagnoses such as neoplasia, helminth infection, iatrogeny, ABPA or chronic eosinophilic pneumonia were excluded. Differential diagnosis with the latter entity is particularly challenging due to the existence of common diagnostic criteria. However, given the presence of 4 out of 6 ACR/EULAR criteria: asthma, peripheral eosinophilia > 10%, pulmonary infiltrates and parasinusal abnormalities, we assumed an eosinophilic granulomatosis with polyangiitis ANCA -, without multiorganic disease stigma (FFS 1), and with indication for prednisolone 1 mg/kg/day for a

month. After induction therapy, the patient showed clinical and analytical improvement (2.1% eosinophils, 250 cells/L), maintaining clinical stability during the current tapering period. In the ANCA-patient subgroup, which comprises about 60% of individuals with EGPA, the advantage of using mepolizumab as a steroid-sparing therapy has already been demonstrated.

***Keywords**: Asthma. Eosinophilia. Lung. Eosinophilic granulomatosis with polyangiitis. Vasculitis. ANCA.*

PE 059. RELATIONSHIP BETWEEN INHALER TECHNIQUE, LITERACY AND ASTHMA CONTROL IN ANGOLAN ADULT

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Introduction: The aim of the treatment of asthma is to get and keep control of symptoms of the disease, with the use inhaler medication which is fundamental in acute episodes, as in maintenance treatment. The incorrect use of inhalation devices is associated to low drug bronchial deposition and can contribute to the poor disease control. The aim of this study was to evaluate the inhalation technique errors and your relationship with the asthma knowledge and asthma control in asthmatics, followed up at pulmonology outpatient clinics in Luanda.
Methods: Cross-sectional study, performed at Military Hospital, from April 2018 to March 2019, with ≥ 18 year-old patients, followed up at pulmonology outpatient clinics for asthma. Asthma control was assessed in accordance with GINA (Global Initiative for Asthma) criteria, we used a standardized questionnaire that included questions about socio-demographic data and questions related to asthma and a check list on an inhalation technique errors observed during the demonstration of the use of inhalers by patients. Asthmatic patients with previous pulmonary tuberculosis or Chronic Obstructive Pulmonary Disease (COPD) were excluded. Data were analysed using SPSS Statistics v25.0, through univariate and multivariate analysis.
Results: The sample consisted of 305 asthmatic patients [mean age 41.3, median 41.0 (18 to 86) years], 56.1% female. Of these 28.2% had controlled asthma, 36.4% partially controlled and 35.4% uncontrolled, without significant differences between sexes, age, Body Mass Index (BMI) and asthma knowledge. Patients without literary qualifications (5.5%) had worse asthma control, while patients with I to III GRAFFAR classification (55.0%) had better control. About 64% of patients used some type of inhaler, the most commonly used were pMDIs (pressurized metered dose inhalers) and turbuhaler device, DPI (dry powder inhalers). Only 39.0% of patients used controller medication but irregularly and 53.1% only used rescue medication. Most patients (94.3%) replied that he had inhaler training by the attending physician (67.8%) or by the nurse (24%); however, only 21.3% of them stated that they had regular verification of the technique. The inhaler technique in pMDIs and in DPIs, was incorrect in 65.7% and 54.4%, respectively. The main major errors observed were related to inadequate preparation (empty device, out of expiration date, failure to shake the inhaler and failure to load the DPI device or start pMDI) in 64.9% of patients, failure to hold the breath for 10 seconds (18%) and inadequate inspiratory technique (4.6%). The main minor errors were failure to discard air before inhalation (89.7%), failure to tilt the head backwards (58.6%) and failure to expire slowly with half-closed lips (5.2%). The frequent use of pMDIs was associated with non asthma control and the use of DPIs for better asthma control.
Conclusions: Most Angolan asthmatics in Luanda have their asthma partially controlled or uncontrolled, with incorrect inhalation technique related to the non asthma control.

***Keywords**: Inhaler technique. Asthma. Angolan adults.*

PE 060. RESPIRATORY ARREST AFTER WHEAT FLOUR EXPOSURE: RARE PRESENTATION OF A COMMON DISORDER

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Introduction: Baker's asthma is one of the most common forms of occupational disease in developed countries, generating a high socioeconomic burden. The onset of bronchoconstriction symptoms months or years after the beginning of exposure to baking flour is the most common form of disease presentation. The inaugural episode responds to conventional therapy in most cases. Nevertheless, the authors describe a clinical case in which bronchospasm severity required orotracheal intubation.
Case report: A 21-years-old female, non-smoker, with a past of left nephroblastoma excised at 2, was working at a bakery shop since 6 months ago, with continuous exposure to wheat flour powder. She came to the emergency department for acute dyspnea and wheezing one hour after the start of her bakery shift. On physical examination with tachypnea, bilateral decreased of vesicular murmur and wheezing. Arterial blood gas had no evidence of respiratory failure (pH 7.417; pO2 99.9 mmHg; pCO2 35.3 mmHg; bicarbonates 22.7 mmol/L) or hyperlacticaemia. There was no evidence of inflammatory parameters elevation or eosinophilia. Rhinoviruses where isolated in nasopharyngeal secretions. Chest X-ray presented signs of hyperinflation. Ipratropium/salbutamol nebulization, as well as intravenous methylprednisolone 125 mg and intravenous 2 g magnesium sulfate were initiated with no clinical response. Patient status evolved to stridor and ventilatory failure requiring orotracheal intubation under videolaryngoscopy, with no evidence of obstruction or edema. She was admitted to the intensive care unit and extubated after 48h still under systemic corticotherapy, with no complications. She was then transferred to the general ward and undergone respiratory kinesiotherapy, progressive weaning from systemic corticosteroid therapy and initiation of inhaled bronchodilator therapy (budesonide/formoterol) with verification of inhalation technique. Additional research study with negative IgE and phadiatop and slight decrease of C4, with no other complement or immunological study changes. No alterations were detected on chest, neck and rhinolaryngeal computed tomography. The patient was observed by otorhinolaryngology excluding vocal cord dysfunction or pharyngolaryngeal neoformations. At the time of discharge, asymptomatic and without any changes on objective exam. The patient decided to leave work at the bakery following this event. Spirometry and nonspecific inhalation challenge test performed in stable phase and under inhalation therapy, 7 weeks after admission, without major changes. The patient remained asymptomatic during the follow-up period. Inhalated therapy was stepped down, with no symptoms recurrence.
Discussion: When clinical suspicion is high, baker's asthma should be treated empirically, especially in the presence of a life-threatening acute crisis. Early recognition and subsequent removal of exposure are the best predictor of a favorable prognosis. The bronchial hyperreactivity phenomena of an occupational asthma may resolve after the avoidance of occupational exposure, making the definitive diagnosis challenging. In these cases, when the causal relationship is unclear and the therapeutic strategy is dependent on

the definitive diagnosis, a specific bronchial challenge for these allergens may ultimately be necessary.

Keywords: *Asthma. Occupational. Baker's asthma. Respiratory arrest.*

PE 061. DIFFERENTIAL DIAGNOSIS OF PRIMITIVE TUMOR VS METASTASIS

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Introduction: Pulmonary metastasis is seen in 20-54% of extrathoracic malignancies. Lungs are the second most frequent site of metastases from extrathoracic malignancies. In face of lesions that raise doubts as to whether they correspond to second primary tumors or metastases, biopsy plays a fundamental role for histological characterization and correct diagnosis. Additionally, immunohistochemistry (IHC) plays a complementary role in the differentiation of benign and malignant lesions, identification of cell type, degree of tumor differentiation and origin of metastasis/primary tumor determination.
Case report: The authors bring the case of a 49-year-old female patient, smoker with a smoking load of 30 PY, with a diagnosis of schizophrenia. After episode of right upper lobe pneumonia (RUL) having undergone antibiotic therapy with clinical and analytical improvement. However, due to persistence of right atelectasis in chest X-ray, underwent a videobronchofibroscopy that revealed a complete occlusion of the right upper lobar bronchus by infiltrated mucosa. Bronchial biopsies were positive for poorly differentiated non-small cell carcinoma with IHC positive for CK7, CK8/18 and negative for TTF1, p40, CK5, CD56, napsin A and PAX8. Staging thoracoabdominopelvic CT scan has documented collapse of the RUL by central lesion with dimensions of approximately 8.3 × 4.5 cm with right upper paratracheal adenopathy and 10 mm nodule in the external segment of the left lower lobe (LLL). PET scan revealed a large area of pulmonary parenchymal condensation in a central topography of the right lung with an SUV of 20.4; a 10 mm right upper paratracheal adenopathy with SUV 8.3 and a nodular image of 9 mm in LLL with SUV 1.6. Additionally, it revealed hypermetabolic uptake adjacent to the pancreas tail with SUV 6.9 and those alteration suggests malignancy. The case was discussed at a multidisciplinary team meeting and given the various hypotheses of pancreatic lesion etiology (primary tumor/metastasis/inflammation) and considering the expected difficulty of approaching the lesion by invasive gastroenterology techniques, the patient underwent distal pancreatectomy. Anatomopathological examination of the surgical specimen revealed a moderately differentiated ductal adenocarcinoma, with IHC positive for CK7, CK19, S100P, IMP3 and negative for CK20, napsin, TTF1 and GATA 3, favoring the pancreatic origin of the tumor. The lung biopsy slides were reviewed and the IHQ study with CK19, IMP3 and S100p was found to be positive and it was concluded that the lung lesion corresponded to a metastasis of the pancreatic carcinoma. The patient was referred to Medical Oncology with the diagnosis of Stage IV Pancreatic Adenocarcinoma and started chemotherapy with gemcitbine + NAB-placlitaxel. Response evaluation after three cycles of chemotherapy revealed partial response with reduced lung lesion size and partial RUL re-expansion.
Discussion: The present case is a diagnostic challenge due to its presentation with non-typical symptoms of pancreatic carcinoma and the early sites of distant metastasis, highlighting the central role of biopsy for the correct diagnosis and subsequent therapeutic orientation.

Keywords: *Primary tumor. Metastases. Immunohistochemistry.*

PE 062. HYPERTROPHIC PULMONARY OSTEOARTHROPATY WITH PRIMARY LUNG CANCER: A CASE REPORT AND LITERATURE REVIEW

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Introduction: Hypertrophic pulmonary osteoarthropathy (HPOA), also known as the Pierre Marie-Bamberger syndrome, is a rare paraneoplastic syndrome that most commonly occurs secondary to lung cancer. HPOA occurs in 1-5% of all patients with non-small cell lung cancer (NSCLC). The usual clinical presentation is painful, swollen joints, digital clubbing, and pain in tubular bones. Periostitis is the hallmark of HPOA and can be revealed on whole- body bone scintigraphy (WBBS), being the typical scintigraphic presentation a diffuse, symmetrically increased uptake in the diaphysis and metaphysis of tubular bones, with a distinctive double stripe or parallel track sign.
Case report: The authors did a literature review of HPOA and present a case report of a 37-year-old woman without any significant past medical history, non- smoker. In June 2018 she presented with complaints of bilateral tibial tenderness and swelling painful knees bilaterally, and a month after, progressive weakness, dyspnea and hemoptysis. It was performed a chest-CT that revealed a lung mass (measuring 11.3 cm) located on right superior lobe with intense F-FDG uptake on 18F-FDG PET-CT (SUVmax = 18.5) and also on vertebral body of D11 and posterior portion of right iliac bone. It was performed a bronchoscopy that revealed an endobronquial tumour at the level of anterior segment of right main bronchus, being the biopsy diagnostic of adenocarcinoma. Bone scintigraphy showed an increased uptake on D11 and a heterogeneous increased uptake bilaterally on the cortical of femur and tibia, suggestive of hypertrophic osteoarthropaty. Molecular testing revealed an EGFR positive adenocarcinoma stage IV, so it was started targeted therapy with Erlotinib. WBBS showed an improvement following the first 6 months of treatment, with reduction of the signs of periostitis.
Discussion: Authors reported this case to draw attention to a rare paraneoplastic syndrome associated with lung cancer. To the best of our knowledge, few studies have investigated the incidence of HPOA and the clinical characteristics of patients with lung cancer and HPOA.

Keywords: *Hypertrophic pulmonary osteoarthropathy. Paraneoplastic. Lung cancer.*

PE 063. SAFETY OF COMPUTED TOMOGRAPHY GUIDED LUNG BIOPSY AND PREDICTIVE FACTORS OF COMPLICATION

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Introduction: CT guided transthoracic lung biopsy (CT-TTLB) is an established diagnostic procedure for pulmonary lesions. It has high diagnostic yield, but published data show frequent complications, namely pneumothorax.
Objectives: To evaluate the safety of CT-TTLB and identify predictive factors of complication.
Methods: Retrospective review of CT-TTLB performed at a hospital dedicated to thoracic pathology from February 2013 to January 2019. Data regarding demographics, lesion features, procedure and complications were collected. Factors associated with complication on univariate analysis were evaluated in multiple logistic regression analysis to identify independent risk factors (IRF).
Results: During 6 years, 503 patients underwent CT-TTLB. The majority of patients (72%) were male, with a mean age of 66.6 years. An 18G needle was used in the majority of procedures. Complication rate was 39.8%, with major complications being rare. Pneumothorax

rate was 22.7%, but requirement for chest tube drainage was low (1.2%). Alveolar hemorrhage (HA) was identified in 23.1%, mostly mild (95.4% of cases). 6.6% of patients presented hemoptysis. There was no procedure related mortality. IRF for overall complications were smaller size ($p < 0.001$), spiculated margin ($p = 0.032$) and fissure proximity ($p = 0.003$). Smaller size ($p = 0.006$), fissure proximity ($p = 0.018$) and marked emphysema ($p = 0.02$) were IRF for pneumothorax. Smaller size ($p < 0.001$), absence of pleural contact ($p = 0.001$) and central location ($p = 0.031$) were IRF for HA. Smaller size ($p = 0.01$) was an IRF for hemoptysis.
Conclusions: CT-TTLB is a safe procedure, rarely associated with relevant morbidity, despite frequent minor complications. Lesion size and location, margin characteristics, pleural contact and pulmonary emphysema are the main predictors of complication in our experience.

Keywords: *Lung biopsy. Computed tomography.*

PE 064. ANGIOLYMPHOID HYPERPLASIA WITH EOSINOPHILIA (ALHE): A COMPLEX BUT HARMLESS NAME?

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Introduction: Angiolymphoid hyperplasia with eosinophilia (ALHE), also named epithelioid hemangioma, is an uncommon benign vascular tumor characterized by well formed but often immature vessels and by the proliferation of epithelioid endothelial cells with prominent lymphocityc and eosynophilic infiltration. The majority of the ALHE lesions affect the subcutaneous tissue of the head and neck. Reported cases of the pulmonary involvement are extremely rare. Due to the scarcity of published cases, no ideal treatment is defined.
Case report: A 59-year-old Caucasian man, current smoker (CT 48 UMA) and former drug addict had performed a Thoracic computed tomography (CT) that revealed "left peripheral pulmonary mass with 4 cm (...) bilateral diffuse emphysema (...)". For that reason he was referred to our hospital. He presented a 2-3 months history of weight loss, asthenia and exertion dyspnea. Blood tests revealed eosinophilia (540), a normal Total IgE are normal (22.9 U/ml) and negative serologies. PET-CT revealed mild pulmonary radiopharmaceutical uptak, of an undetermined nature, that led to a Transthoracic Biopsy revealing "Histological picture suggestive of Angiolymphoid Hyperplasia with Eosinophilia, although it is not a complete decision in parasitic". The fiberoptic bronchoscopy was normal and the bronchoalveolar lavage showed negative neoplastic cells as well as negative microbiological exams. He did a parasitological examination of his feces, that were also negative, excluding parasitic infection. Given the rarity of pulmonary involvement by ALHE, and to assess the possibility of surgical resection of the mass, he performed a Respiratory Functional Study with severe obstruction (FEV1 post-bronchodilation 48%) and moderate decrease in diffusing capacity of lung for carbon monoxide (DLCO, DLCO/VA-44%) and the case was discussed with Thoracic Surgery that accepted him for surgery after integration into a pre-operative rehabilitation program.
Discussion: We report one rare case study of pulmonary involvement by ALHE, a diagnosis that must be added to the large list of differential diagnoses of lung nodules, also extending the spectrum of vascular and lymphoid lesions that can occur within the lung. To the best of our knowledge, there are only four published cases describing the pulmonary involvement by ALHE and that's why we believe that, even smaller number of cases or individual experiences of pulmonary involvement by ALHE are important to improve our understanding and management of this rare entity.

Keywords: *Pulmonary involvement by angiolymphoid hyperplasia with eosinophilia. Epithelioid hemangioma. Vascular tumour.*

PE 065. LUNG CANCER AND PULMONARY TUBERCULOSIS: A SOLE LESION, TWO DIAGNOSIS

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Introduction: The association between lung cancer and pulmonary tuberculosis is well known and has been reported in recent studies. It occurs in only 2% of lung cancer patients, more often in squamous cell carcinoma and typically in the upper lobes.
Case report: 87 year-old male, current smoker, with previous history of COPD and pulmonary tuberculosis, diagnosed in 2006 and treated with first-line tuberculostatic agents. The patient was referred to our department in February 2019 by his family physician due to a six months evolution left pleuritic chest pain irradiating to the back – with no further complaints – and imaging findings in a chest CT performed last year showing extensive lesion with calcifications and cavitated areas in the posterior region of the apicoposterior segment of the left upper lobe (LUL), conditioning significant parietal thickening and extensive lytic lesion of at least one adjacent rib. Sputum was collected for examination: acid-fast bacilli (AFB) smear revealed 1-9 AFB/100 fields and nucleic acid amplification test of M. tuberculosis DNA was positive. Tuberculostatic therapy with Isoniazid, Rifampin, Pyrazinamide and Ethambutol was initiated. Repeated chest CT showed a massive cavitated lesion in the LUL with partial invasion and destruction of the 2nd and 3rd dorsal vertebrae, the posterior arch of the 2nd and 3rd ribs and invasion of the left subscapularis muscle; secondary pulmonary nodules of the left lung; no lymphadenopathies. Bronchoscopy showed no significant findings and no malignant cells were found in the bronchial aspirate. Ultrasound-guided transthoracic needle biopsy was performed, presenting histological features compatible with non-small cell lung carcinoma, still pending complementary immunohistochemical testing.
Discussion: The authors intend to present a rare case of association between lung cancer and pulmonary tuberculosis. The causal relationship between them remains unclear: the most consensual hypothesis relates lung cancer development with chronic inflammation, structural changes in the bronchial tree and epithelial metaplasia of old tuberculosis lesions (scar carcinoma). On the other hand, lung cancer might play a role triggering the reactivation of old lesions of pulmonary tuberculosis.

Keywords: *Lung cancer. Tuberculosis.*

PE 066. BLACK BRONCHOFIBROSCOPY: A CASE REPORT

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Introduction: The presence of black pigmentation in the bronchial tree is not a rare occurrence and could be translated as infectious process, environmental exposures, iatrogeny and neoplastic causes.
Case report: A 54-year-old, non-smoking woman with a history of malignant melanoma in the left axilla who underwent surgical treatment with ganglion dissection six years before. She developed dry cough, asthenia and dyspnea on exertion (mMRC 1), with about 1 month of evolution. In addition, she mentioned neck pain with painful right supraclavicular adenopathy. She denied fever or other constitutional symptoms. After a chest X-ray showing hypotransparency in the right upper hemithorax, she was empirically medicated for community-acquired pneumonia with ceftriaxone and azithromycin, which was completed without clinical or imaging improvement. On admission to the emergency department, the patient was sub-febrile (37.7 ºC), with decreased vesicular murmur in the right upper lung and right supra-clavicular adenopathy of hard consistency, adhering to the deep planes. Laboratory data presented ane-

mia (Hb 12.4 g/dL), PCR 14mg/dL and pro-calcitonin 0.05 ng/mL. Given the personal history and unfavorable radiological evolution, the patient underwent CT-scan showing: a massive right upper lobe neoformation, with 9 × 12 cm and invasion of the right upper lobe bronchus (RULB) and the right pulmonary artery, causing extrinsic compression of the brachiocephalic trunk; multiple contralateral nodular lesions; exuberant mediastinal, hilar, supraclavicular and axillary adenopathies, and right pleural effusion of moderate volume. Bronchofibroscopy revealed black infiltrating and petria mass, causing almost complete occlusion of the RULB entrance, not allowing distal progression (photo). Bronchial biopsies and brushing of the described lesion were performed and pathological results were compatible with pulmonary metastasis of melanoma (Melan-A and HMB45 expression). The patient progressed unfavorably with worsening dyspnea, facial and cervical edema as a result of extensive tumoral occlusion of the brachiocephalic trunk. The patients was referred for emergent palliative radiotherapy, but died 1 month after the onset of the symptoms.
Discussion: Malignant melanoma is the cutaneous neoplasia with the highest mortality rate and potential for distant dissemination, and the lung is one of the most common metastasis sites, right after the ganglia. Pulmonary metastasis of melanoma is often asymptomatic but this condition is associated with a poor prognosis. This case illustrates the aggressiveness of melanoma even after a long period free of disease, so any new symptomatology requires a targeted investigation for tumor recurrence.

Keywords: *Malignant melanoma. Lung mass. Metastasis.*

PE 067. GIANT SOLITARY FIBROUS TUMOR: CASE REPORT

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Introduction: Solitary fibrous tumor is a rare neoplasm, originated from mesenchymal tissue with fibroblast differentiation. Its incidence is estimated to be around 2.8 cases per 100,000 hospitalizations. This tumor commonly involves the pleura, peritoneum, meninges or lower extremities but it can occur in any part of the body. Malignant forms are histologically defined as hypercellular, mitotically active (> 4 mitoses/10 high power field (HPF)), cellular atypia, presence of necrosis and/or infiltrative margins. Around 10 to 20% of the cases described in the literature are malignant. Surgery is the first line treatment in cases of local disease and 10-year survival rates are reported to be between 54% and 89%.
Case report: The authors report a case of a 60-year-old woman, active smoker, with previous diagnosis of COPD with emphysema, mitral valve prolapse, post-thyroidectomy status (macro nodular and microfollicular hyperplasia). The patient turned to her general practitioner, reporting a history of recurrent respiratory infections over the last six months, dyspnea, productive cough and significant weight loss (8 kg in one year). A chest X-ray was performed showing an opacity located to the lower half of the left hemithorax. The computed tomography (CT) revealed a solid vascularized mass, with 21 cm long axis, containing calcifications inside, contacting the left border of the mediastinum and involving the pulmonary artery. The mass conditioned contralateral deviation of the mediastinum and complete collapse of the left lower lobe. The patient was referenced for the pulmonology department and in this setting she was hospitalized for further clinical investigation. On admission, she had partial respiratory failure and in objective examination digital clubbing was evidenced. CT-guided transthoracic biopsies were performed and the results were compatible with myofibroblast tumor. The PET-scan confirmed the presence of a single lesion with SUV of 3.1. The patient was submitted to surgery with giant pleural tumor block excision and left inferior lobectomy by thoracotomy. The postoperative period was prolonged especially due to the need of re-intervention for hemostasis. After this, clinical evolution was favorable for the remaining hospitalization. The result of the pathological anatomy was compatible with a pleural solitary fibrous tumor with uncertain incident biological behavior: mitotically poorly active (2 mitoses/10HPF), but presence of necrosis and hypercellularity. The patient maintains clinical and imaging surveillance, with no signs of local recurrence or distant metastasis after one-year follow-up.
Discussion: This case shows the exuberance of the presentation of this type of slow growing tumors with onset of symptoms in later stages of the disease. On the other hand, it reflects the difficulty that sometimes exists in clinical practice to distinguish benign from malignant disease using histological criteria. Surgery is the first-line treatment. The patient had a good clinical evolution with no signs of relapse after one-year follow-up.

Keywords: *Pleural tumors. Solitary fibrous tumor.*

PE 068. MULTIPLE LUNG NODULES: AN UNEXPECTED DIAGNOSIS

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Introduction: Differential diagnosis of multiple lung nodules may be challenging. The main diagnostic hypothesis to be considered are primary lung cancer with bilateral metastasis, secondary lesions from an extra-thoracic tumour and interstitial lung disease. Very often, a lung biopsy is mandatory to get the final diagnosis.
Case report: 81-year-old male patient, non-smoker, former worker of the sawmill industry and agriculture, with clinical history of type 2 diabetes, arterial hypertension, dyslipidemia and deep vein thrombosis. The patient searched medical assistance due to dyspnea, dry cough, anorexia, weight loss (unquantified) for the past month. He referred no fever. Objective clinical examination was normal. As such, he performed chest-computed tomography (CT) which showed multiple nodular formations spread through the lung parenchyma, the larger ones on the right inferior lobe (RIL) with 30 mm and irregular borders and on the left inferior lobe (LIL) with 24 mm and irregular borders- suggestive of pulmonary metastasis, though primary lung tumour may not be excluded. The patient was then referred to the Pneumology department for complementary study. He performed arterial gasometry with hypoxemic respiratory insufficiency and plethysmography with an increase on airway resistance. The patient also performed bronchofibroscopy with no endobronchial lesions (microbiological studies were negative; bronchoalveolar lavage, bronchial aspirate and bronchial biopsies showed no cancer cells); positron emission tomography-CT (PET-TC) showed, spread through the lung parenchyma, multiple nodular formations of varied dimensions, the larger ones on the LIL (with 34 × 22 mm and SUVmax 3.1), right superior lobe (with 25 × 21 mm and SUVmax 2.2) e RIL (with 31 × 24 mm and SUVmax 1.6), as well as multiple mediastinal lymphadenopathies, and any other organ lesions; CT-guided transthoracic biopsy of the LIL pulmonary mass showed amorph eosinophilic material with green-apple refringence on Congo-red coloration, compatible with amyloid substance, with no cancer cells. CT-guided transthoracic biopsy was repeated with similar histologic result. The patient was submitted to surgical resection of the RIL mass which presented amorph eosinophilic material and amyloid substance, compatible with nodular amyloidosis. The patient was referred to the Haematology department, in order to study any possible lymphoproliferative underling condition. He keeps follow-up consultations on the Pneumology department.
Discussion: Pulmonary amyloidosis is a rare disease that is caused by deposition of amyloid microfibril material in the lung parenchyma. Amyloidosis can be systemic or localised ad it affects the

lung in three different forms: nodular pulmonary amyloidosis, diffuse alveolar-septal amyloidosis and tracheobronchial amyloidosis. The authors present a clinical case of Nodular Pulmonary Amyloidosis. The exclusion of metastatic and primary lung disease is pertinent and, after histologic confirmation of amyloidosis, study for possible underling condition should be performed - inflammatory conditions, such as Sjögren's disease, as well as lymphoproliferative disorders, like lymphoma, MALT lymphoma (mucosa-associated lymphoid tissue) and multiple myeloma. The preferable treatment is surgical resection of lung nodules, which is not feasible on this specific case due to multiple lung nodules.

Keywords: *Amiloidosis. Nodule.*

PE 069. PREDICTIVE FACTORS FOR IATROGENIC PNEUMOTHORAX AFTER CT-GUIDED PERCUTANEOUS CHEST BIOPSY

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Introduction: CT-guided transthoracic core-needle biopsy has been shown to be safe and effective in the diagnosis of lung nodules. However, pneumothorax is a well-known complication of this technique.
Objectives: Identify predictive factors for pneumothorax.
Methods: Retrospective observational study of patients submitted to percutaneous chest biopsy (18F dual spring system) under CT guidance, in a one-year time period. The factors evaluated were: age, gender, emphysema, tobacco use, lesion size, distance from pleura to target lesion (mm), previous history of pneumothorax and Bio-Seal use.
Results: The study included 217 patients (average age 67 ± 13 years-old; 67.3% were male). According to radiological criteria 49 (22.6%) patients had pulmonary emphysema. Sixty-one patients (28.1%) had post-procedure complications. Pneumothorax was the most frequent complication occurring in 49.2% (30/61). Of these 30 pneumothoraxes, 14 (46.7%) required no treatment, 11 (36.7%) were treated with manual aspiration immediately after biopsy and a chest tube had to be placed in 5 (16.7%) cases.
Conclusions: No association was proven between iatrogenic pneumothorax and evaluated factors, however patients with emphysema were more prone to have iatrogenic pneumothorax. The fact that trained and experienced physicians performed the techniques and low number of patients with emphysema might influence the results.

Keywords: *Pulmonary biopsy. Iatrogenic pneumothorax. Bio-seal.*

PE 070. GROUND-GLASS SOLITARY NODULE: A RADIOLOGICAL FINDING NOT TO BE LOST SIGHT OF

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Introduction: Ground glass opacifications usually present non-uniformity and less density than solid nodules. This subset of pulmonary nodules require follow-up for a longer period of time, due to the risk of actually being a manifestation of adenocarcinoma.
Case report: 64-year-old female patient, non-smoker, former worker of the textile industry and with contact with birds, with clinical history of rheumatoid arthritis (under therapy with rituximab, salazopyrine, methotrexate, corticotherapy), secondary Sjögren syndrome, Hashimoto thyroiditis and degenerative osteoarticular disease. The patient was referred to the Pneumology–Diffuse Lung Disease consultation, in order to study a possible lung involvement of rheumatoid arthritis. She referred progressive worsening dyspnea and dry cough. Objective clinical examination was normal. The patient performed chest-computed tomography(CT) which showed a ground-glass area with 25 mm of diameter on the anterior segment of the left superior lobe (LSL), with no lymphadenopathies nor pleural effusion; functional respiratory study which was normal; 6 minute walk test with no desaturation; bronchofibroscopy with no endobronchial lesions (microbiological, mycobacteriological and cytological studies were negative; immunophenotypical study of the broncho-alveolar lavage showed a cellularity of 68 cel/mm^3, 5% neutrophils, 87% macrophages and 5% lymphocytes). Due to the diagnostic hypothesis of organizing pneumonia secondary to rheumatoid arthritis, the case was discussed with the Interventional Radiology department, which considered that the nodule was not accessible through CT-guided transthoracic biopsy. Surgical lung biopsy was proposed, but the patient declined and agreed only on radiologic control of the lesion. The patient repeated chest-CT with evidence of a vaguely nodular area with 25 mm of diameter on the LSL, mainly with ground-glass density but presenting a denser inside area (with 4.4 × 3.6 mm). As such, she performed positron emission tomography-CT (PET-TC) which showed a ground-glass area on the LSL with no FDG-F18 uptake, unsuspicious of high-degree cancer lesion. Control chest-CT (about 24 month after the first CT) showed a nodular area with 26 × 21 mm on the LSL, mainly with ground-glass density but with larger dimensions then previously and with a denser larger inside area (with 7 × 6 mm), with no lymphadenopathies or other identifiable lesions. Surgical lung biopsy was proposed once more, which the patient finally accepted. Extemporaneous examination of the surgical biopsy material was compatible with adenocarcinoma in situ/minimal invasive lung adenocarcinoma, so left upper lobectomy with complete lymphadenectomy (stations 5, 10 e 11). Resection piece confirmed minimal invasive lung adenocarcinoma with central invasion area with a diameter inferior to 5 mm, with no other identifiable lesions, as well as, alterations in the nodule-surrounding lung parenchyma consistent with constrictive bronchiolitis, in relation with lung involvement by rheumatoid arthritis/Sjögren syndrome.
Discussion: The authors present a clinical case of ground glass opacifications which turn out to be a minimal invasive lung adenocarcinoma, with a gradual evolution for a period of 24 months. Minimal invasive lung describes solitary nodules with < 3 cm, predominant lepidic growth, ≤ 5mm invasion and without lymphatic, vascular, or pleural invasion. If resected, it is associated with near 100% disease-free survival.

Keywords: *Solitary lung nodule. Ground-glass. Rheumatoid arthritis.*

PE 071. CHARACTERIZATION OF PULMONARY NODULES SUBMITTED TO STEREOTACTIC BODY RADIATION THERAPY (SBRT) AFTER LUNG BIOPSY: IS THERE ANY POSSIBLE RECURRENCE?

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Introduction: Stereotactic body radiation therapy (SBRT) is considered an alternative therapy for lung cancer in early stage (I/II and III, in selected cases and T ≤ 3 cm), when there is no possibility for surgical resection. The prediction of cancer recurrence in patients undergoing SBRT is not well established and it is important to recognize possible morphological characteristics of the pulmonary nodules that may infer the possibility of recurrence.
Objectives: Characterization of pulmonary nodules submitted to SBRT and prediction of local recurrence in a sample of patients followed at in Pulmonology consultation.

Methods: We, retrospectively, selected patients followed for solitary lung nodule who, after decision at a multidisciplinary meeting, underwent SBRT, between January 2016 and January 2019, and documented their evolution until July 2019. Ten patients were selected of which we only included those who had a histological diagnosis (n = 4).
Results: Four patients were submitted to SBRT with a mean dose of 57Gy (min 48 Gy; max 60 Gy) and a mean number of 4.6 fractions (3-7.5). They were all men with an average age of 76 years (min 71; max 83). They had heavy smoking habits (mean 77.5 AU) and moderate to severe chronic obstructive pulmonary disease. Two patients had a history of non-pulmonary cancer. 75% (N = 3) were in stage I or II and 25% (N = 1) in stage III (T ≤ 30 mm) lung cancer. In 3 patients, pulmonary nodules were found to be peripheral and located in the right upper lobe; while in the other patient it was central and located in the perihilar region of the lingula. Morphologically, they were solid nodules, irregular or lobulated contours, mean axis of 24.5 mm (min 17; max 30), and had a positron emission tomography (PET) mean value 10.88 SUV (min 2.83; max 18). After SBRT only two patients were re-evaluated with PET, with a decreased metabolic uptake in both. No adverse effects were observed after SBRT. Diagnostics obtained: adenocarcinoma (N = 3) and squamous cell carcinoma (N = 1). There was no cancer progression in any of the patients keeping up follow-up (mean 17 months; 6 - 36 months) in our consult.
Conclusions: SBRT is an excellent therapeutic option in patients with evidence of solitary lung nodule. Since all patients are being followed up with no evidence of recurrence since SBRT, it was not possible to demonstrate plausible criteria for the possibility of recurrence. The sample size may also have conditioned the results obtained.

Keywords: *Stereotactic body radiation therapy. Cancer recurrence. Solitary lung nodule.*

PE 072. COMPLICATIONS OF TRANSTHORACIC CT GUIDED LUNG BIOPSY: A RETROSPECTIVE STUDY

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Introduction: CT guided lung biopsy is a frequent diagnostic procedure in Oncologic Pneumology. It is used mainly for peripheral lung lesions. This technique implies pleural e lung puncture and consequently, an increased risk of complications. According to the most recent literature, the overall rate of complications is approximately 40% and major complications of 6%.
Objectives: Observational, retrospective study with the goal of analysing the complication rate and associated risk factors of lung biopsies in a sample of patients from our department.
Methods: It was selected a sample of 61 patients aged 25 to 84 years old, that underwent lung biopsy in the period of August 2016 to June 2018 in the Pneumology department. It was analysed the rate of major complications (pneumothorax with the need of intervention, haemothorax, gas embolism and mortality) and minor complications (pneumothorax without the need for intervention, transient haemoptysis and alveolar haemorrhage). Furthermore, the risk factors with potential contribution for these complications were analysed (age, gender, presence of lung emphysema, bullous emphysema, size of the lesion, presence of cavitation, distance of the lesion to the pleura, number of biopsies for each procedure. For statistical analysis the software SPSSv25 was used.
Results: In the considered sample, the rate of major complication was 9% (n = 6) and minor complication rate was 39% (n = 24). After statistical analysis, it was observed an association between the presence of lung emphysema and the occurrence of alveolar haemorrhage (p = 0.020). It was found that there is an association between a larger distance between the lesion to pleura and pneumothorax with the need for intervention (p = 0.023). This variable was also associated with pneumothorax without the need for intervention (p = 0.012) and haemoptysis (p = 0.014), however for smaller distances. Lesions with cavitation were associated with more occurrence of haemoptysis (p = 0.045). It appears that there is more pneumothorax with the need for intervention (p = 0.021) and alveolar haemorrhage (p = 0.046) in the group with the highest number of biopsies per procedure.
Conclusions: This study gives strength to some of the data already described in previous studies. In this analysis, the only factors patient-related in which there was a positive association with the number of complications was the presence of lung emphysema and lesions with cavitation. About the procedure-related factors, it was observed a more frequent occurrence of pneumothorax with the need for intervention in the cases of biopsy of lesions with larger distances to pleura and more occurrence of minor complications for smaller distances. It was found that more biopsies per procedure is associated with more complications (both major and minor). More studies with a larger sample of patients are necessary to corroborate this finding.

Keywords: *Ct guided lung biopsy. Lung cancer. Lung nodule. Pneumothorax.*

PE 073. SMALL CELL LUNG CARCINOMA (CPPC): A CASE REPORT

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Introduction: Small Cell Lung Carcinoma (CPPC) represents 10% to 13% of all lung cancers. The etiology is fundamentally due to smoking habits. Clinically, it has rapid tumor growth and early metastatic spread, with a good response to chemotherapy and radiotherapy, but with frequent development of therapeutic resistance in metastatic disease. Only 33% have limited disease. When left untreated, it has a median survival of 1.3 months in disseminated disease and 2.5 months in limited disease. When treated, or prognosis is somewhat favorable, it has a 5-year survival of 20% to 25% in limited disease, and in 12-month disseminated disease, a 1% to 2% survival rate.
Case report: It presents a case of a self-contained 75-year-old man, followed by an external consultation of COPD Pulmonology and Obesity and Hypoventilation Syndrome, with a history of hypertension, a smoker of 50 UMA. The patient, due to the worsening of the disease pattern, resorted to the Emergency Department, performing thoracic X-ray and thoracic CT aiming at dispersed pulmonary modules associated with hepatic nodules. A month later, the external thoracic abdominal control pelvic thoracic CT scan revealed worsening findings, with lower familial lung mass (not previously identified), hepatic, adrenal, and bone lesions with peritoneal carcinomatous hearing. The patient, due to poor clinical control, was admitted to a Palliative Care Unit. He underwent CT-guided transthoracic biopsy, which revealed stage IV small cell carcinoma. Because of the progressive and rapid worsening of the signs and symptoms of disseminated severe cancer, he is unable to start chemotherapy and has failed after 7 days.
Discussion: Despite therapeutic advances, with significantly increased conjugation with improved quality of life, such as long survivals and eventual cures are very rare. In this case, we want to highlight the rapid evolution of cancer disease, without the possibility of chemotherapy and the need for symptomatic control of patients. In conclusion, tabular prevention is the most important preventive intervention without reducing the CPPC mortality rate.

Keywords: *Lung carcinoma. Tobacco.*

PE 074. LONG SURVIVORS IN SMALL CELL LUNG CARCINOMA

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Introduction: Small cell lung carcinoma (SCLC) belongs to the group of high grade lung neuroendocrine tumours and characteristically presents with rapid growth, early metastasis and initial sensitivity to chemotherapy (CTX) and radiotherapy (RT). SCLC represents approximately 13% of all lung cancers and prognosis strongly depends on the tumour stage.
Objectives: To assess the population of patients with SCLC who survived 24 months or longer in a tertiary hospital.
Methods: An analysis of the patients followed in Pulmonary Oncology Unit of the Centro Hospitalar Universitário Lisboa Norte Hospital Pulido Valente with a survival of 24 months or longer, was carried out from January 2013 to December 2017. An analysis of the main demographic, clinical, imaging and therapeutic data was performed.
Results: From the selected period, 100 patients with SCLC were diagnosed and followed, and 15 (15%) had a survival of 24 months or more. Eleven patients were male (73%) and the mean age was 61 ± 11 years. All had smoking habits with 57 ± 29 pack-year, and 40% were former smokers. The body mass index was 26 ± 6 kg/m^2, all patients had a performance status (PS) of 0-1 and a Charlson Comorbidity Index between 2 and 9. Twelve patients (80%) had limited disease (IIIA, IIIB, IIIC). Three patients had extensive disease, none had central nervous system metastasis and only 1 had metastasis in two organs (adrenal and bone). The onset of CTX since the date of diagnosis was 25 ± 13 days, with 80% of patients receiving combination therapy with RT. All patients underwent first-line CTX with platinum doublet and etoposide, with a partial response rate of 80% (n = 12) and a complete response of 20%, with no progression record. 40% of patients progressed with a time to progression since the last CTX cycle of 13.2 months (n = 5) and 1 patient after 3 months. Five patients repeated the 1st line CTX regimen and 1 underwent 2nd line topotecan. Four patients had 3a or more lines therapies. Of the 6 patients who died (40%), median survival since diagnosis was 40 months.
Conclusions: In this group, patient and disease characteristics are favorable in relation to age, comorbidities, PS, disease stage and response to therapy, which may explain the greater survival compared to the general population of SCLC patients.

Keywords: *Lung cancer. Small cell lung carcinoma. Long survivors.*

PE 075. RARE METASTASIS FROM LUNG ADENOCARCINOMA: A CASE REPORT

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Introduction: Lung cancer remains a major cause of cancer-related death worldwide. The most common sites of extra thoracic metastasis of lung cancer are adrenal glands, liver, bones and central nervous system.
Case report: A 67-year-old female, smoker (25 pack/years), with past medical history of stage VI lung adenocarcinoma with pulmonary and left adrenal gland metastasis, diagnosed 1.5 years ago. She had been treated with cisplatin/pemetrexed in 1st line with partial response. Because the disease was progressing (growth of the primary lesion of the left lower lobe and appearance of a new lesion in the left upper lobe), she was waiting for a 2nd line therapy. She presented to the emergency department with progressive dysphagia, abdominal pain, nausea and vomiting in the last 15 days. She was apyretic and hemodynamically stable. Polyneic, with decreased breath sounds on the left hemithorax. No pain on abdominal examination. Gasometry with hypoxemic respiratory failure. Analytically with hypochromic and microcytic anemia (haemoglobin 7.4 g/dL) and creatinine elevation (1.68 mg/dL). The patient performed: chest X-ray with hypotransparency in the lower third of the left pulmonary field, suggestive of pleural effusion; abdominal ultrasound revealed nodular formation (58 mm) in the left suprarenal gland and adenopathy (21 mm) in the hepatic hilum region; esophagogastroduodenoscopy showed an ulcerative lesion (5 cm) in the posterior wall of the gastric body and a subepithelial lesion (3 mm) on the gastric fundus. Biopsies from the ulcerative lesion were obtained and pathological examination of specimens demonstrated poorly differentiated invasive adenocarcinoma. In the immunohistochemical studies, tumour cells were positive for thyroid transcription factor 1 (TTF1) and cytokeratin 7 (CK7); and negative staining for cytokeratin 20 (CK20). Therefore, the diagnosis of gastric metastasis from primary lung cancer was made. Subsequently, the patient's general condition was deteriorated and, accordingly of her poor overall performance status, best supportive care management was recommended. She died 21 months after the initial diagnosis.
Discussion: Metastasis to gastrointestinal tract from lung cancer are uncommon with reported incidence ranging from 0.5% to 10%, whereas the incidence of gastric metastasis ranges from 0.2 to 0.5% thus representing a rare event. Because most gastric metastasis are submucosal, the majority remain asymptomatic. However, they can cause epigastric pain, digestive bleeding, anaemia, or even acute complications such as gastric perforation or pyloric obstruction. In general, the presence of gastrointestinal metastasis in lung cancer is associated with an advanced or end-stage disease and should be considered in the differential diagnosis of lung cancer patients presenting with an acute abdominal or gastrointestinal bleeding. Immunochemistry is very useful tool in differentiating between primary gastric cancer from gastric metastasis from primary lung cancer in equivocal cases.

Keywords: *Lung cancer. Adenocarcinoma. Gastric metastasis.*

PE 076. NIVOLUMAB TOXIDERMIA: ABOUT A CASE REPORT

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Introduction: Immunotherapy with nivolumab, human anti-PD-1 monoclonal antibody, has revolutionized the treatment of various neoplasms, including lung cancer. The safety profile of this drug appears to be better than that of chemotherapy. However, the number of immunomediated adverse effects is significant, with severe or fatal cases being rare. Skin adverse effects are usually grade 1 or 2, with an incidence of 20.1% and 5.1% respectively. More advanced grades are quite rare, usually leading to discontinuation of the drug.
Case report: We report the case of 63-year-old women, former smoker, with a 40 pack-year smoking history. In March 2015 she presented with left pleuritic thoracalgia. Imaging revealed a solid 18 mm nodule near the left hilum. The etiological investigation was inconclusive and, therefore, in April 2015 she underwent diagnostic/therapeutic surgery. The evaluation of the anatomical specimen revealed a moderately differentiated acinar lung adenocarcinoma (PD-L1 negative, without EGFR and BRAF mutation, and no ALK and ROS1 rearrangement) with intranodal hilum metastasis, with lymphatic, vascular, visceral pleura and pericardium invasion and tumor presence at the edge of perihilar tissues: pT3N1M0. Adjuvant QT with 4 cycles of cisplatin and vinorelbine was administered, with progression of bilateral suprarenal metastatic disease at 18 months,

the restaging: pTxNxM1b. She had first-line QT with carboplatin and pemetrexed (6 cycles) with partial response (PR) and later progression of pulmonary and adrenal gland disease at 5 months. She proceeded to second-line QT with docetaxel (6 cycles) with PR and subsequent progression of adrenal disease at 9 months. There were no serious adverse reactions to any of the chemotherapy regimens. She started 3rd line with nivolumab (3 mg/kg) in March 2018. The patient presented PR to immunotherapy at 3 months with disease stabilization since then. At 4 months therapy asymptomatic secondary hypothyroidism was diagnosed and controlled with medical therapy. At 7 months, after 16 cycles of nivolumab, the patient begins with progressive eczematiform disease with injuries to the forearms, trunk and cervical region (> 30% of body area), accompanied by pruritus. She was observed at a dermatology consultation and had a skin biopsy that revealed a slight superficial perivascular inflammatory infiltrate with rare eosinophils. Late-onset immunomediated grade 3 nivolumab toxidermia side effect was admitted. Treatment was initially discontinued, but in April 2019 persistence and worsening of symptoms prompted discontinuation of nivolumab definitively. Prednisolone therapy was instituted (1.5 mg/kg/day), with subsequent gradual dose reduction along with progressive but incomplete resolution of symptoms requiring maintenance of low-dose corticosteroids.

Discussion: Nivolumab is associated with a good therapeutic response with tolerable adverse effects. Skin toxicity is one of the most common problems but it's usually well managed. We present this case to highlight the importance of timely recognition and proper treatment, sometimes requiring temporary or definitive discontinuation of the drug.

Keywords: *Nivolumab. Human anti-PD-1 monoclonal antibody. Side effect. Immunotherapy. Toxidermia.*

PE 077. LUNG CANCER WITH PERITONEAL CARCINOMATOSIS: AN INFREQUENT PRESENTATION

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Introduction: Lung cancer is among the most prevalent worldwide, demonstrating one of the highest mortality rates. It is a silent disease presenting in stage IV at the time of diagnosis in about 50% of cases. Preferred extrapulmonary sites of metastasis are lymph nodes, liver, adrenal glands, bone and brain. Peritoneal carcinomatosis, representing neoplastic involvement of the peritoneum, is rare, around 2-3% (16% according to autopsy reports) and clinical manifestations associated with this entity are uncommon. The form of dissemination for intra-abdominal localization is believed to occur through the hematogenous and lymphatic pathways. Several studies suggest that they occur more frequently in lung adenocarcinoma, but not exclusively.

Case report: We present the case of a 47-year-old autonomous, healthy, female, smoker (22 pack-year), with relevant neoplastic family history (mother with colon cancer), who experienced weight loss, anorexia, increased abdominal perimeter, diffuse abdominal cramps, and diarrhoea (no blood, mucus, pus, steatorrhea or acholia). Initially interpreted as constipation and medicated symptomatically. Because she maintained complaints she consulted a Gastroenterologist and performed an abdomen-pelvic-CT that showed "portal thrombosis, moderate ascites and bilateral pleural effusion". She was them referred to the emergency department of HSFX. On admission, she was jaundiced, analytically had elevated PI and hyperbilirubinemia with cytocholestasis pattern and a large right pleural effusion on chest X-ray. From the investigation carried out in the hospital, we highlight: ERCP, where we could visualize a closed stenosis of the CBD (selective cannulation of the right hepatic branches), without unequivocal infiltrative lesion. Negative CBD brush cytology; Diagnostic thoracentesis whose cell block revealed "pleural metastases of lung adenocarcinoma"; Thoracic CT: "suspicious occlusive image in the middle bronchus and some mediastinal adenopathies" and BF with marked infiltration of the intermediate bronchial wall, apparently permeable, but unable to progress (...)". Thoracic drainage was performed with two chemical pleurodesis (the last after ascites evacuation) with partial response. Because of maintenance of elevated IP, a TAP-CT was repeated and documented "liver abscesses", so she was started on empirical antibiotic therapy with Piperacillin/Tazobactam (13 days) which was escalated to Meropenem (33 days) and Gentamicin (15 days) due to K. pneumoniae bacteremia admitted to have an abdominal origin. Because of a massive ascites with clinical repercussion, she performed a total of 4 evacuating paracenteses during hospitalization, with identification of neoplastic cells (lung adenocarcinoma). Cranial-CT and Bone Scintigraphy didn't show the presence of secondary deposits. She was discharged for consultation of Onco-Pulmonology but died 2 weeks later.

Discussion: Clinical manifestations associated with peritoneal carcinomatosis are rare, although in advanced stages it may be related to nausea, vomiting, bloating, ascites and ileus. CT, PET/CT and paracentesis are important diagnostic tools, and the latter also allows symptomatic relief. Collaboration between different specialties is critical in managing the disease, but the palliative treatment of these patients tend to have a poor outcome. The factors leading to the development of abdominal spread and peritoneal carcinomatosis are not known, but the histological type, degree of differentiation, and biological markers appear to play an important role.

Keywords: *Lung cancer. Peritoneal carcinomatosis.*

PE 078. SOLITARY FIBROUS TUMOUR: A GIANT MASS

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Introduction: Solitary fibrous tumour (SFT) is a rare, usually benign, mesenchymal tumour. Although most of these tumours originate from the pleura, they may occur in other thoracic (mediastinal, pericardial and lung) and extrathoracic regions. These tumours are frequently observed in middle-aged adults, with greatest occurrence in the 6th to 7th decades of life, without gender predilection neither identified risk factors.

Case report: A 74-year-old female, non-smoker, retired (worked in agriculture) was admitted to the hospital for a blunt trauma of the right hemithorax. She also reported progressive dyspnoea (mMRC 2), cough with poor mucoid sputum, anorexia and weight loss of 10 kg in the last year. She reported a history of left-sided thoracic trauma following an occupational accident 50 years ago. Without past medical history and no usual medication. The physical examination revealed digital clubbing and decreased breath sounds over the right hemithorax. Chest radiography showed total opacification of the right hemithorax, with slight contralateral mediastinal shift. Laboratory data only revealed hypoglycemia. Without respiratory failure. Contrast-enhanced CT scan revealed: a large mass, 20 × 10 × 15 cm, with ovoid and lobulated morphology, but with well-defined margins, occupying practically the whole left hemithorax. The lesion displayed intense and heterogeneous contrast uptake and central areas of calcification; no invasion of adjacent structures, mediastinal or hilar lymphadenopathy. She was submitted to a videobronchofibroscopy showing slight deviation of the trachea and carina to the right side and signs of extrinsic compression throughout the left bronchial tree. The bronchial lavage cytology was negative. A transthoracic CT-guided biopsy was then performed and the anatomopathological result was compatible with a solitary fibrous tumour, composed of spindle cells with slight atypia arranged in a fibrocollagenous stroma; immunohistochemical staining was intense and diffusely positive for CD34, vimentine and Bcl2. Considering the

dimensions and characteristics of the lesion, the patient was proposed for surgical recession.
Discussion: SFT are slowly growth tumours, usually asymptomatic, and in one third of cases constitute an incidental finding on routine chest radiography. Occasionally, and more often in malignant SFT, patients have refractory hypoglycemia known as Doege-Potter Syndrome. The treatment of choice for these tumours is complete resection, usually with favourable prognosis. However, malignant recurrence may occur and a careful follow-up evaluation is mandatory.

Keywords: *Solitary fibrous tumour. Pleura. Lung.*

PE 079. NOT ALL LUNG MASSES ARE LUNG CANCER!

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Introduction: Pulmonary nodules/masses remain a challenge for pulmonologists. We focus on the basic principle of its nature: benign (requiring no specific approach) or malignant, requiring prompt and precise intervention. The differential diagnosis of pulmonary nodules/masses is vast, contributing predominantly the patient's clinical symptoms, analytical study, radiographic characteristics, dominated always by histological characterization, given the different treatment and prognosis of each clinical entity.
Case report: We report the case of a 63-year-old autonomous HIV-1 man undergoing therapy, who went to the ED of HSFX because of episodes of lipothymia associated with dizziness, tunnel vision, tinnitus and hearing loss experienced in the last month, and weight loss (5 kg in 10 days) with anorexia, nausea and vomiting in the previous days. Observation showed paresthesia in the lower lip with left predominance associated with deviation of the contralateral lip commissure and a palpable mass of approximately 5cm in the hypogastrus, painless and immobile. The complementary study showed: analytically PCR 2.61 mg/dL; Chest X-ray with left parahilar hypotransparency; Abdominal-pelvic ultrasound highlighting three suspicious pancreatic nodular lesions (neoformation vs adenopathy?). Admitted for investigation. On TAP-CT he had "a large mass with probable starting point in the LUL, which invades the mediastinum infiltrating the aortopulmonary window, the left pulmonary artery, part of the main bronchus and involving the parietal pericardium; Contralateral adenopathies in the pre-tracheal space; Cervical lymph nodes, left supraclavicular and left axillary adenopathies. Asymmetry of glottic aperture due to recurrent laryngeal nerve involvement? and two nodules, one in each adrenal gland, heterogeneous". Observed by ENT, with indirect laryngoscopy without alterations. Cranial-CT unchanged. Because he maintained episodes of lipothymia, mentonean hyposthesia and the appearance of left ptosis with ipsilateral lip commissure deviation and diplopia at the extremities of the left gaze, he performed cranial-MRI which showed: hypointense lesions in the cervical vertebrae, multiple areas compatible with secondary deposits in the skullcap; asymmetry of the superior rectus muscles, thicker on the left, with apparent lesion inside. Bone lesion in the clivus. Cavernous sinus asymmetry due to possible secondary deposit". LP was performed, without pathological cells in the cerebrospinal fluid. In BF there were prominent lesions at the entrance of the LUL, with hyperemic mucosa but without signs of infiltration. Biopsies at this level revealed stage IV non-Hodgkin B lymphoma (translocation (8; 14) c-MYC).
Discussion: Burkitt's lymphoma is a rare and extremely aggressive form of B-cell lymphoma. HIV-associated Burkitt's lymphoma is the most common form in Western countries, typically with ganglion and bone marrow involvement. It is characterized by an extremely high proliferation rate, with c-MYC overexpression being the characteristic mutation. The authors underline this case given the need to integrate all clinical data as well as to obtain a histological diagnosis of suspected pulmonary nodules/masses, aiming at the most appropriate therapeutic approach. We emphasize the differential diagnosis of pulmonary nodules, which do not all correspond to pulmonary neoplasms. Maintaining a critical spirit and teamwork are crucial to the diagnostic and therapeutic success of all clinical conditions.

Keywords: *Mediastinal masses. Burkitt's lymphoma.*

PE 080. RESPIRATORY FAILURE: THYROID IS ALSO TO BLAME!

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Introduction: Mediastinal masses constitute a diverse group of tumours that affect individuals of all ages, representing a diagnostic challenge. In the mediastinum, the aetiologies are numerous, predominating the malignant aetiologies. Given the size of the mediastinum, the presence of tumours in this location often leads to compression of adjacent structures or even to life threatening situations. About 40% of tumours with this location remain asymptomatic until they reach considerable dimensions, which contributes to mass effect, invasion of nearby structures and hinders early etiological determination.
Case report: We present the case of a 64-year-old woman, PS 0, with a personal history of smoking, COPD, obesity and diabetes mellitus who went to the emergency department of HSFX with a 2 day right earache, tinnitus and dizziness. Observation showed right otorrhea, pyrexia and hypoxemia. From investigation stands out: leukocytosis with neutrophilia, PCR 27.6 mg/dL and D-Dimers 0.9 ug/mL; ABG with global respiratory failure (FiO2 21%: pO2 50 mmHg, pCO2 50 mmHg); Chest X-ray with bibasal hypotransparency, obliteration of the right costophrenic sinus and deflection of the air column from the trachea to the left; Urine Antigen positive for Streptococcus pneumoniae; Thoracic CT-angiography: "Well-delimited high right paratracheal mediastinal hypodense lesion with hypercaptant walls, compatible with abscess/necrotizing adenopathy with mass effect (over trachea and esophagus). Contiguous adenopathy. Bibasal atelectasis. Adrenal nodule". Bilateral CAP was assumed and treatment with Piperacillin/Tazobactam and topical Ofloxacin for suppurative otitis media was initiated. The case was discussed in a multidisciplinary meeting, and the diagnostic hypothesis of euthyroid goiter (TSH 0.37uUI/mL) was presented. She underwent FNAC, whose interpretation was limited by follicular cell scarcity. For complementary study of global respiratory failure she did a nocturnal oximetry (21%) which revealed significant desaturation (min 72%) and a cardiorespiratory sleep study that showed mild OSA (IAH 13.9/h; ODI 14.3), assumed to be secondary to the mass effect and overweight. She was discharged under LTOT (2 L/min) waiting for a new FNAC. She returned to the ED 3 months after discharge due to progressive 5-day dyspnoea. She presented with worsening respiratory failure, increased IPs and, again, right-sided hypotransparency. She was empirically medicated for CAP with Levofloxacin. Due to unfavourable evolution with development of respiratory acidemia she was transferred to the Pulmonology nursery - Non-Invasive Ventilation Unit. Haemophilus Influenzae was isolated in the sputum and the antibiotic changed to Amoxicillin/Ac. Clavulanic. In chest-CT, she maintained thyroid mass (...); banded atelectasis in the RLL with focal reduction of the caliber of the bronchi, which had some calcifications. Performed BF with BAL that revealed no major changes. Currently, the patient remains under LTOT and awaits a new FNAC. The possibility of surgical indication has been placed, given tracheal compression and mediastinal extension.
Discussion: The authors present this clinical case in order to alert to the importance of the correct differential diagnosis of intrathoracic tumours and their consequences. Chest-CT and multidisciplinary team discussion play an important role in diagnosis and therapeutic decision making, being the histological diagnosis a priority for the correct therapeutic approach.

Keywords: *Anterior mediastinal masses. Diagnosis mediastinal masses. Benign mediastinal masses.*

PE 081. NODULAR PULMONARY AMYLOIDOSIS WILL NOT ALWAYS WALK ALONE

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Introduction: Amyloidosis comprises a group of protein misfolding disorders characterized by extracellular deposition of insoluble amyloid fibrils. Amyloidosis may be systemic or localized, and may also occur along with other inflammatory diseases. Pulmonary involvement develops in essentially 3 clinicopathologic types: tracheobronchial, diffuse alveolar septal and nodular. Nodular amyloidosis is typically a sign of localized amyloidosis. In this context, the authors describe a case where inflammatory pathology concomitant with a localized pulmonary amyloidosis was confirmed.
Case report: A 57-years-old man, non-smoker, with no relevant medical history was referred to Pulmology consultation for left lower lobe (LLL) pulmonary nodule, an incidental finding on abdominal computed tomography (CT) performed due to mild hepatosplenomegaly. No respiratory clinic was found, as the patient referred xerophtalmia as his only symptom, denying other systemic or autoimmune evocative complaints. Chest CT identified multiple bilaterally disperse cysts with peribroncovascular distribution, a discrete ground-glass pattern, as well as two nodular lesions with spiculated contours in the upper segment of the LLL and a solid lingular nodule. Positional emission tomography (PET) presented discrete uptake in nodular lesions (maximum SUV 2.4). Blood analyzes revealed elevated serum amyloid A (1.01 mg/dL), while a negative autoimmune study. CT-guided transthoracic aspiration biopsy (BAT) turned out inconclusive. Bronchofibroscopy without relevant morphological changes. Bronchoalveolar lavage unveiled hypercellularity (2.49×10^5/mL) and significant lymphocytosis (61%), with a CD4/CD8 ratio of 3.4. Cytology of bronchial aspirate with foci of necrosis, some lymphocytes and neutrophils. Follow-up chest CT exhibited coalescence of the two nodular areas forming a single spiculated lesion with 33 mm of major axis and central cavitation. BAT was performed again, revealing deposition of amorphous, acellular, eosinophilic material, positive for Congo red stain, confirming the diagnosis of amyloid tumor. Respiratory functional study revealed moderate DLCO impairment (52.4%) with no other changes. Electrocardiogram, echocardiogram, proteinogram and urinalysis were normal. Salivary gland biopsy revealed no changes. Therefore, systemic amyloidosis was excluded. Although Schirmer test evidenced a decrease of basal tear production, the patient did not meet criteria for Sjögren's syndrome diagnosis. The patient undergone left inferior lobectomy and lingula wedge resection. Histological examination revealed nodular lesions compatible with amyloid tumor (positive Congo red stain). The remaining pulmonary parenchyma was fulfilled by interstitial lymphocytic infiltrate, occasionally forming small peribronchiolar lymphoid aggregates. The diagnosis of pulmonary amyloid tumor with lymphocytic intersticial pneumonia (LIP) was established.
Discussion: Nodular pulmonary amyloidosis usually arises as an incidental finding on an imaging study. Although asymptomatic and characterized by indolent growth lesions, its excision warrants cure in case of localized lesions. Association with LIP, although previously described, is rare. Considering the possibility of these pathologies being associated with lymphoproliferative or autoimmune diseases, such as Sjögren's syndrome, it is important to provide clinical-imaging follow-up in this case.

Keywords: *Pulmonary amyloidosis. LIP. Interstitial lymphocytic pneumonia. Amyloid tumor.*

PE 082. DRUG-INDUCED LUNG DISEASE IN A RENAL TRANSPLANT PATIENT: ABOUT A CLINICAL CASE

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Introduction: Multiple drug formulations, including immunosuppressing agents, have been described as capable of provoking pulmonary injury. Interstitial disease is a recognized manifestation of drug-induced disease. Diagnostic is established in patients exposed to medication with known association to lung injury with diffuse imagological changes that can regress after drug suspension in which other causes of interstitial lung disease were excluded.
Case report: 74 year-old male with a history of smoking (25 pack-years) and renal transplant, taking mycophenolate mofetil and tacrolimus, was admitted because of a 4-day clinical picture of dyspnea with hypoxemic respiratory failure. In spite of broad-spectrum antibiotics coverage and non-invasive ventilation, worsening of respiratory failure with increasing need of supplementary oxygen delivery (pO2/fiO2 = 100 mmHg) ensued. Chest CT-scan showed diffuse ground glass areas and septal thickening, as well as focal consolidations on the dependent portions of the superior lobes and especially on the inferior lobes. The patient underwent bronchoscopy with bronchoalveolar lavage immunology revealing linfocitosis (26%) and a CD4/CD8 ratio of 3.273. Because of lung toxicity suspicion, usual immunosuppressant drugs were substituted by cyclosporine. Systemic corticosteroids were initiated (boluses of 500 mg metilprednisolone followed by a 1 mg/kg/day scheme for posterior weaning). The patient showed improved clinical condition, with non-invasive ventilation withdraw and gradual decrease in oxygen supplementation. Functional respiratory tests showed a severe decrease in DLCO (34%). Further investigation revealed type-II cryoglobulinemia with two monoclonal components (IgG/lambda and IgM/kappa), positive serology for rheumatoid factor and anti-SRP (probably false positive results) and negative remainder immune study. There was no clinical, laboratorial or image evidence of lymphoproliferative disease. Hepatitis, HIV and parvovirus infections were discarded. There was also no positivity for pathogen cultures. For further clarification, the patient underwent cryobiopsy, unveiling unspecific morphologic changes. This biopsy was done after treatment initiation, given the severity of presentation. Revaluation chest CT-scan showed some regression of ground glass pattern, supporting favorable response to therapy. There was also an improvement in diffusing capacity for carbon monoxide (DLCO) –49%. Given clinical, image and functional improvement, this presentation probably corresponds to a case of drug-induced lung injury.
Discussion: Drug-induced lung disease frequently constitutes a diagnostic challenge as it presents with clinical, laboratorial and image findings similar to those of infectious complications. In an immunosuppressed patient, the most common and more frequently suspected diagnosis is that of infection. Nevertheless, upon therapeutic failure it is very important to actively pursue differential diagnosis and keeping in mind drug-induced toxicity hypothesis.

Keywords: *Drug-induced lung disease. Interstitial lung disease. Type II cryoglobulinemia. Cryoglobulinemia.*

PE 083. PRIMARY PULMONARY OSSIFICATION: CASE REPORT

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Introduction: Pulmonary ossification is a rare lung disease in which mature bone is present in the alveolar or interstitial spaces. It can occur with either a focal or diffuse distribution and can be idio-

pathic or secondary to chronic lung, cardiac or systemic disorders. There are two types of pulmonary ossification, nodular and dendritic. Nodular pulmonary ossification is characterized by lamellar deposits of bone material in the alveolar spaces, where bone marrow elements are usually absent. Dendritic pulmonary ossification is characterized by formation of branching bone tissue that often contains marrow elements in the interstitial spaces which can extend to the alveoli.

Case report: The authors present the case of a 70-year-old Caucasian woman, non-smoker, no relevant occupational and environmental exposure and with clinical diagnoses of neck and face eczema, venous insufficiency of the lower limbs, cervicarthrosis and osteopenia. She was referred our pneumology clinic 15 years ago for a single nodular image at the base of the left hemithorax on chest-X-ray. The patient reported a non-productive cough with nocturnal predominance and dyspnea on exertion. Chest CT scan showed bilateral bullous emphysema and multiple calcified granulomas equally dispersed in both lung fields. Blood tests included negative autoimmunity study, sedimentation rate of 5 mm/h, negative serology for HIV 1 and 2. Bronchofibroscopy was normal and transbronchial lung biopsies revealed mild fibrosis and moderate inflammatory infiltrate. Bronchoalveolar lavage showed lymphocytosis with 62% CD4+ cells, 30% CD8+ cells and significant count of CD1 activated cells; cytomorphological exam was negative for neoplastic cells. The respiratory functional tests was within normal limits. In the absence of a conclusive diagnosis, surgical lung biopsy was performed and revealed an altered pulmonary parenchyma due to the presence of extensive areas of pulmonary interstitial calcification with scattered ossification foci involving the bronchiolar wall. On the periphery of the lesions there was mild parenchymal fibrosis, chronic inflammatory infiltrate and emphysematous changes. The study for secondary causes was inconclusive: normal calcium and serum phosphorus, normal calciuria, normal B2-microglobulin; normal cell marrow myelogram with deviated leukoerythroblastic ratio in favor of the erythroblastic series by series hyperplasia; normal electrocardiogram and echocardiogram. Thus, the diagnosis of primary dendritic pulmonary ossification was established, and the patient was referred to the Interstitial Lung Disease Clinic. Over the years, the patient developed respiratory failure requiring long-term oxygen therapy. Low-dose systemic corticosteroid therapy was initiated without significant improvement. In more recent CT scans, a pattern of non-specific interstitial pneumonia appeared in parenchyma areas not involved by pulmonary ossification and it was decided at the multidisciplinary team meeting to start mycophenolate mofetil.

Discussion: Pulmonary ossification is a rare entity that may be associated with other pulmonary diseases such as interstitial pneumonia or pneumoconiosis. However, its' diagnosis is most commonly made post mortem, and the follow-up and therapeutic strategy in this patients remains a challenge.

***Keywords**: Ossification. Pulmonary interstitial pathology.*

PE 084. SPONTANEOUS PNEUMOMEDIASTINUM IN DERMATOMYOSITIS: AN UNUSUAL OUTCOME

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Introduction: Dermatomyositis is an inflammatory myopathy characterized by proximal muscle weakness, myalgias and typical skin manifestations. The majority of the patients have specific antibodies that correlate with clinical evolution e disease prognosis. The Anti-melanoma differentiation antigen 5 antibody (anti-MDA5) is associated with rapidly progressive interstitial lung disease, which is an independent predictor of a worse prognosis.

Case report: Women, 71 years old, a retired seamstress, non-smoker. In January 2019 she was diagnosed with dermatomyositis with multisystemic involvement: 1) skin (Gottron papules and suggestive skin biopsy), 2) muscle (myalgias, muscle weakness and subtle increase in muscle enzymes), 3) pulmonary (ground-glass opacities and discreet reticulation, mainly subpleural, in the high-resolution CT, and linfocitosis of 32% with predominantly CD8 considering the cytological and immunological studies of the bronchoalveolar lavage), 4) cardiac (impairment of left ventricular systolic function, with an ejection fraction of 32%). Anti-MDA5 and anti-Ro52 antibodies were positive. She initiated 60 mg prednisolone daily. In April 2019, she was admitted with progressive worsening and life-limiting dyspnea and hypoxemic respiratory failure. Imagiological progression of lung disease in CT was observed, with worsening of ground-glass opacities and pneumomediastinum. She progressed unfavorably during the first 48 hours, requiring noninvasive ventilatory support and worsening of the pneumomediastinum. Progressive aggravation of pulmonary involvement was suspected and, after excluding infection and impaired heart function, she started 500 mg of daily prednisolone for 3 days, followed by 2 days of immunoglobulin therapy (1 g/kg/day), with progressive clinical and gasometrical improvement.

Discussion: Antibody anti-MDA5 positivity on dermatomyositis is typically associated with mucocutaneous manifestations, discreet muscle involvement and rapidly progressive interstitial lung disease, which can be complicated with spontaneous pneumomediastinum, as described above. So, considering the strong relation with a worse prognosis, it is essential to pay close attention to pulmonary involvement and start high doses of immunosuppressive therapy at an early stage.

***Keywords**: Dermatomyositis. Pneumomediastinum. Anti-MDA5 antibodies. Interstitial lung disease.*

PE 085. PET/CT IN THE MANAGEMENT OF SARCOIDOSIS

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Introduction: Sarcoidosis is a chronic granulomatous systemic disease of unknown etiology. The organs most commonly involved include the lungs and lymph nodes. Histopathology is characterized by non-necrotizing granulomas and symptoms presentation may vary. Although most cases are acute forms, it can develop chronically and a specific curative treatment does not exist. On patients with serious illness, organ failure and declining quality of life, it is used systemic steroids, methotrexate or azathioprine (immunomodulators) and anti-TNF alfa as 1st, 2nd and 3rd therapeutic choice, respectively.

Case report: The authors report a case of a 50 year old male, smoker (> 10 pack-year), with a past medical history of chronic gastritis, psoriasis and pulmonary sarcoidosis stage II with cutaneous involvement, followed-up on pulmonology department since 2014. Although asymptomatic for 2 years, was put on steroids due to radiological worsening and 9 months later on methotrexate. In spite of immunosuppression, CT-scan revealed massive pulmonary fibrosis with asymmetric nodular area on left apex, which raised the possibility of a malignant lesion. After multidisciplinary discussion, the patient was submitted to PET, revealing a diffuse uptake of fludeoxyglucose F 18 on the various pulmonary lesions, more significant and symmetric on both apex (SUVmax = 7.9), suggestive of inflammatory activity from sarcoidosis. Considering the PET result, since it is a potentially reversible condition and due to inflammatory activity, patient was proposed for infliximab therapy, assuming neoplastic lesion was less probable on the differential diagnosis regarding its symmetry.

Discussion: This case highlights the complexity of this systemic disease, the varying severity degrees and different development patterns, such as the importance of a dynamic therapeutic management with specific objectives depending on the phase. In case of

patients refractory to conventional treatment, PET can be a useful tool in therapeutic management.

Keywords: *Sarcoidosis. Infliximab. PET/CT.*

PE 086. A NOT SO OBVIOUS DIAGNOSIS...

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Introduction: Pleuro-pulmonary masses are a diagnostic challenge in current clinical practice, and metastatic disease is the main etiology.
Case report: The authors present a case of a 76-year-old man, ex-smoker (50 pack-year) with past medical history of arterial hypertension and diabetes mellitus, who was referred to our pulmonology clinic due to tiredness for medium efforts, on the past three years (mMRC 1) and abnormal chest radiological exams. No changes on physical exam. He had performed chest x-ray, followed by computed tomography (CT) scan showing bilateral pleural nodular thickening, predominantly in the upper two thirds, bilateral parenchymal masses and hilar, mediastinal, mesenteric and retroperitoneal adenopathies. Lung function tests with mild obstructive pattern consistent with chronic obstructive pulmonary disease. For etiological study, bronchoscopy was performed with cytological (secretions, bronchoalveolar lavage and bronchial brushing) and histological (transbronchial lung biopsy) examinations negative for neoplasia. Bacteriological, mycobacteriological and mycological tests were negative He performed two inconclusive CT-guided transthoracic biopsy, the second complicated by pneumothorax, solved with conservative therapy. Subsequently, the patient was submitted to echoendoscopy, with fine needle aspiration of mediastinal adenopathies revealing reactive lymph nodes. In the absence of a definitive diagnosis, a surgical biopsy of a lung mass was performed, which showed a slight chronic inflammatory infiltrate and eosinophilic amorphous material, positive to Congo red stain combined with polarized light, consistent with amyloidosis. Additionally, normal urinary and serum immunofixation, and serum immunoelectrophoresis did not reveal monoclonal gammopathy. A review of the samples previously collected (lung and pleura) was requested, confirming amyloid, AL type. From the remaining tests, involvement of other organs, namely renal and cardiac, were excluded.
Discussion: Amyloidosis is a heterogeneous group of diseases characterized by extracellular deposition of amyloid substance, with an overall incidence of 8 cases/million/year. Although rare, pulmonary amyloidosis corresponds to 20% of these cases and should therefore be considered in the differential diagnosis of pleuro-pulmonary masses. This case highlights the complexity of the approach of patients with pleuro-pulmonary masses and the importance of a multidisciplinary approach to reach an earlier diagnosis.

Keywords: *Pleuro-pulmonary masses. Amyloidosis.*

PE 087. A CASE OF SARCOIDOSIS AND A SURPRISE IN A MEDIASTINOSCOPY

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Introduction: Several diseases, benign and malignant, can be identified as the cause of lymphadenopathies. When this find occurs at the level of pulmonary hilum, bilaterally, the first diagnostic hypothesis that comes to mind is sarcoidosis.
Case report: Here we report a case of a 68 years old patient, former smoker, usually medicated for his hypertension, with no other comorbidities. He was sent to a pulmonology appointment after two months of presenting respiratory symptoms (non-productive cough and dyspnea for small efforts). He had no other complains (as anorexia, weight loss, fever or others). He underwent a chest radiography that revealed bilateral hilar lymphadenopathy and diffuse reticular interstitial reinforcement. Due to these findings, he was also submitted to a thoracic CT scan that documented multiple mediastinal, laterotracheal, prevascular, aortopulmonary and hilar lymphadenopathies (the largest measuring 22 mm), and parenchymal micronodules with centrilobular distribution. Bronchofibroscopy revealed 37% lymphocytes on bronchoalveolar lavage (BAL), with a CD4/CD8 reason of 6.3. Blood tests revealed an augmented angiotensin converting enzyme (67 U/L). Microbiologic specimens, including acid fast stain and cultures from sputum and bronchial lavage were negative for Mycobacterium tuberculosis detection. Polymerase chain reaction detection of M. tuberculosis DNA was also negative. A mediastinoscopy was executed for histological diagnosis. In this procedure two lesions were identified and submitted to biopsy: right paratracheal lymph node was almost totally transformed by non caseating necrosis, with a few focus of fibrosis. Right pretracheal lymph node presented the structure of a lymph node, but was replaced by thyroid tissue – suggesting papillary thyroid carcinoma. Due to these findings, patient was sent to an Endocrinology appointment. One cervical thyroid ultrasound was planned, where a hypoechogenic nodule measuring 7 mm was found at the level of the isthmus/right lobe of the thyroid. Fine needle aspiration biopsy was performed and histopathology documented a suspected papillary carcinoma of thyroid. At this time, patient was already under corticosteroids with good symptomatic response.
Discussion: This clinical report highlights the particularity of encountering a second diagnosis, firstly not suspected. We managed to find a thyroid neoplasm as an incidental finding throughout a sarcoidosis investigation. Thyroid neoplasms, particularly papillary thyroid carcinoma, has tendency to metastasize to regional lymph nodes, more frequently for central lymph nodes, followed by lateral lymph nodes and mediastinal ones. Sometimes there is overlap of causes of lymphadenopathies in the same patient, thus being very important the differential diagnosis between those entities. In this particular case, there was no suspicion of thyroid neoplasm and if it wasn't for the lymphadenopathy biopsy we wouldn't achieve the secondary diagnosis.

Keywords: *Lymphadenopathies. Sarcoidosis. Mediastinoscopy.*

PE 088. PULMONARY ALVEOLAR MICROLITHIASIS: A RARE DIAGNOSIS

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Introduction: Pulmonary alveolar microlithiasis (PAM) is a rare autosomal recessive disease caused by an inactivating mutation in the SLC34A2 gene encoding sodium-dependent phosphate cotransporter of alveolar epithelial type 2 cells promoting the intra-alveolar accumulation of minute calculi.
Case report: We present a case of a 30-year-old Nepalese woman who presented at the emergency room with a 2 month history of worsening dyspnea and dry cough. She denied fever, nocturnal sweating, weight loss, thoracalgia or haemoptysis. She was living in Portugal for 3 years and had no history of occupational inhalation exposure or smoking habits. From her past medical history, a suspicion of pulmonary tuberculosis (TB) years ealier led her to do antibacilar treatment for 6 months. She denied any therapy or pulmonary diseases in the family. During clinical examination the patient only presented diminished and rude vesicular sounds. Blood tests were unremarkable, as well as HIV serology, erythrocyte sedimentation rate, angiotensin converting enzyme (ACE) and autoimmune study. Chest radiograph showed a bilateral dense micronodular pattern with

non-specific reticulation with basal predominance. Considering the history of TB, the first suspicion was a reactivation of the disease and she was admitted to the Infectious Diseases ward. She collected numerous samples of sputum smear for acid-fast bacilli (AFB) and nucleic acid amplification tests (NAAT) that were persistently negative. A thoracic computed tomography scan revealed a high-density and extensive micronodular pattern with subpleural and peribronchial predominance. The patient underwent flexible bronchoscopy that showed an unspecific hyperaemia of the mucosa and bronchoalveolar lavage (BAL) samples showed 5% lymphocytes (with index CD4/CD8 2.1) with no neoplastic cells. BAL direct exam, NAAT and cultures were negative. Afterwards, pulmonary function tests showed a restrictive pattern with a marked decrease of diffusing capacity. The case was discussed in a multidisciplinary meeting within the interstitial lung diseases group and pulmonary alveolar microlithiasis (PAM) was considered due to the characteristic radiologic pattern. Currently the analysis of the SLC34A2 mutation is ongoing.
Discussion: This clinical case illustrates a rare genetic disease that can be underestimated, especially in endemic areas of tuberculosis. Differential diagnosis includes diseases with a miliary pattern of distribution, such as tuberculosis, sarcoidosis or pneumoconiosis. We emphasize the role of CT scan in the diagnosis, thus avoiding the need for invasive procedures. Therapeutic options remain limited and lung transplant is the only definitive treatment.

Keywords: *Pulmonary alveolar microlithiasis. Micronodular. Interstitial lung disease. Genetic disease.*

PE 089. EXTENSIVE PULMONARY FIBROSIS WITH DESTRUCTION OF THE PULMONARY PARENCHYMA SECONDARY TO ANTHRACOSIS

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Case report: RNF, female, 226 years old, black, single, student, native and resident of Luanda. Symptomatology about 3 months of evolution characterized by dry cough, dyspnea and easy tiredness of progressive aggravation. He denied fever, chest pain, weight loss, excessive night sweats, haemoptysis, orthopnea, wheezing, nasal obstruction. He denied complaints of the gastrointestinal forum. Referenced to Pulmonology consultation on 09/25/2017 after chest radiography. Background: Bronchitis in adolescence, sic. No smoking or ethylic habits, no history of atopy. No history of contact with people with tuberculosis. No history of contact with birds. No usual medication. No recent travel history, no risky behaviors. Examination: Conscious, oriented, collaborative. Apparent age not coincident with actual age. Fair general condition and nutrition, skin and mucosa stained and hydrated. Anicteric and acyanotic, eupneic at rest, without jugular engorgement, without palpable adenomegalies. Max.: 36.5 ºC, PA: 112/83 mmHg, FC: 97 bpm, SpO2: 96% in room air. Thorax: normal inspection and palpation. AP: MV decreased to the lower 1/3 level of both lung fields with "velcro" crackling dry fervors. AC: normal. Abdomen, limbs and neurological examination without alterations. Chest X-ray: diffuse heterogeneous opacity with more pronounced reticulo-interstitial pattern on both bases. Diagnostic hypotheses: Interstitial pneumonia/Pulmonary fibrosis of etiology to be clarified/Cystic fibrosis? Pulmonary Tuberculosis? Testing required: General rheumatoid factor analysis, autoimmunity study, sweat test, echocardiogram, CFTR gene mutation scan, chest CT failed. Clinical development: After the 2017 consultation the patient came to another hospital where she was treated for pulmonary tuberculosis for 9 months without improvement. She has flocked to several other institutions in recent months for dyspnea, and has been treated with several drugs she does not know she needs without improvement. She again came to the emergency department of our institution on 06/23/2019 with a hypoxemic respiratory failure and was admitted to the ICU due to respiratory failure during hypertensive spontaneous pneumothorax due to cystic/emphysematous bubble rupture. Cardiorespiratory arrest reversed with chest compressions. The patient underwent pneumothorax drainage, subsequently identified bronchopleural fistula and was approached by thoracic surgery, placement of biological glue and chemical pleurodesis. Chest X-ray (06/23/2019): diffuse heterogeneous opacity with hypertransparent oval image occupying the upper 2/3 of the right hemithorax. Chest CT showed abnormalities compatible with bilateral extensive pulmonary fibrosis, traction bronchiectasis and almost total right lung parenchyma destruction, with large emphysematous and cystic bullae, sparing only part of the lower lobe that is also fibrous. Microbiological studies of bronchial secretions, TB-PCR were negative. Pulmonary biopsy: "marked peribronchial and interstitial fibrosis, bronchial dilations and lymphohistiocytic infiltrate with lymphoid aggregates. Mild antrancosis and macrophages with anthracotic pigment ". Currently at home with chronic hypoxemic respiratory failure requiring long-term oxygen therapy. Prednisolone medication, bronchodilators... Lung transplantation candidate. diagnosis: Extensive pulmonary fibrosis with destruction of the pulmonary parenchyma secondary to anthracosis. Another associated unclear etiology is to be considered.

Keywords: *Pulmonary fibrosis.*

PE 090. FROM BIOPSY TO AUTOPSY: DIAGNOSTIC CHALLENGE OF DIFFUSE PULMONARY AMYLOIDOSIS

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Case report: A 71-year-old female with a medical history of asthma, bronchiectasis, atrial fibrillation and a mass in the left lung presented with severe exercise intolerance, orthopnea and small volume hemoptysis. She complained about progressive dyspnea, peripheral edema, abdominal swelling, fatigue, xerostomia, xerophthalmia and unintentional weight loss over the past year. Fever, nocturnal sweating and pain were denied. The patient was admitted for diagnostic workup. Investigations: Laboratory tests showed a low level of total proteins (54 g/L) and a mild increase in C-reactive protein (10.9 mg/L) and brain-type natriuretic peptide (182 pg/mL). Chest computed tomography showed a mosaic attenuation of the lung parenchyma with interlobular septal thickening, mainly in the upper lobes; tubular bronchiectasis in the right lower and middle lobes; 5 cm mass in the lower left lobe causing its complete atelectasis, appearing to be formed by multiple distended bronchoceles; 8 mm nodular ground glass opacity in the upper right lobe; and moderate cardiomegaly. Transthoracic needle biopsy (TNB) of the nodular lesion revealed fibrotic areas with lymphoplasmacytic infiltration and thickening of vessel walls and interalveolar septa. Two TNB of the left mass showed mild and nonspecific signs of inflammation. All microbiological analysis were negative. Serological autoimmunity was negative except for ANA 1:1000. Due to the maintenance of dyspnea and leg swelling despite diuretic therapy, an echocardiography was performed that documented left atrial dilation, mild hypertrophy of the interventricular septum, left ventricular ejection fraction of 60% and an estimate pulmonary blood pressure of 40 mmHg. Peritoneal fluid was collected and characterized as transudative. The patient presented with melena and underwent an upper gastrointestinal endoscopy. A 2 cm gastric ulcer in the lesser curvature with an adherent clot was detected. Histological analysis showed signs of chronic gastritis with focal erosion. A salivary gland biopsy identified a discrete lymphoplasmacytic infiltration and periductal and peri-acinar fibrosclerosis (negative for Congo red and polarized light). Results and treatment: Hemoptysis didn't recur; the apparent hypervolemia was refractory to treatment. 37 days after admission, the patient suffered a fatal sudden cardiac arrest. Clinical autopsy was performed and a mul-

tiple myeloma associated with systemic amyloidosis was diagnosed. Amyloid deposits were present in the vessel walls of every organ system, except the nervous system. There was a diffuse involvement of the lung (amyloid deposition in the interalveolar septa) and of the heart (thickening of the ventricular walls and aortic and tricuspid valvopathy). The cardiac amyloidosis caused restrictive cardiomyopathy, heart failure and atrial fibrillation that eventually lead to an episode of ventricular fibrillation and cardiac arrest.
Discussion: Systemic amyloidosis is a rare disease and may lead to death if left untreated. In particular, pulmonary interstitial involvement associated with cardiac amyloidosis can contribute to cardiopulmonary failure. Herein, the echocardiogram and the salivary gland biopsy weren't diagnostic of amyloidosis and the biopsied pulmonary nodule wasn´t stained with Congo red, highlighting the importance of actively search for amyloidosis and the diagnostic challenges inherent to it.

Keywords: *Diffuse pulmonary amyloidosis. Systemic amyloidosis.*

PE 091. RECURRENT PNEUMONIA CAUSED BY FOREIGN BODY ASPIRATION

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Introduction: Foreign body aspiration is significantly more frequent in children but can occur in the adult population. Clinical presentation depends on the aspirated material, time lapse and obstruction location and it may present as a medical emergency or gradually with the onset of chronic complications.
Case report: 54 year-old male, with a history of COPD and hypertension, presented to the Emergency Room with an 8-day clinic of productive cough and dyspnea for moderate exertion. On admission, he had no relevant findings on physical examination. Subsequent study revealed a right basal hypotransparency on chest X-ray and elevated C-reactive protein (CRP). He started empiric antibiotic therapy for community pathogens with favorable response. Upon reviewing previous lung images, it was consistently found a hypotransparency in the same location. Following CT-scan showed endoluminal content on the intermediate bronchus and right inferior lobe consolidation and bronchiectasis. The patient proceeded to do flexible bronchoscopy, where an immobile foreign-body was found on the entrance of the right main bronchus, along with granulation tissue. Downstream permeability in the segmentar and subsegmentar bronchi was preserved. Rigid bronchoscopy granted foreign body removal, retrieving and object resembling dental prosthetic material. Ensuing CT-scan revealed consolidation resolution.
Discussion: Foreign body aspiration is a diagnostic that requires high-level of suspicion. Presentation may occur only years after the aspiration episode and the delay in the recognition of this entity may favor the onset of chronic and irreversible complications. Recurrent respiratory infections on the same location should induce clinical suspicion and subsequent investigation.

Keywords: *Foreign body aspiration. Recurrent pneumonia. Flexible bronchoscopy.*

PE 092. PULMONARY EMBOLISM ASSOCIATED TO INFECTION BY MYCOPLASMA PNEUMONIAE

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Introduction: Infection by Mycoplasma pneumoniae is an underdiagnosed cause of community acquired pneumonia, with a low rate of hospitalization and complications. Despite this fact, an association between Mycoplasma pneumonia and higher rates of pulmonary embolism has been proposed, particularly in the young patient, suggesting that this infection could be involved in the pathophysiology of a subset of cases.
Case report: A 44-year-old female of Brazilian descent was admitted to urgent care for progressive complaints of right chest pain of pleuritic nature, non-productive cough and orthopnoea of two-weeks duration. For the suspicion of a respiratory tract infection, she had undergone an empirical course of amoxicilin + clavulanic acid without improvement. She presented prior history of a hemoptoic cough and unilateral right lower limb oedema days after a 10-hour flight, which resolved spontaneously. The physical examination showed no relevant changes. She exhibited a mild elevation of peripheral inflammatory markers and D-dimers of ng/mL (~4xULN), without fibrinogen consumption. The arterial blood gas sample showed respiratory alkalaemia with a PaCO2 of 28.1 mmHg. The chest radiograph showed a bilateral interstitial pattern, a homogenous opacity in the left costophrenic angle compatible with pleural effusion, and ipsilateral triangular opacities of juxtapleural base. Based on the suspicion of pulmonary embolism, a chest CT angiogram was attained which confirmed the presence of emboli in the lobar and interlobar arteries with regions of infarction in the right upper and lower lobes. The patient was admitted for investigation of the aetiology of the mpulmonary embolism. No risk factors were found for deep venous thrombosis with the exception of the relative immobilisation period during the patient's flight and the taking of an oral contraceptive drug for 3 weeks, 6 months prior to the onset of symptoms. Pregnancy was excluded by immunologic testing. Ultrassound with venous Doppler study of the lower extremities and the pelvis, performed separately on two occasions, excluded the presence of deep vein thrombosis.
Testing for anti-phospholipid, anti-nuclear and anti-neutrophilic cytoplasm antibodies was negative. Quantification of alpha-2 antiplasmin and plasminogen was normal. The molecular study for FV Leiden and FII and FV variants showed no changes. Quantification of C3 and C4 was normal. There was no reactivity for hepatitis B or C viruses nor for HIV. Therapeutic hypocoagulation was started. For lack of a full symptomatic remission, with persistence of exertional dyspnoea and cough, as well as absent radiological improvement, serology for M. pneumoniae was tested and was confirmatory of the infection.
Discussion: We present a case of pulmonary embolism in the setting of M. pneumoniae infection in a patient for whom the diagnoses of both illnesses were equated by recognition of protracted symptoms and refractoriness to therapeutic. Infection by M. pneumoniae may have been an adjuvant pathophysiological factor in this patient's embolism. The mechanisms linking both illnesses are, to this moment, unknown. Vascular aggression directly by Mycoplasma or secondary to systemic inflammation caused by the infection may produce local thrombosis. A yet unidentified cryoglobulin- or prothrombotic antibody-mediated state is also a promising field for future research.

Keywords: *Pulmonary embolism. Mycoplasma pneumoniae.*

PE 093. CHRONIC FIBROSING PULMONARY ASPERGILLOSIS. CLINICAL CASE

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Introduction: Aspergillus is a fungus that can cause variable lung disease. Aspergillus fumigatus is the most frequently involved specie but other species such as Aspergillus flavus or Aspergillus niger can be identified. Chronic pulmonary aspergillosis (CPA) is an uncommon but potentially complicated lung disease. CPA usually affects middle-aged men with previous pulmonary pathology, having

as main risk factors a history of tuberculosis, non-tuberculous mycobacterial infection, chronic obstructive pulmonary disease and allergic bronchopulmonary aspergillosis (ABPA). The most common form of CPA is chronic cavitated pulmonary aspergillosis (CCPA) which when left untreated can progress to chronic fibrosing pulmonary aspergillosis (CFPA). CFPA is characterized by severe fibrotic destruction complicating previous CCPA, with marked degradation of lung function; fibrosis usually manifests by consolidation, but cavities with surrounding fibrosis can be observed. The clinic is non-specific, usually presenting with constitutional symptoms associated with chronic productive cough and dyspnea. Radiographically, it is common to find pulmonary cavities, infiltrates and pulmonary or pleural fibrosis of diverse degrees. Diagnosis of the disease requires identification of IgG for Aspergillus or precipitins and evidence of Aspergillus on sputum culture or PCR, or identification of the fungus on biopsy. CPA is associated with high morbidity and mortality. Given the high frequency of relapse, treatment is usually continued for long periods of time or even throughout life. The prognosis of the disease varies with the degree of immunosuppression of the patient.
Case report: 56-year-old male patient with a history of asthma, ABPA, pulmonary tuberculosis, bilateral cylindrical and varicose bronchiectasis and chronic respiratory insufficiency. He was admitted to the emergency department for prolonged fatigue, dyspnea, productive cough, fever and acute respiratory insufficiency. Analytically with an elevation of the acute phase parameters and extensive fibrotic alterations in the chest X-ray, similar to previous exams. Antibiotic therapy was started and kept for 14 days, with no significant response. The patient underwent computed tomography of the chest that showed marked subpleural interstitial thickening, bronchiectasis of the entire pulmonary parenchyma with marked peribroncovascular interstitial thickening, marked distortion of the pulmonary architecture, cavities and consolidations - aspects compatible with diffuse interstitial fibrosis. Aspergillus flavus was isolated on sputum's mycological examination, without other microbiological isolations. Previous result of Aspergillus precipitins positive. CFPA was admitted and medication with Voriconazol was started with progressive clinical improvement, having been decided to maintain therapy. The patient is listed for lung transplantation.
Discussion: Aspergillus is responsible for a wide spectrum of diseases, with CFPA being a rare complication of CPA. Overlap and progression in the spectrum of Aspergillus-related diseases is possible particularly when the patients' immune status varies, as with prolonged administration of corticosteroids in ABPA. The development of some degree of immunosuppression in patients with prior structural pathology and other associated risk factors for CPA may lead to the development of the disease. CPA has a significant impact on patients' quality of life, so being alert for an early diagnosis and treatment initiation is important.

Keywords: *Aspergillus. Chronic pulmonary aspergillosis. Chronic cavitary pulmonary aspergillosis. Chronic fibrosing pulmonary aspergillosis.*

PE 094. NO LOCAL NÃO EXPECTÁVEL - A PROPÓSITO DE UM CASO DE PAPILOMATOSE LARINGOTRAQUEOBRÔNQUICA

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Introdução: A papilomatose laringotraqueobrônquica é uma doença caracterizada pela presença de lesões epiteliais de aspecto verrucoso ou papiloides, únicas ou múltiplas, mas geralmente recorrentes. Esta doença é maioritariamente limitada à laringe, mas em casos mais raros pode-se estender para a árvore traqueobrônquica e eventualmente para o parênquima pulmonar.

Caso clínico: Mulher de 46 anos, ex-fumadora desde há 10 anos com carga tabágica de 8 UMA, medicada apenas com venlafaxina por episódio depressivo. É referenciada à consulta de Pneumologia, após o diagnóstico de papilomatose laríngea, por persistência de tosse seca com saída de 2 massas brancas e expectoração raiada de sangue. Por suspeita de papilomatose traqueo-brônquica e para esclarecimento do quadro foi realizada uma videobroncofibroscopia onde se observou uma lesão papilomatosa esbranquiçada no 1/3 proximal da traqueia com cerca de 2 cm de altura e múltiplas lesões papilomatosas milimétricas em toda a árvore brônquica (direita e esquerda). Foi submetida a laserização da lesão traqueal por broncoscopia rígida. Devido à grande extensão do acometimento brônquico não foi possível realização de laser nas restantes lesões. Os resultados anátomo-patológicos foram todos positivos para Papiloma virus Humano. Foi ainda realizada uma Tomografia do Tórax para descartar acometimento do parênquima pulmonar, que não mostrou qualquer alteração. A doente mantém seguimento e vigilância apertada na consulta de Pneumologia.
Discusão: A papilomatose laringotraqueobrônquica é uma doença rara, com poucos casos relatados. Embora histologicamente seja uma proliferação benigna do epitélio, usualmente limitada à laringe, ocasionalmente pode tornar-se agressiva e resultar num envolvimento persistente e recorrente da nasofaringe, laringe e da árvore traqueobrônquica. Sublinho, por isso, a necessidade do estadiamento endobrônquico nos doentes com o diagnóstico de Papilomatose laringea com o intuito de reduzir a sua disseminação. Reforço ainda a necessidade de vigilância por TC do Tórax, pela possibilidade de acometimento do parênquima pulmonar.

Palavras-chave: *Papilomatose laringotraqueobrônquica. Papilomavirus humano. Broncoscopia rígida. Laser.*

PE 095. CRAZY PAVING: IS IT PULMONARY ALVEOLAR PROTEINOSIS?

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Introduction: Pulmonary alveolar proteinosis (PAP) is a rare diffuse lung disease characterized by the accumulation of surfactant in the distal air spaces. Since it can be caused by a spectrum of disorders, treatment varies depending on etiology and severity.
Case report: Male, 51 years old, smoker (35 pack-years). Personal history of beta thalassemia minor and high level exposure to silica dust in the last mouth, without airway protection. Patient presented in the ER after 2 weeks of productive cough, dyspnea and fever – with no improvement after 4 days of amoxicillin/clavulanic acid. On physical examination signs of respiratory distress were evident and pulmonary auscultation had audible bilateral crackles and diminished breath sounds. Blood tests showed leukocytosis, elevated CRP (19.29 mg/dl) and type 1 respiratory failure. Chest X-ray revealed bilateral opacities located centrally in mid and lower lung zones with "bat wing" distribution. Thorax CT revealed ground-glass densification and thickened intralobular septa ("crazy-paving"). After patient admission azithromycin was added to the therapeutic plan, later changed to piperacillin/tazobactam. Secondary PAP was considered and flexible bronchoscopy with bronchoalveolar lavage (BAL) was performed. The results did not confirm the diagnosis – BAL was PAS-negative with no opaque or milky appearance; there were no microbiological isolations. Later serologic testing were positive for Chlamydia pneumoniae. Patient recovery, with clinical, analytical and radiological improvements, did not justified further etiologic study. After 8 weeks chest CT revealed complete resolution of imagological changes.
Discussion: "Crazzy paving" appearance is typically associated with PAP, however the search for other causes is always important.

Keywords: *Pulmonary alveolar proteinosis. "Bat wing" distribution. "Crazy paving".*

PE 096. DISSEMINATED MYCOBACTERIUM ABSCESSUS INFECTION: THE CHALLENGE OF TREATMENT

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Introduction: Pulmonary and extrapulmonary non-tuberculous mycobacteria (NTM) infections have been increasingly reported worldwide in the last few years. Mycobacterium abscessus is a rapidly growing and extremely pathogenic NTM, which accounts for 5-20% of NTM infections. It is usually associated to respiratory tract, skin and soft-tissues infections caused by contamination of a wound with non-sterile material (surgeries, injections, introduction of foreign bodies).
Case report: A 59-year-old non-smoker female has a history of atrial fibrillation, pacemaker, hypothyroidism and rheumatic valvular heart disease having undergone a mitral valve annuloplasty in 2002 with resurgery in 2015. Medicated with warfarin. In March/2018 she was admitted to the emergency department after one month of fever, chills, excessive sudoresis, headaches, asthenia, loss of appetite and fatigue for physical activity. She presented with C-PR 3.86 mg/dL, erythrocyte sedimentation rate 120 mm and LDH 700U/L. She was hospitalized and began treatment with vancomycin, gentamicin and ceftriaxone for the suspect of infective endocarditis, which was not confirmed by transesophageal echocardiogram. Blood and bone marrow cultures were positive for M. abscessus, therefore she started treatment with clarithromycin, levofloxacin and ethambutol. She performed a PET-CT that confirmed infective endocarditis of the mitral prosthesis with hepatosplenic and CNS embolisms. Because she maintained positive blood cultures and there was yet no antibiotic sensibility test (AST), after 2 months of treatment the scheme was changed to levofloxacin, clarithromycin and amikacin and afterwards to cefoxitin, imipenem, amikacin and clarithromycin. The patient underwent mitral valve prosthesis replacement after having negative blood cultures. She had no more positive cultures for M. abscessus. Only after surgery, AST was known and revealed macrolide, moxifloxacin and sulfamethoxazole resistance; amikacin, cefoxitin and linezolid sensibility; and moderate sensibility for ciprofloxacin. Afterwards, her treatment was changed to cefoxitin, ciprofloxacin, amikacin and linezolid. Subcutaneous nodules appeared de novo in the right popliteal region and a biopsy was performed, without a conclusive result. Due to the worsening of the subcutaneous lesions and their probable relation with M. abscessus infection, treatment was changed to cefoxitin, imipenem, amikacin, tigecycline e linezolid. There was a total resolution of the subcutaneous lesions. When she was discharged, cefoxitin was stopped due to prolonged use as well as amikacin because she could not have intramuscular injections due to being hypo-coagulated. She maintained treatment at CDP do Lumiar. There the treatment was adjusted to clofazimine, doxycycline, linezolid and ciprofloxacin. However, linezolid was stopped after 4 months of use due to axonal polyneuropathy confirmed by electromyography. Treatment was administered for thirteen months after negative blood cultures and clinical cure of disseminated M. abscessus infection was achieved.
Discussion: The authors present a case of disseminated M. abscessus infection, without pulmonary involvement. Generally, these situation are associated to immunosuppression, however it was not present in our patient. M. abscessus is the NTM with the highest resistance to most antituberculosis drugs and several other antibiotics as well as having limited therapeutic options, being a challenge in the treatment of these patients. Therefore, recurrence rates are observed in 20-40% of the cases.

Keywords: *Disseminated Mycobacterium abscessus.*

PE 097. GHOST TUMOR

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Introduction: Heart failure leads to an increase in fluid in the interstitial spaces of the lung generating positive hydrostatic pressure through the visceral pleura leading to the formation of bilateral pleural effusions. However, although uncommon, it may present with septal pleural effusion in the horizontal cleft. This presentation simulates a mass on the chest x-ray that disappears with the treatment of the underlying disease and has been termed a phantom tumor or evanescent pseudotumor.
Case report: A 77-year-old man, autonomous with previous diagnoses of ischemic and hypertensive heart disease, atrial fibrillation, and type 2 DM. Hospitalized with cough with sputum, dyspnea for small/medium efforts, orthopnea, and progressive edema of the lower limbs with 10 days of evolution. On objective examination he is apyretic, tachypneic and 88% saturated with 21% FiO2. Cardiac auscultation presents hypophonetic sounds; and at pulmonary auscultation a murmur abolished at the right base with scattered crackles. Analytically highlighting increased NTProBNP (1.324 pg/dL), leukocytosis with neutrophilia (14.30×10^9/L; 87.6% N), elevated serum CRP levels (4.5 mg/dL) and culture and antigen tests for Pneumococo and Legionella. negative. Chest X-ray shows increased ICT, rounded hypotransparency (mass type), well-defined contours on the right hemithorax and parahilar reinforcement. Decompensated CHF was assumed in the context of respiratory infection and antibiotic and diuretic therapy was made with clinical and radiological improvement, with disappearance of oval hypodensity.
Discussion: The radiological appearance of the phantom tumor varies, depending on the volume of septate fluid and its location. Early recognition of this radiological finding related to CHF is important to avoid unnecessary diagnostic procedures, since the main differential diagnosis is nodule and/or lung mass.

Keywords: *CHF. Pleural effusion. Imaging.*

PE 098. A CASE OF EMPYEMA TO STAPHYLOCOCCUS HAEMOLYTICUS AFTER TALC PLEURODESIS IN A MALIGNANT PLEURAL EFFUSION

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Introduction: Malignant pleural effusions (MPE) are a common complication of advanced malignancies (mostly lung, breast and colon cancer) with a poor prognosis. Since systemic treatment does not control the disease, the local approach to MPE is to control the recurrence by pleurodesis. Complications from pleurodesis have been reported in several studies, being empyema one of the most serious complications, reported in 0-4% of procedures.
Case report: The authors report the case of a 62 year-old man, exsmoker, with a personal history of diabetes mellitus type 2 and dorsal fybrosarcoma excised in November 2015. In May 2017 he was admitted with complaints of dyspnea, left- sided chest pain and hemoptysis for two weeks. Upon physical examination the patient was eupnoic (SpO2 95%, FiO2, 21%), with diminished breath sounds throughout the left hemithorax and absent vocal vibrations on pulmonary auscultation and dullness to percussion. The relevant laboratory findings were a mild normochromic normocytic anemia (hemoglobin 11.8 g/dL) with normal renal function (creatinine 0.8 mg/dL), normal C-reactive protein and normal D-dimer levels. Chest X-ray revealed a hypotransparency in the lower thirds of the left hemithorax and multiple bilateral pulmonary nodular hypotransparencies. It was performed a chest CT scan that revealed a left-sided massive pleural effusion with heterogeneous density. It was performed a thoracentesis with drainage of 2,000 mL of sero-hemorrhagic fluid (pH 7, 340) and pleural biopsy

(PB), compatible with an exsudate and the cytology was negative for malignancy. Histological results were inconclusive and microbiological results (PE and PB) negative. The chest X-ray performed four days after the procedure was concordant with recurrence of PE, a loculated effusion on chest ultrasound. It was performed a second thoraconcentesis (fluid pH 7.1) and PB and it was placed a 24 Fr chest tube. Citological and histological results were concordant with pleural metastasis of fybrosarcoma. After 6 days it was performed a talc slurry pleurodesis (with 4 g of talc in 100 mL of sodium chloride after local anaesthesia). Three days after, the patient had a new onset of fever and worsening dyspnea. It was started empiric piperacilin-tazobactam and vancomicin after blood samples to cultural analysis. At this time, the chest CT showed a large loculated left-sided PE (empyema) and pleural thickening. It was also performed a chest ultrasound and a thoracocentesis with aspiration of only 35 mL of pleural fluid compatible with an empyema, but it wasn't possible to place a chest tube. The microbiological culture of pleural fluid identified a Staphylococcus haemolyticus penicilin-resistant, sensible to vancomicin, what guided the change on the antibiotic spectrum to Meropenem plus vancomicin (after 8 days of previous antibiotherapy). Two days after, patient´s clinical status declined with impairment of respiratory exchange, acute respiratory insufficiency and death.
Discussion: The authors emphasized this case considering that, although data from literature support fever and chest pain as the most common side effects of talc slurry pleurodesis, empyema although less frequent could be one of the most serious, having a great impact in outcomes and prognosis of these patients.

***Keywords**: Pleural effusion. Malignant. Pleurodesis. Empyema. Staphylococcus haemolyticus.*

PE 099. LUNG ABSCESS IN A PATIENT WITH ACHALASIA

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Introduction: Gastroesophageal motility disorders are a risk factor for aspiration pneumonia and polimicrobian lung abscesses.
Case report: The authors present the case of a 34-year-old male patient, non-smoker and with no significant environmental exposures, proposed for surgical treatment of achalasia diagnosed in 2016. In preoperative study, chest X-ray showed an opacity in the upper third of the right lung field, bullous areas, one of them with thickened walls (20 × 18 mm) and gas bubble with apparent fluid level. He presented dysphagia for solids and liquids with frequent choking episodes and productive cough with mucopurulent sputum for the last year. Chest CT showed a heterogeneous thick-walled lesion with 52 × 35 mm and central necrosis area. Lung abscess was suspected and the patient was admitted to a pulmonology ward for further study and empiric antibiotic therapy was started. Flexible bronchoscopy was performed. Purulent aspirate and inflammatory lesions in right upper lobe were seen and bacteriological study was positive for Klebsiella pneumoniae. Mycobacteriological and mycological cultures were negative, cytological and histological analysis presented no suspicious features of malignancy. He completed Piperacillin/Tazobactan for 7 days and then 16 days of Amoxicillin/Clavulanic Acid at home with significant improvement of cough and sputum. Two weeks after clinical discharge and end of antibiotic therapy he was submitted to Nissen fundoplication with symptomatic improvement. Follow-up chest CT showed an apparently inhabited cavitated lesion in the right upper lobe and a thin-walled cavity with superior location in the same lobe. Due to absence of symptoms he maintained clinical and imagiological surveillance.
Discussion: This case report enlightens the importance of chronic microaspiration secondary to achalasia, with prevalence of pulmonary complications greater than 50%. It is a rare condition with an incidence of 1.6 per 100,000 individuals. It arises from progressive degeneration of myenteric plexus ganglion cells with absence of lower esophageal sphincter relaxation and loss of distal esophageal peristalsis. The main symptoms are dysphagia for solids and liquids and regurgitation of undigested food and saliva, a predisposing factor for microaspirations. Parenchymal lung changes are described nearly in 17% on chest X-ray and 41% on chest CT in achalasia, mostly ground-glass opacities. Serious pulmonary complications such as aspiration pneumonia, lung abscesses and empyema occur in less than 10%. Respiratory symptoms in achalasia should be valued and promptly managed in order not to delay diagnosis and treatment and decrease complication rate.

***Keywords**: Lung abscess. Achalasia.*

PE 100. LUNG ABSCESS: RETROSPECTIVE STUDY IN A DISTRICT HOSPITAL

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Introduction: Lung abscess is defined as necrosis of the pulmonary parenchyma caused by microbial agents, which results in the development of a cavity within the lung itself.
Objectives: Study of the clinical, epidemiological, microbiological and treatment features of patients admitted with the main diagnosis of lung abscess.
Methods: A retrospective analysis of medical records from patients admitted in Beatriz Ângelo Hospital diagnosed with Lung abscess, between January 2016 to July 2019, excluding the ones with cavitated pulmonary tuberculosis.
Results: 17 patients were included, 9 of them were male and 13 of them were Caucasian. The average age was 53.1 years (23 to 88 years). 58.8% of the patients had smoking habits and 17.6% known drinking habits. Gingival crevice disease was reported in 41.1% of patients. From the 17 patients, 5 had some degree of immunosuppression and 2 lung cancer diagnosed. The most frequent complaints were cough (94.1%, with sputum production in 64.7% of the cases), chest pain (76.4%) and fever (70.5%). Every patient did a CT scan, as part of the radiologic diagnosis, and most of the abscess were in the right lung (58.8%), being the inferior lobe the most affected one (50%). Besides that, 12 patients were submitted to bronchofibroscopy. Regarding microbiological features, in 11 of the cases there was no isolated microbiologic agent, although there were some isolations we can highlight: MRSA strain in blood cultures of two patients; Klebsiella pneumoniae strain in bronchial cultures of one patient; Pseudomonas aeruginosa strain in the bronchial cultures of one patient; and Streptococcus agalactiae strain and Candida tropicalis strain in the sputum cultures of two patients. All of the patients were submitted to medical treatment with empirical antibiotic, as amoxicilin-clavulanate in association with clindamycin, the most used combination (50%). According to the clinical response of patients, 29.1% had to switch to piperacillin-tazobactam. The average duration of ambulatory treatment was 5 weeks (2 to 12 weeks), and one patient had to be submitted to percutaneous drainage plus three patients were submitted to surgery because of medical treatment failure. No patient died while admitted to the ward.
Conclusions: Lung abscess continues to be a not frequent disease. Even though the sample was small, the findings are according to those described in literature, as seen in risk factors like gingival crevice disease and alcohol abuse.

***Keywords**: Lung abscess. Pulmonary infection.*

PE 101. BILATERAL ISOLATED PHRENIC NEUROPATHY: A RARE CAUSE OF DYSPNEA

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Introduction: Diaphragmatic dysfunction is an uncommon and often misdiagnosed cause of dyspnea. It can be caused by diseases that

affect the central and peripheral nervous system, neuromuscular junction and muscle. In patients with low lung volumes on imaging exams, hypercapnia and orthopnea, diaphragmatic paralysis should be considered. The main goal of the treatment is the maintenance of adequate ventilation in order to avoid the consequences of chronic hypoventilation.
Case report: 65 year-old ex-smoker, male, with no relevant previous medical history, including for thoracic trauma, referred to Pulmonology clinic due to history of orthopnea and mMRC1 dyspnea, with an acute onset one year before. Besides a history of nocturnal episodes of numbness of the right hand he denied persistent numbness or weakness of upper limbs or the presence of shoulder or cervical pain at the onset of his respiratory complaints. He had an ambulatory thoracic radiography showing low lung volumes and bilateral diaphragmatic elevation. At the physical examination he had desaturation while on supine (SpO2 93%) and normal saturation (SpO2 99%) while standing. The pulmonary auscultation showed bibasal muffled sounds with no adventitious sounds). The thoracic CT showed symmetric elevation of both hemidiaphragms, leading to decreased expansibility in the basal lungs and consequent atelectasis, vascular and broncohilar crowding. There were no lung lesions. The ambient arterial blood gas was normal. The spirometry showed a restrictive pattern: functional vital capacity (FVC) of 1.92 Litters corresponding to 51.9% of the predicted for race, height, sex and age, forced expiratory volume (FEV1) of 1.5 Litters (51.9%), FEV1:FVC ratio of 0.79, total lung capacity (TLC) of 78% predicted, residual volume (RV) of 124% predicted and maximum inspiratory pressures (MIP) of 43% predicted. Blood analysis showed normal erythrocyte sedimentation rate and normal values for rheumatoid factor antinuclear antibody and angiotensin converting enzymes. Screening for HIV and Treponema pallidum infection was negative.
Discussion: The neurography of the phrenic nerve showed absent responses on the left and severely reduced amplitudes on the right, with moderately increased latencies. Needle electromyography of the diaphragm was not performed. Electroneuromyography revealed signs compatible with mild carpal tunnel syndrome and excluded the presence of other mononeuropathies in upper limbs, brachial plexopathy, polyneuropathy, motor neuropathy and myopathy. Repetitive nerve stimulation excluded significant end plate dysfunction. We diagnosed our patient as having bilateral isolated phrenic neuropathy (BIPN). He underwent respiratory muscle training with some improvement of the symptoms. After that, we prescribed him noninvasive mechanical ventilation with BIPAP® in the nocturnal period, which is a comfortable and practical ventilator modality. Bilateral diaphragm paralysis due to BIPN is a very rare cause of unexplained respiratory failure. This condition is generally chronic and has a poorer prognosis, compared to other cases of phrenic nerve involvement. NIV can restore near-normal daily function.

Keywords: *Phrenic nerve. Diaphragm. Dyspnea. Noninvasive ventilation.*

PE 102. LONG-TERM PULMONARY REHABILITATION: FOR WHOM?

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Introduction: Pulmonary Rehabilitation (PR) is a beneficial intervention for patients with chronic respiratory disease, reducing symptoms and increasing exercise tolerance and quality of life. PR program guidelines refer to 8 weeks as the minimum period to reach benefit but safeguard that gains from longer programs appear to be higher. Given the impossibility of offering extended programs to all patients, it is essential to understand who will benefit most from the extension of PR. This paper aims to illustrate the benefit of an extended PR program through a case report. Emphasis is placed on clinical evaluation, program structure and clinical and functional outcome throughout treatment.
Case report: 55-year-old male patient, worked as a merchant, former smoker (70 pack-years), diagnosed with stage 4 COPD, GOLD D, having been referred to PR program in 2005. Initial evaluation: Chest CT: diffuse centrilobular emphysema. Respiratory functional study: severe obstruction and severe decrease in CO diffusion capacity (FVC 71%, FEV1 36%, DLCO 39%). Arterial blood gases without respiratory failure. 6 Minute Walk Test (6MWT): 504 meters (85%), no desaturation. Echocardiogram: moderate pulmonary hypertension, without other relevant alterations. Cardiopulmonary exercise test: 60 Watts, maximum HR 117 bpm (67%), VO2 860 ml/min. The patient started a formal PR program, including exercise training (endurance, resistance, upper limb training), therapeutic and nutritional optimization, and health education. Between 2005 and 2012, he maintained biweekly periodic PR, having performed 12 training periods, with a median duration of 10 weeks per period (4-18). Throughout these 7 years, the patient maintained a gradual but slow decline in respiratory function (FEV1 in 2005: 36%; in 2012: 27%) with preserved functional capacity (distance covered in 6MWT in 2005: 504m; in 2012: 570m); decreased frequency and severity of exacerbations were observed. From 2013, due to functional and symptomatic worsening, he started continuous bi-weekly PR, in an attempt to maintain work activity and functional autonomy. He worked as a merchant until 2015. In 2017, he started being followed in the Palliative Care clinic and, due to severe impairment of respiratory function, suspended exercise training, maintaining only neuromuscular stimulation of the lower limbs. Currently, at age 69, 14 years after joining the PR program, the patient maintains partial autonomy in self-care, which he performs under energy conservation techniques.
Discussion: The inclusion of this patient in a long-term PR program allowed the maintenance of respiratory functional stability, reduction in the number and severity of exacerbations and a much higher functional capacity than expected for the severity of his condition, which allowed him to maintain social and work activity until a very late stage of his disease. A program of this magnitude will not be feasible for a significant number of patients, but it will certainly be beneficial for patients who wish to maintain socio-occupational activity despite the difficulties inherent with their disease.

Keywords: *Pulmonary rehabilitation. COPD.*

PE 103. COMMUNITY-BASED PULMONARY REHABILITATION PROGRAM

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Based on the recently published guidelines for the implementation of Community-based pulmonary rehabilitation programs, we aim to show the struggles and successes of trying to build a program in primary care.

Keywords: *Community-based pulmonary rehabilitation program.*

PE 104. INHALED THERAPY: THE REALITY OF THE PULMONOLOGY SERVICE AT HOSPITAL SOUSA MARTINS

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Introduction: Inhalation is currently the choice route for administration of drugs to treat respiratory diseases. This fact led to prescription increase and investment in the development of new drugs

and devices. International and national consensus and recommendations have been developed to promote good practice in this area. However, several studies continue to demonstrate/highlight the incorrect use of inhalation devices and non-adherence to therapy, with a clearly negative influence on the efficacy of inhaled drugs and consequently on patients quality of life.
Objectives: The aim of this study was to identify inpatient's real difficulties regarding the manipulation of devices and inhalation technique.
Methods: Descriptive cross-sectional study. Non-probabilistic sample for convenience. Inclusion criteria: admission to the Pulmonology Department of the hospital Sousa Martins during the 2019 year; diagnosis of COPD or asthma undergoing inhalation therapy at home; ability to realize the objectives of the study and consented to participate. Data collection: form (with socio-demographic and clinical questions), and observation grids (inhalation device manipulation and inhalation technique checklists). **Results:** Sample: 29 patients, 23 male and 6 female. Ages range from 20 to 81 years, with an average value of 68 years. Clinical diagnosis: asthma-8 patients and COPD -21 patients. Inhalers prescription time: 20 patients have been using inhalers for more than 24 months; 4 patients between 12-24 months; 3 patients between 6-12 months and 2 for less than 6 months. Type of Inhalers: 23 patients were using Dry Powder Inhalers; 3 patient Pressurized Metered Dose Inhaler; 3 patients Dry Powder Inhalers and also inhalation solution for nebulization. Number of inhalation devices: 1 patient handles 3 different inhalation devices, 16 users 2 inhalation devices, and 12 users 1 inhalation device. Inhalation instruction: 27 patients reported having received previous counseling and training on inhaler technique and inhaler devices, however only 2 patients correctly prepared their devices and respected all steps of the inhalation technique; 25 inpatients made at least one error while demonstrating devices preparation and inhalation technique. The most common errors were: not releasing the device tabs after piercing the capsule; no full or near full slow exhalation, and no apnea after inhalation (technique); 2 patients reported that they have never had any education or instruction about inhalation therapy. One of them admits not to comply with the prescription, and in practical evaluation does not properly prepare the device or perform the inhalation technique correctly. The other reports complying with the prescription, properly prepares the device but does not perform the inhalation technique correctly.
Conclusions: Despite some limitations, the results of this study, still underway, seem to confirm the need for awareness of this theme, and allow to know in more detail some difficulties of users. In the future, they will form the basis for the planning and implementation of concrete strategies that favor adherence and optimize device learning/inhalation therapy.

***Keywords**: Inhaled therapy. Asthma. Chronic obstructive pulmonary disease. Optimization.*

PE 105. INSPIRATORY MUSCLE TRAINING IN NEUROMUSCULAR PATIENTS: A PILOT STUDY

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Objectives: Neuromuscular diseases represent a group of disorders that includes muscular dystrophy, spinal cord injuries or atrophy, amyotrophic lateral sclerosis and paralysis of the phrenic nerve. It can affect 1 in 3,500 people, manifesting during childhood or later in the course of life. Patients have increased risk of morbidity and mortality, mainly related with the impact in the respiratory system. Weakened diaphragmatic and respiratory muscles is a major problem, since it leads to severe respiratory complications, including decreased lung volumes (vital capacity), decreased chest wall expansion and mobility, impaired alveolar ventilation, decreased coughing capacity and secretions clearance with greater risk of lung infections and atelectasis, and also leads to chronic respiratory failure with premature death. With this pilot study, we aimed to assess the benefits of inspiratory muscle training (IMT) in neuromuscular patients and their compliance to the training. We also wanted to assess the feasibility of developing a larger prospective study.
Methods: We conducted a prospective study with two neuromuscular patients with decreased maximal inspiratory pressure (MIP) (< 60 cmH2O), selected from pulmonology consultation. We developed an IMT protocol with 6 months duration, using Powerbreathe Medic Classic® devices to perform the training. Both patients started training with low resistance (20% MIP) and progressed according to their tolerance. Pulmonary muscle function (maximal inspiratory and expiratory pressures (MIP and MEP) and peak cough flow (PCF)) was evaluated at the beginning of protocol, after 3 and 6 months of training, for comparison. Patients had monthly follow-up consultations and were asked to keep a training diary to register the training completion and symptoms.
Results: MIP and PCF improved in both patients after 3 months of training, and patient 2 also had improvement in MEP. However, after 6 months of training, only patient 1, who had higher compliance (96% of training completion), finished protocol training at 80% MIP and increased MIP (+38.6%) and PCF (+34.3%). Patient 2 completed 81.9% of training, finished protocol training at 50% MIP and only had benefits in PCF (+30.8%). Arterial blood gas parameters had some minor variations, with no significant clinical impact. This protocol was safe and had no adverse outcomes.
Conclusions: This pilot study showed that IMT is a safe adjunct to these patients' treatment and had promising results in the rehabilitation of pulmonary muscles function. A larger study is required and feasible to validate these benefits.

***Keywords**: Inspiratory. Training. Neuromuscular. Rehabilitation.*

PE 106. A RARE DISEASE DISGUISED AS ASTHMA: A COMMON "DISGUISE" OF CHRONIC COUGH

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Case reports: We present two cases of chronic cough misdiagnosed as asthma, a disease confused with many common entities. But the following cases belong to a rare situation, for which we want to raise the alert. The first refers to a non-smoking woman diagnosed with poorly controlled asthma who, following pneumonia at age 58, underwent a chest CT scan. This revealed a mosaic attenuation pattern and multiple scattered nodules. She underwent bronchofibroscopy, whose products were negative for neoplastic cells. She maintained surveillance with annual CT, remaining stable for the next 5 years, when the number and size of pulmonary nodules increased. She performed a wedge resection of the 2 largest nodules, whose histological result was atypical carcinoid tumor. She completed 4 cycles of adjuvant octreotide chemotherapy and maintained surveillance with serial CTs. Despite presenting imaging stability, she maintained daily cough. Respiratory function tests (RFT) were normal. It wasn´t until the last CT, 3 years after surgery, that the hypothesis of diffuse idiopathic pulmonary neuroendocrine cell hyperplasia (DIPNECH) was raised. Histological revision of the resected lung was made, which confirmed this diagnosis, showing constrictive bronchiolitis and neuroendocrine cell hyperplasia. The second case concerns an ex-smoking woman, with chronic cough since 53 years of progressive worsening, diagnosed as asthma. In the RFT she had an obstructive ventilatory deffect. At 58 years of age, following hepatitis, she underwent thoracoabdominal CT scanning that revealed scattered micronodules in both lungs and mosaic pattern. She repeated CT after 2 months, which showed a new ground glass nodule. This was resected and histology revealed to be a car-

cinoid tumor surrounded by foci of neuroendocrine cell hyperplasia and constrictive bronchiolitis compatible with DIPNECH.
Discussion: DIPNECH is a rare benign condition first described by Aguayo et al in 1992. It is defined by the WHO as widespread proliferation of isolated scattered cells, small nodules or linear proliferation of pulmonary neuroendocrine cells that may be confined to the bronchial epithelium, develop extraluminal invasion (tumorlets), or develop carcinoid tumors (diameter > 5 mm). Only a minority of carcinoid tumors are associated with DIPNECH. It is assumed to be a premalignant lesion. It is often accompanied by constrictive bronchiolitis due to chronic inflammation and fibrosis. The diagnosis is histological. Most cases occur in non-smoking women in their sixth decade of life. It is manifested by exertional dyspnea and chronic dry cough -often leading to the diagnosis of asthma or gastro-oesophageal reflux disease. RFT may be normal, obstructive, restrictive or mixed. In some patients the diagnosis is incidental. In many, it is made in the context of carcinoid tumor. Typical CT findings are mosaic attenuation pattern, air trapping, and multiple disseminated nodules. In general it has a good prognosis. There are no established treatment recommendations. In asymptomatic patients surveillance is recommended. In symptomatic patients, the most effective seems to be systemic corticosteroid therapy and somatostatin analogues. Bronchodilators generally have little effect.

Keywords: *DIPNECH. Carcinoid. Chronic cough.*

PE 107. OCCUPATIONAL HYPERSENSITIVITY PNEUMONITIS TO DIISOCYANATES. REFINING THE PREVIOUS DIAGNOSIS OF OCCUPATIONAL DISEASE

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Introduction: Hypersensitivity Pneumonitis (HP) is a complex syndrome triggered by prolonged and recurrent inhalation of multiple antigenic particles in previously sensitized individuals. Its clinical polymorphism often makes its diagnosis a real challenge. Although some forms of HP are attributable to recreational or domestic exposures, most diagnoses today result from occupational exposures.
Case report: A 57-year-old woman with a history of excised carcinoid tumor of the colon in 1996, nephrolithiasis and type 2 DM. She worked in a ceramic tile and flooring factory between 1991 and 2017, initially as a press operator and then applying glues and silicones on floors. The patient was referred in 2011 to Pulmonology consultation and reported insidious exertional dyspnea throughout 12 years, associated with dry cough and occasional wheezing, with an auscultatory presence of bilateral basal inspiratory crackling fervors. The HRCT scan showed a diffuse mosaic attenuation pattern, with areas of ground glass hyperattenuation and changes in lobular air entrapment and some aspects of subpleural reticulation. Restrictive functional limitation with 49.2% FVC and 49.3% DLCOSB. The BAL showed a total count of 480,000 cells/mL with 55% lymphocytosis (CD4/CD8 ratio 0.67). Lung biopsy showed granuloma of ill-defined multinucleated giant cells, BALT hyperplasia, histiocytes with anthracotic pigment, and small birefringent particles. The initial diagnostic framework turned out to be Chronic Silicosis, and the case was validated by the DPRP. In the subsequent 2 years, there was progressive clinical and functional deterioration, maintaining the same radiological pattern of mosaic attenuation, being treated under a systemic anti-inflammatory therapeutic regime. It was eventually referred to the CHBV Pulmonology/Interstitium consultation. The radiological pattern, immunological data and histological findings were considered to be inconsistent with the previous diagnosis of Silicosis. After integrative review of the complementary study, pulmonary histology and safety data sheet of the glue used and after multidisciplinary discussion, its diagnosis was rectified to HP (Subacute) to diisocyanates. The inhalation exposure component to silica has been interpreted as a secondary phenomenon. The patient was removed from her workplace, the recertification of her occupational disease was proceeded and was made adjustment of her immunomodulatory therapy (prednisolone and mycophenolate mofetil) with activation of supplemental oxygen therapy and referral for respiratory rehabilitation program.
Discussion: We illustrate the case of a factory worker with several and simultaneous inhalation exposures, initially managed under an incorrect diagnosis of fibrogenic pneumoconiosis. Despite exposure to silicates, simultaneous exposure to diisocyanates (polyurethane glues) had primacy as a disease-inducing agent, in this case in the form of occupational HP. As a frequent respiratory disease in industry but often underdiagnosed, the hypothesis of HP should be considered in cases of diffuse disease in workers. In this context, the detailed collection of the occupational, domestic and recreational history of the patient is essential in order to fully assess the full range of possible correlated exposures, in parallel with the complementary examinations usually considered necessary for confirmation.

Keywords: *Hypersensitivity pneumonitis. Diisocyanates.*

Withdrawn abstract

PE 109. SANDSTORM LUNG

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Introduction: Pulmonary alveolar microlithiasis (PAM) is a genetic lung disorder that is characterized by the accumulation of calcium phosphate deposits in the alveolar spaces of the lung. It is a rare disease, with less than 800 cases reported worldwide. As it progresses, symptoms such as dyspnea on exertion and dry cough may develop. The diagnosis can usually be established radiographically, not needing any invasive procedures. Authors present a case of pulmonary alveolar microlithiasis diagnosed at the age of 85 years.
Case report: An 85-year-old Caucasian male, former farmer, presented with a four-week history of irritating cough and dyspnea. His past medical history was relevant for high blood pressure and prostatic hyperplasia. He never smoked but had past contact with resin. He was chronically under perindopril and tansulosin, and had no known allergies. On physical examination he showed bilateral crackles on auscultation and swollen legs. Laboratory analyses revealed hyponatremia, while chest X-Ray exposed diffuse dense bilateral micronodular opacities obscuring the cardiac and diaphragmatic borders. Arterial blood gas was normal. High resolution CT scan revealed ectasia of the pulmonary trunk (32 mm), small areas of lung emphysema and innumerous bilateral calcifications with intra-alveolar and septal distribution and confluence, suggesting alveolar microlithiasis. Lung function tests revealed a mixed pattern with very low diffusing capacity for carbon monoxide. Invasive procedures were not conducted due to the typical radiologic appearance. The patient was medicated with fluticasone furoate/vilanterol and is currently under follow-up, maintaining sporadic cough.
Discussion: Pulmonary alveolar microlithiasis (PAM) is a rare disease that can be diagnosed by its radiologic features. Typically reveals a fine, sandlike micronodular pattern mainly in the lung bases. In literature, the diagnosis has been determined by lung biopsy in 46.9% of cases, most likely because the disease is unfamiliar to many physicians. Differential diagnosis includes pulmonary alveolar proteinosis, sarcoidosis, silicosis, pulmonary hemosiderosis, amyloidosis and metastatic calcification in chronic renal failure. The prognosis of PAM is unclear and treatment remains supportive, including supplemental oxygen therapy. Authors hope to raise awareness to this rare condition, its typical radiological appearance as well as its differential diagnosis.

Keywords: *Pulmonary alveolar microlithiasis. Lung calcifications.*

PE 110. TRIPLE POSITIVE ANTIPHOSPHOLIPID SYNDROME: AN UNEXPECTED DIAGNOSIS

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Case report: Male, 20 years old, smoker. Personal history: irrelevant. He first came to the emergency room (ER) complaining of vomiting, diarrhea and right low back pain irradiating to the right groin that began a week before. He also had leukocytosis (13,700 × 10^3/μL) and elevation of CRP (15.84 mg/dL). Gastroenteritis and acute renal colic were assumed. He received symptomatic treatment and ciprofloxacin. 3 days later he returned to the ER with productive cough, hemoptoic sputum and thoracic pain that began 2 days before. He had worsening of CPR (29.90 mg/dL) and the chest X-ray showed an opacity in the right lung base. Community acquired pneumonia (CAP) was assumed and ciprofloxacin switched to levofloxacin. He returned to the ER after a week because he developed fever, dyspnea, fatigue and loss of appetite. He was subfebrile and had diminution of breath sounds in the right lung base. Chest CT showed "several areas of consolidation in the right lung with a subpleural peripheral distribution, some of them with atoll sign." CAP was again assumed and doxycycline and cefuroxime initiated. The patient didn't get any better and, meanwhile, he recurred to a private doctor and began corticotherapy with clinical improvement. Considering the absence of response to antibiotics and the clinical improvement with corticotherapy, a diagnosis of organizing pneumonia was assumed and the treatment maintained. Nonetheless, after 15 days, in spite of clinical improvement, new opacities appeared in the chest X-ray, reason why he underwent bronchofibroscopy with bronchoalveolar lavage (BAL) and lung biopsy. About 10 days later, he was again evaluated in ambulatory consultation. In this occasion, he reported pain in the left popliteal area for one week, making him unable to walk without crutches. Additionally, BAL didn´t show any relevant findings and lung biopsy showed focal lesions of necrosis in the lung parenchyma. Given the new symptoms and the findings of the lung biopsy, the patient was sent to the ER and underwent angio-CT that showed "filling defects of the distal portion of the right pulmonary artery and its lobar and segmental branches in the inferior, middle and superior right lobes, compatible with non-recent pulmonary thromboembolism (PE). Irregular densifications with central cavitation in the right lobes, probably areas of pulmonary infarction". Inferior limb eco doppler was also performed and showed "left deep vein thrombosis with visible clot filling the lumen of the superficial femoral, popliteal posterior tibial and the external saphenous veins, probably not recent." Anticoagulation was initiated and the patient was later diagnosed with triple positive antiphospholipid syndrome (APS) - persistent positivity (12 weeks apart) for lupus anticoagulant, anti-cardiolipin and anti- β2glycoprotein I antibodies.
Discussion: It is paramount to keep in mind that PE and APS can have unexpected presentations and that the former can occur at any age and the latter, although is more common in women, can also occur in men. Thus, it is critical to maintain a high level of suspicion so that clinically relevant cases are not missed.

Keywords: *Antiphospholipid syndrome. Pulmonary embolism.*

PE 111. A RARE CAUSE OF PLEURAL EFFUSION

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Introduction: Several hypotheses should be considered in the investigation of pleural effusions, which may be caused by intrinsic pulmonary and pleural pathology or be a manifestation of systemic diseases. Determining its etiology is essential as it will determine the therapeutic strategy. The authors present the case of a patient with a rare cause of pleural effusion.
Case report: Male, 77 years old, history of hypertension and benign prostate hypertrophy. He was admitted to the Cardiac Surgery Unit in November 2018 due to cardiac pre-tamponade and was submitted to pericardiocentesis with an output of 1250 mL of serohematic fluid. Pericardial fluid cytology was negative for malignant cells; bacteriological and mycobacteriological tests were also negative. Post-procedure echocardiography revealed no changes in function and no recurrence of pericardial effusion. Six months later he re-

turns to the emergency department for progressive worsening dyspnea, but without fever, cough or sputum. Blood tests without relevant changes. Chest X-ray: hypotransparency in the lower half of the left hemithorax compatible with pleural effusion (not present at hospital discharge date). We performed diagnostic and evacuating thoracentesis. Cytochemical examination of the pleural fluid revealed an exudate. Negative bacteriological and mycobacteriological tests. Cytological examination: 13,590 cells/µL: 4% neutrophils, 6% lymphocytes, 5% eosinophils, 17% monocytes/macrophages, other cells 68% (irregularly lymphoid morphology cells, characterization required by Immunophenotyping/Pathological Anatomy). Immunophenotyping: 83.6% of pathological cells, with phenotype that may be compatible with primary serous lymphoma. Pleural fluid cytology: Atypical lymphoid cells, compatible with large non-Hodgkin B lymphoma, primary serous lymphoma. Pleural biopsies were also performed, but only showed signs of chronic pleuritis. The patient was then referred to a Hematology Consultation. They requested cervico-thoraco-abdominopelvic CT, which excluded lymph nodes or other organ involvement by malignant cells. Bone biopsy: representation of the three series without significant alterations; no pathological infiltrates. Of the remaining etiological study: HIV and hepatitis B and C serologies were negative. Given the diagnosis of serous primary lymphoma, he started chemotherapy with R-CHOP (rituximab, cyclophosphamide, doxorubicin, vincristine, prednisolone). Until definitive diagnosis and initiation of chemotherapy, we performed 2 additional thoracenteses for symptomatic relief. After starting chemotherapy, the pleural effusion remained stable. The patient maintains follow-up in Hematology consultation.
Discussion: Primary serous lymphoma is an individualized pathological entity, and its diagnosis is essentially based on serous cavity fluid analysis (in this case pleural) by immunophenotyping and pathological anatomy, excluding lymph nodes or other organ involvement by malignant cells. Primary serous lymphoma is an uncommon type of non-Hodgkin's lymphoma and is more common in immunocompromised patients. The authors describe this case because it is a rare cause of pleural effusion and it is a rare pathology in immunocompetent patients with only few cases described in the literature.

Keywords: *Pleural effusion. Primary serous lymphoma. Immunocompetent.*

PE 112. UNUSUAL ETIOLOGY OF CHYLOTHORAX

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Introduction: Chylothorax results from the accumulation of lymph in the pleural space due to injury or obstruction of the thoracic duct, and accounts for about 2-3% of all pleural effusions. Lymphoma is the most common oncologic cause, but in rare cases other cancers may be at its origin.
Case report: 56-year-old woman, autonomous in daily life activities, with a history of high-grade poorly differentiated serous carcinoma of the ovary diagnosed in 2014, with epiploic and peritoneal metastasis. She underwent several cycles of chemotherapy and finished a Nab-Paclitaxel cycle in December 2018. A follow-up Magnetic Resonance Imaging on February 2019 showed progression of the disease, with an increase in a retroperitoneal adenopathic conglomerate. A chemotherapy regimen with carboplatin was initiated, but suspended in April due to allergic reaction, and Nab-Paciltaxel therapy was resumed due to the lack of alternatives. In early June, she is admitted to the hospital due to worsening dyspnea for minor efforts. Thoracic CT showed, besides multiple supraclavicular, axillary, mediastinal, and bilateral hilar adenopathies, a massive left pleural effusion. Blood tests showed increased inflammatory parameters. Pulmonology collaboration was requested, and a diagnostic thoracentesis was performed, with aspiration of a milky and very thick fluid. It was not possible to characterize the pH or the differential cell count due to the liquid thickness, so a chest tube was immediately inserted, with a total drainage of 2,700 mL on the other hand, the biochemical study of the liquid showed an exudate with glucose: 89 mg/dL, LDH: 252 mg/dL, total proteins: 42 g/dL and triglycerides: 3,614 mg/dL (seric value: 210 mg/dL), compatible with the diagnosis of chylothorax. Due to the impossibility of performing a new chemotherapy regimen, support therapy was initiated, with a diet rich in medium chain triglycerides and low in fat, as well as octreotide therapy. On the following day, the patient presented with marked lethargy and later desaturation, discomfort and agitation, so it was decided to optimize comfort measures. The patient died a few days later.
Discussion: Chylothorax secondary to ovarian carcinoma is a rare entity, with few cases described in the literature. The treatment of the underlying disease, when possible, is essential to its resolution, and may be complemented by other measures such as special diet, chest drainage, somatostatin or octreotide therapy or even surgical treatment.

Keywords: *Chylothorax. Support therapy. Ovarian carcinoma.*

PE 113. PLEURAL LIPOMA: A RARE FINDING

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Introduction: Lipomas are benign and solid mesenchymal tumors, often seen in adults. Nevertheless, the pleural localization of these tumours is extremely rare. Lipomas are usually stable, slow-growing, asymptomatic, and accidentally discovered lesions.
Case report: A 54-year-old man former smoker, who underwent elective axillary lipoma excision surgery in January 2019, was referred to the pulmonology department for presenting a well-defined mass on the preoperative chest roentgenogram contiguous to the surface pleura in the right mid-thoracic region. Chest computed tomography (CT) showed low density pleural lesion, size 4.5 × 3.8 × 3.5 cm, in the right mid-thoracic region, suggestive of pleural lipoma, without parenchymal component or invasion of intercostal spaces. The patient has no constitutional or respiratory symptoms or local complaints. Revaluation chest CT was performed in May 2019, confirming the lesion and showing its morphological and dimensional stability. Therefore, the diagnosis of pleural lipoma has been established. As the patient is asymptomatic, after multidisciplinary discussion, clinical and thoracic follow-up of the lesion and its potential complications were recommended.
Discussion: A definitive diagnosis of pleural lipomas usually requires histopathological confirmation. However, in asymptomatic individuals who fulfill CT criteria for pleural lipoma, histological confirmation may be obviated. Nonetheless the multidisciplinary discussion plays an important role, as it helps in the differential diagnosis of lesions and avoidance of invasive procedures and their complications.

Keywords: *Pleural lipoma. Benign. Radiological diagnosis.*

PE 114. SECONDARY PNEUMOTHORAX. A CASE OF THORACIC ENDOMETRIOSIS

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Introduction: Endometriosis is a disease characterized by the presence of ectopic endometrial tissue. Chest involvement is the most

common extra-pelvic location. Catamenial pneumothorax is a rare entity that occurs within the first 72 hours of the menstrual period.
Case report: A 36-year-old female patient, social worker, non-smoker, with a personal history of symptomatic bradycardia with episodes of syncope under investigation. G1P1A0. For some years, with monthly complaints during menstruation of right omalgia associated with effort intolerance. Medicated with contraceptive pills. The patient went to the emergency department (ED) with respiratory distress of sudden onset, on the first day of the catamenial period, easy fatigue, and right omalgia, of increasing intensity (9/10), intermittent, with irradiation to the anterior and posterior thoracic wall. It aggravated with decubitus and improved with oral anti-inflammatories, complaints with 4 days of evolution. She denied fever, cough, depletion, hemoptysis and trauma. At the physical exam: feverless, blood pressure 130/70 mmHg, pulse 90 bpm, eupneic, at room air SpO2 97%. Pulmonary auscultation, with right diminished vesicular sounds and hyperresonant to percussion. No other relevant changes. Blood tests had no relevant changes. Chest X-ray: hyper transparency of the upper 1/3 of the right hemithorax, without tracheal deviation, compatible with pneumothorax. She was submitted to insertion of a chest tube drain on the 8th right intercostal space in the axillary midline. Performed thorax CT that revealed a thin blade of apical pneumothorax to the right. Right pleural drainage and small subcutaneous emphysema on the homolateral thoracic wall. Area of nodular thickening of the right diaphragmatic pleura with 16 mm. No pleural effusion or other changes. At 48h of drainage, the right lung was fully expanded, and the thoracic drainage was removed. She was discharged, clinically and imagiologically improved. After 4 months, at the first 24h-48h of her menses, the previous complaints recurred and she returned to the ED. She presented imaging changes compatible with the recurrence of the right pneumothorax. She refused drainage placement, was transferred to the Department of Thoracic Surgery and underwent video-assisted thoracic surgery (VATS), which observed multiple pleural diaphragm fenestrations and pleural adhesions, without pleural implants, compatible with catamenial pneumothorax. She was submitted to pleurodesis with talc and started continuous and uninterrupted oral contraceptive therapy. Subsequently, she started three month GnRH analog, with menstrual spotting and the appearance of previously reported complaints and diagnosis of new multiloculated pneumothorax on the right. She was transferred to the Thoracic Surgery service and submitted to new pleurodesis by VATS. Due to adverse effects, progestogen therapy was altered, with a new spotting, with recurrence of chest complaints and imaging alterations compatible with small pneumothorax, in the right hemithorax that cures with conservative therapy. Currently, in pharmacologically induced menopause, without new episodes.
Discussion: Thoracic endometriosis is a rare and underdiagnosed entity, for which a high level of suspicion for recurrent pneumothoraces is crucial in women of childbearing age. Diaphragmatic fenestrations are one of the characteristic lesions of catamenial pneumothorax.

Keywords: *Pneumothorax. Catamenium. Endometriosis.*

PE 115. PYOPNEUMOTHORAX: A RARE INFECTIOUS COMPLICATION

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Introduction: A pyopneumothorax is defined by the accumulation of purulent fluid and gas in the pleural cavity. In the absence of bronchopleural fistula and previous surgery or thoracentesis, its presence suggests anaerobic or mycobacterial infection and is associated to significant morbidity and mortality. Prevotella melaninogenica and Streptococcus constellatus are commensal anaerobic and aerobic agents, respectively, usually present in the mouth and upper respiratory tract. They are only occasionally isolated in empyematous pleural effusions.
Case report: We present the case of a 58-year-old patient that recurred to the Emergency Room (ER) complaining of productive cough, fatigue and dyspnoea at rest for 6 days. As relevant medical history, he had suspected epilepsy with history of head trauma, peptic ulcer, alcoholic liver disease with maintained alcohol consumption and active smoking (> 100 pack-years). He had furosemide 40 mg and phenobarbital 100 mg as usual medication, with doubtful compliance. Physical examination revealed fever (38.4 ºC), icteric conjunctivae, poor oral hygiene and diminished breath sounds on the left hemithorax. Lab testing showed leukocytosis (20.1 G/L with 87.9% neutrophils), C-reactive protein of 20.3 mg/dL, hyperbilirrubinemia (total bilirrubin of 9.9 mg/dL, direct bilirrubin of 6.6 mg/dL) with slight hepatolysis and prolonged clotting times. Homogeneous opacity of the inferior two thirds of the left hemithorax, with air-fluid levels, could be seen on chest radiograph, suggesting complicated pleural effusion. Chest CT confirmed the presence of a large hydropneumothorax, with collapse of the adjacent lung and areas of parenchymal densification. Intravenous piperacillin-tazobactam and clindamycin were started, and a chest tube (24 Fr) inserted, with drainage of brownish, foul-smelling, purulent fluid. The patient had alcohol withdrawal syndrome as complication during admission, but presented good clinical progression. Several pleural washings with iodopovidone were performed and a total drainage of 2,400 cc of fluid was observed, whose cultures revealed the presence of Streptococcus constellatus and Prevotella melaninogenica. The patient was discharged at day 19 after admission, overall clinically improved, under respiratory kinesiotherapy program, with no need for surgical intervention. He later changed his lifestyle with clear improvement in his overall health status.
Discussion: With this case, the authors describe the favourable outcome of a patient with a rare complication of respiratory infection and isolation of agents usually associated with poor outcome. The good response to a program of kinesiotherapy and multiple pleural washings, with broad spectrum antibiotics, should be emphasized, as this approach frequently avoids more invasive interventions, with greater morbidity and mortality risk.

Keywords: *Pleural empyema. Pneumothorax. Respiratory tract infections. Microbiology.*

PE 116. CHYLOTORAX AS THE INITIAL MANIFESTATION OF A SIGNET RING-CELL GASTRIC CARCINOMA

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Introduction: Chylothorax is a rare entity related to traumatic and non traumatic causes. It is characterized by leakage and accumulation of lymphatic fluid in the pleural cavity, and it is usually caused by lesion of the thoracic duct, mainly from external compression or flux obstruction. The traumatic etiology is verified usually in accidents or surgeries, corresponding to an important cause of thoracic lesion duct. For that reason, patients with chylothorax as solo presentation at an emergency room should be considered to multiple other diagnostic options, mainly malignant, congenital, infectious, subclavian vein thrombosis, or pancreatitis and mediastinal irradiation associated causes.
Case report: This case reports a 54 years old women, with no medical history to report, was observed for asthenia and dyspneia for basic efforts with a one-month evolution, reporting progressive aggravation evolving with right thoracalgia, peripheral edema and abdominal ascites. Thoracic radiography revealed a considerable right pleural effusion, which was identified after thoracocentesis as a milky and sterile fluid, without malignant cells and with an abnormally high quantity of triglycerides, which motivated the placement

of chest tube. After thoracic tomography it was identified infracentrimetric bilateral axillary and left mammary adenopathy, as well as the right pleural effusion. For further investigation, it was performed an abdominal and pelvic tomography that identified parietal thickening of cardia, as well as asymmetrical thickening of the gastric and rectal wall, and oversized ovaries bilaterally. Later, and for dorsalgia, she was submitted to a vertebral column tomography that identified metastatic lesions in vertebral bodies from D11 to L4 with pathologic fracture at D4 level. It was performed an echocardiogram and a mammary echography with no abnormalities. It was later confirmed by digestive endoscopy the presence of a massive gastric infiltrative lesion of nodular and ulcerative characteristics, compatible after biopsy with a poorly cohesive cells carcinoma (signet ring-cell). Due to the clinical status, tumoral aggressiveness and low tumoral response to standard therapy, there were no conditions to perform attempts of curative therapy. During hospitalization the patient maintained pleural drainage during ten days with further effusion resolution, however it was registered progressive aggravation of the clinical status, with prostration and severe caquexia. The patient died in the hospital ward 8 weeks after admission.
Discussion: Cancer is the main cause of non-traumatic chylotorax, namely neoplasms like lymphoma, chronic lymphoid leukemia, lung or esophageal tumors have been implied as the most frequent etiologies. Surprisingly, it has been noted a decreasing number of cases related to lymphoma, given its timely diagnosis. The demonstration of triglyceride above 110mg/dL or the presence of quilomicrons in the collected pleural fluid is the gold-standard for diagnostic. The therapeutical management depends naturally on the cause, and includes one or several interventions such as diet modifications, pleurodesis our thoracic duct ligation. Despite the negative outcome, given the aggressiveness of the disease, this case reveals unusual pleural presentation, as a first manifestation of a non mediastinal cancer.

Keywords: *Chylotorax. Pleural effusion. Lymphoma. Mediastinal masses. Gastric signet ring cell carcinoma.*

PE 117. THORACIC ENDOMETRIOSIS AND RECURRENT PNEUMOTHORAX. A CASE REPORT

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Introduction: Endometriosis is a reproductive-aged women characterized by the presence of endometrial tissue outside the uterine cavity and commonly associated with chronic pelvic pain and infertility. Thoracic endometriosis, a rare form of the disease, is characterized by the presence of distinct clinical entities: catamenial pneumothorax; catamenial hemothorax; hemoptise and pulmonar nodules.
Case report: We present the case of a 35 year old patient, born and resident in Angola, since March 2019 in Portugal, with the previous diagnosis of thoracic and abdominal endometriosis, submitted only to hormonal therapy, with dienogest and etinilstradiol. The patient was also submitted to two intestinal resections with a colostomy in 2014 and 2018, without further clinical information. With a history of recidivant pneumothoraxes on the right since 2013, which were only treated through pleural drainage. She arrives to the emergency room on June 2019 with an episode of thoracalgia and non-productive cough with a 4-day duration accompanied by asthenia. Recurring to imagiology, a new pneumothorax on the right was diagnosed, and the patient was hospitalized in the Pneumology ward. She was submitted to passive pleural drainage initially, and later to active drainage, which was maintained for 25 days, without complete pulmonary re-expansion. It was finally confirmed, through abdomino-pelvic magnetic resonance a profound endometriosis with pelvic freezing, right hematosalpingis and infiltration of the anterior abdominal wall. In a thoracic MR, multiple implants on the right were observed, confirming the diagnosis of thoracic endometriosis. The patient was submitted to pleural talcage, identifying the presence by direct observation of diaphragmatic fenestrations in the tendinous centre and the absence of pulmonary and pleura lesions. There are many physiopathological theories for the genesis of the catamenial pneumothorax in thoracic endometriosis.
Discussion: This case reveals the importance of diaphragm involvement and the presence of diaphragmatic fenestrations, verified in only 20-30% of thoracic endometriosis cases. This shines light on the possible translocation and further implantation of gland elements from the pelvic cavity in the thoracic cavity. These episodes occur mostly on the right given the existence of congenital defects most commonly in this region of the diaphragm.

Keywords: *Catamenial pneumothorax. Thoracic endometriosis. Diaphragmatic fenestrations.*

PE 118. SÍNDROME SWYER-JAMES-MACLEOD: A CASE REPORT

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Introduction: Swyer-James-McLeod syndrome is a rare entity associated with postinfectious bronchiolitis obliterans that occurs in childhood. It is an acquired pulmonary condition that occurs in the early years of life, and is associated with "air trapping", hypoplasia and/or agenesis of the pulmonary arteries, resulting in hypoperfusion of the pulmonary parenchyma; and in some cases bronchiectasis. The evolution of the disease varies according to the extension of the pulmonary involvement.
Case report: A 31-year-old man, leukodermal, who was born at Lisbon (Portugal), with a history of presumptive viral infection at 3 years-old that caused unilateral bronchiolitis obliterans and bilateral sequelae bronchiectasis; and several respiratory infections in childhood and adolescence. The patient has no other significant medical history, and his family history was noncontributory. He had mo consumption of tobacco, alcohol or recreational drugs. The patient had a dyspnea mMRC1, and he was medicated with LAMA + LABA + ICS, having already performed preventive pneumococcal immunization, as also influenzae immunization. The clinical history, who had recurrent respiratory infections, and the immunological study without detected abnormalities have led to the need for a chest CT scan. A small-sized left pulmonary artery and a diffuse whitening, as also cystic bronchiectasis were detected on both bases of the lungs. The respiratory function was verified with a moderate obstructive pattern and it was also found to be analytically negative for the deficit of alpha-1-antitrypsin. All these findings led to the diagnosis of Swyer-James-McLeod syndrome.
Discussion: Although treating a relatively uncommon entity, most patients who carrier this syndrome are asymptomatic. However, they have a higher incidence of recurrent respiratory infections and dyspnea to medium efforts. To sum up, we reinforce the importance of an appropriate imaging study for faster diagnosis when this pattern is observed.

Keywords: *Swyer-James-McLeod. Bronchiolitis obliterans. Recurrent respiratory infections. Air trapping.*

PE 119. PASTEURELLA MULTOCIDA AND BRONCHIECTASIS: AN UNCOMMON ASSOCIATION?

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Introduction: Pasteurella multocida is a Gram-negative bacteria that is part of the oropharynx microbiome of many animals. P. mul-

tocida infection in humans is often associated with an animal bite or scratch resulting in skin and soft tissue infections, however, deeper dissemination for other tissues and organs is a possible complication. Less commonly, it can affect the respiratory tract, with most cases occurring in patients with underlying chronic pulmonary diseases or elderly, through inhalation of contaminated aerosols.
Case report: Women, 73 years old, non-smoker, owner of a dog, two cats and a parrot. Previous history of partial gastrectomy to treat a gastric ulcer, resulting in chronic anaemia and low body mass index. She was being followed by Pulmonology for bilateral varicose bronchiectasis classified as idiopathic, with a background of isolation of Pseudomonos aeruginosa from sputum; functionally, she had a very severe obstructive ventilatory defect and global respiratory failure, requiring long-term oxygen therapy. In the context of progressive worsening in dyspnea associated with an increased sputum volume and purulence, bilateral rhonchi and prolongation of expiratory time on chest examination, a sample of sputum was collected for microbiological examination. After isolation of P. multocida, sensitive to penicillins, tetracyclines and quinolones, she was medicated with amoxicillin and clavulanic acid, with subsequent clinical improvement.
Discussion: P. multocida is typically a commensal organism of the respiratory tract, isolated in individuals with underlying pulmonary impairment. However, it can be associated with a severe respiratory infection, with a frequent history of animal exposure, mostly dogs and cats, without reference to cutaneous inoculation, as presented in this case. P. multocida infections prognosis is variable, with a mortality rate of 30% regarding bacteremia. The authors enhance the importance of detailed patient history, such as animal exposure, when approaching patients with chronic respiratory pathology.

Keywords: *Pasteurella multocida. Bronchiectasis.*

PE 120. AN UNEXPECTED DIAGNOSIS OF CYSTIC FIBROSIS

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Introduction: Cystic fibrosis (CF) is an autosomal recessive, multisystemic, disease with clinical heterogeneity. Can present with different manifestations, ranging from classic to "atypical" phenotypes, which can difficult the diagnosis. Previously, CF was mostly exclusively to pediatric patients; however, given the increase of survival and diagnosis of atypical forms in adulthood, the percentage of adult patients has been increasing. The authors describe a case of a late diagnosis of CF.
Case report: Twenty-two years old male, with a history of allergic asthma and rhinitis since childhood, with no current follow-up. No smoking history. No relevant family history. He was admitted in the Neurology Department for four-month complain of tetraplegia with a predominance of upper limbs and cramps. Associated, he had fever, cough and sputum (more than usual). Objective exam was unremarkable. Analytically showed elevation of infection markers (neutrophilia leukocytosis; VS 37 mm, PCR 91 mg/L). He underwent thoracic CT, which showed cylindrical bronchiectasis with wall thickening associated with a tree-in-bud micronodular pattern. According to the findings, suspicion of tuberculosis was raised, and airborne precautions were instituted. Advice from Pulmonology was requested: no previous history of tuberculosis or contacts; recurrent respiratory infections since childhood, with cough symptoms and chronic bronchorrhea. Isolation of methicillin-susceptible Staphylococcus aureus (with negative mycobacterial cultures) in bronchial secretions. The sweat test was performed and revealed a value of 129 mMol ClNa. Of the remaining study, which included a brain and cervical MRI and EMG, no changes were found, so neurological symptoms were interpreted in an infectious context (antibiotic therapy with complete resolution). Subsequently, the genetic study identified in p.Val232Asp in exon 6 and p.Phe508del in exon 11 in heterozygous, confirming the diagnosis of cystic fibrosis.
Discussion: Given the diversity and versatility of CF presentation, the diagnosis may go unnoticed for years. The authors intend to show a case of a late diagnosis of the disease and demonstrate that it is essential to maintain high suspicion regarding the association of certain clinical characteristics in order to make a timely diagnosis of CF.

Keywords: *Cystic fibrosis. Bronchiectasis.*

PE 121. IMMUNOGLOBULIN A DEFICIENCY AND BRONCHIECTASIS. RETROSPECTIVE STUDY

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Introduction: Immunoglobulin A deficiency (IgAD) is the most common immunodeficiency, known as a humoral primary immunodeficiency. In order to make a diagnosis, patients must have an isolated deficiency of serum immunoglobulin A (IgA) with normal serum immunoglobulin G and M levels, be over 4 years old and have other causes of hypogammaglobulinemia excluded. The majority of patients are asymptomatic and less than a third has one or more of the following conditions: recurrent sinopulmonary infections, autoimmune disease, bowel disease, atopy, or anaphylactic reaction to transfusions. Some of these patients have associated chronic respiratory conditions such as bronchiectasis. Studies characterizing this association are limited.
Objectives: To study a sample of adult patients with IgAD and its impact in bronchiectasis.
Methods: Retrospective study of adult patients with IgAD followed-up in outpatient appointments over a ten-year period. Demographic, clinical and diagnostic data was collected for all patients. Patients with available thoracic computerised tomography (T-CT) scan images were selected and divided in two groups according to the presence of bronchiectasis (BQ and N groups). For these patients, lung function tests results were also included in the study. The statistical analysis was conducted using SPSS version 22.0.
Results: The initial sample included 115 patients with a median age of 36 years, of which 62.6% were females. Median IgA serum levels were 0.43 g/L. Approximately two thirds had associated sinopulmonary diseases, including recurrent respiratory infections, asthma, rhinitis, and pulmonary sarcoidosis (five cases). Additionally, 28.6% of patients had a diagnosis of atopy and 4.3% of autoimmune diseases, such as Erythematous Systemic Lupus, Graves' disease, and Sjögren Syndrome. Out of the 36 patients with available T-CT images, 11 had bronchiectasis (BQ). Patients with bronchiectasis were generally male (72.7% vs 20%; $p = 0.006$) and presented with lower residual volumes (RV) (83.30% vs 109.40%; $p = 0.045$) in comparison with patients without bronchiectasis. The patients' median age (53 vs 44 years; $p = 0.220$) and IgA levels (0.26 vs 0.29 g/L; $p = 0.161$) were similar in both groups. There were no statistically significant differences in the incidence of sinopulmonary and autoimmune diseases and atopy between the two groups. However, all patients with bronchiectasis had both atopy and an autoimmune disease, in comparison to only 20% and 8%, respectively, of patients without bronchiectasis. Bronchiectasis mainly affected the right lung, including medial and right lower lobes. Apart from RV, other lung function tests results showed no statistically significant difference between groups, though the values were overall lower in patients with bronchiectasis.
Conclusions: In this study, patients with bronchiectasis and IgAD were mostly males with lower RVs. Further studies with larger samples and additional variables are needed. It would also be important to systematically measure serum immunoglobulin levels for the aetiological study of patients with bronchiectasis because it alters the management of these patients.

Keywords: *Bronchiectasis. Immunoglobulin A deficiency.*

PE 122. THE E-FACED SCORE: ASSESSMENT OF THE SEVERITY OF NON-CYSTIC FIBROSIS BRONCHIECTASIS

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Introduction: Non-cystic fibrosis bronchiectasis (NCFB) is a chronic respiratory disease, characterized by abnormal and irreversible dilation of the airways. Due to the multidimensional and etiologically diverse nature of this disease, no single parameter can be used to determine its overall severity and prognosis. Being one validated score in use for the assessment of NCFB severity and prognosis, the FACED score evaluates five parameters: functional (FEV1% predicted), physiological (age), microbiological (chronic colonization by pseudomonas aeruginosa), radiological (number of pulmonary lobes affected by NCFB) and clinical (dyspnea, which is evaluated by the mMRC scale). By assessing these 5 parameters, the FACED score determines the probability of mortality in a 5-year follow-up, independently of the NCFB etiology. In order to also predict the future risk of exacerbations, one more variable was added to this score, the number of severe exacerbations in the last year, compose the final E-FACED score.
Objectives: To evaluate the severity and prognosis of NCFB through the E-FACED score and investigate the possibility of a statistically significant correlation between the parameters covered by the E-FACED score and the severity of NCFB.
Methods: A retrospective study including NCFB patients from a sample of patients attending the "Functional Breathing Re-adaptation" appointment at the Pneumology B Unit (CHUC). All patients underwent evaluation of the variables incorporated in the E-FACED score. Statistical analysis was performed using IBM SPSS® software v20.
Results: The sample included 39 patients (24 females and 15 males, aged 37 to 87 years). Most patients (56.4%) had bronchiectasis classified as mild, 33.3% classified as moderate and 10.3% as severe. A statistically significant difference was observed between the number of severe exacerbations in the last year, the age, the degree of dyspnea of patients and the severity of bronchiectasis (Kruskal Wallis test $p < 0.001$, Anova $p < 0.001$ and Kruskal Wallis test $p = 0.017$, respectively). Furthermore, no significant differences were found between the FEV1% predicted, the colonization by pseudomonas aeruginosa, the radiological extension of the bronchiectasis and the severity of bronchiectasis (Anova $p = 0.133$, Fisher's Exact test $p = 0.151$ and Kruskal Wallis test $p = 0.278$, respectively).
Conclusions: In this study, most patients have bronchiectasis classified as mild by the E-FACED score. Moreover, for our sample, the number of severe exacerbations in the last year, the age and the degree of dyspnea assessed by the mMRC scale were the most important variables in the classification of severity of NCFB. Thus, this study reinforces the importance of evaluating severe exacerbations of bronchiectasis in the stratification of the disease and follow-up of these patients.

Keywords: *E-faced. Non-cystic fibrosis bronchiectasis. Exacerbations..*

PE 123. CATAMENIAL RECIDIVANT PNEUMOTHORAX WITH DIAPHRAGMATIC PUNCHING. CASE REPORT

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Introduction: Endometriosis is a condition in which endometrial-like tissue proliferation occurs outside the uterine cavity. It can affect virtually any organ or tissue, with the pelvic cavity being the most frequently affected site. Among the least commonly affected sites are the lungs and pleura. In these cases, patients present with cough, chest pain and catamenial hemoptysis and/or pneumothorax (recurrent manifestation, usually beginning within 24 hours before catamenium and 72 hours after the onset of menstrual flow).
Case report: We report the case of a 32-year-old woman with a history of asthma, hypothyroidism, polycystic ovary syndrome, and exhibited right pneumothorax in 2016 having undergone surgical pleurodesis. In March 2019 the patient was admitted in the Emergency Department (ED) with dyspnea and right side thoracalgia. Detailed anamnesis identified relationship between catamenium with the above symptoms. On objective examination, a diagnostic hypothesis of right pneumothorax was presented. A chest X-ray confirmed pneumothorax on the inferior part of right lung. Due to the described situation, the patient was referred to the Thoracic Surgery Department, where she underwent right-sided video-assisted surgery. Multiple plaques of brownish coloration were identified in the parietal and diaphragmatic pleura, and a diaphragmatic orifice of circa 1 cm (liver was seen by the orifice). Right lower pleurectomy was performed and the orifice was closed. After 5 days of hospitalization the patient was discharged. However, 3 days later, she came back to the ED with complaints of thoracalgia and dyspnea, and the right basal pneumothorax was again diagnosed. The patient was admitted for drainage and chemical pleurodesis, with imaging control, at discharge date, showing a thin pneumothorax lamina at the right base. Anatomopathological report described nonspecific pleuritis. Three weeks after the last recurrence, she was admitted again to the ED due to thoracalgia, presenting X-ray with vestigial pneumothorax, which was stable compared to previous images. Given the absence of a histological diagnosis, despite the high clinical and macroscopic intraoperative suspicion of endometriosis, a review of the laminae was requested to a different laboratory, which confirmed the diagnosis of pleural endometriosis. The patient was referred for gynecology consultation, which is still awaiting at the time of this abstract.
Discussion: Pleural/thoracic endometriosis should be part of the knowledge of the pulmonologist. Although this is a rare finding, it is a cause of thoracalgia and recurrent hemoptysis, which may, as in this case, be accompanied by relapsing pneumothorax. The diagnosis provides a clear example of the pivotal importance that a complete clinical history, complemented by a detailed physical examination, have as essential tools in formulating an unusual diagnosis, such as described above, but of particular importance given the potential clinical and prognostic implications.

Keywords: *Pneumothorax. Relapse. Endometriosis. Thoracalgia.*

PE 124. GIANT MEDIASTINAL MASS. A CASE REPORT

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Introduction: Mediastinal masses are relatively uncommon. Most occur in the anterior mediastinum and include a variety of different entities, from benign to neoplastic lesions, with a broad spectrum of clinical, radiological, and pathological features. Its diagnosis is a challenge in clinical practice.
Case report: A 63-year-old male, a former smoker with type 2 diabetes mellitus and arterial hypertension. With a mediastinal mass known since 2015, discovered incidentally on echocardiogram. Chest CT-scan revealed a multiloculated cystic lesion measuring about 16 × 13.5 × 11.7 cm in the anterior mediastinum, lateralized on the left, compressing adjacent mediastinal structures and determining a left upper lobe atelectasis; the lesion was well-demarcated, it had a slightly irregular wall with contrast enhancement, extensive parietal calcification and a small area of lipomatous

low-density core. After diagnosis, the patient was lost to follow-up. He was hospitalized in December 2018 and January 2019 due to infection of the lesion. The subsequent study highlights: chest CT with lesion of overlapping dimensions, but with air-fluid level inside; January's chest CT scan showed air level increased, which, along with the fact that the patient to maintain abundant sputum, suggested a fistulation of the mediastinal lesion into the tracheobronchial tree, although not to be visible on CT; bronchofibroscopy revealed a decrease in the diameter of the left upper and lower lobar bronchi by extrinsic compression, without findings of bronchial fistula. The patient completed 41 days of antibiotic therapy, was discharged asymptomatic and was referred to thoracic surgery for resection of the mediastinal mass. He underwent a left thoracotomy; the lesion presented calcified wall adhering to the left lung and adjacent mediastinal structures. Eight hundred milliliters of dark green aqueous intracystic content was aspirated and the capsule of the lesion was dissected. The lesion presented a rough brownish surface and heterogeneous tissues with multiple areas of solid consistency; in one of the specimen's flaps were visible structures compatible with hair suggesting the diagnosis of cystic teratoma. Pathologically, no preserved tissues were found to confirm the suspicion, only aspects compatible with organizing hematoma; there was no evidence of malignancy. The patient had no history compatible with chest trauma. He is currently awaiting additional study for better diagnostic/therapeutic guidance.
Discussion: We present a patient with a large cystic lesion, with clinical, radiological and macroscopic findings suggestive of teratoma, which histologically was not confirmed. Although the lesion presents histological characteristics of benignity, the study will be maintained to confirm/exclude germ cell tumor and to assess the need for additional therapies.

Keywords: *Anterior mediastinal mass. Cystic lesion.*

PE 125. COSTAL "VOLET". CASE REPORT

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Introduction: The movable costal or "volet" costal flap is anatomically defined by the presence of two or more fracture points in 2 or more consecutive ribs, with the presence of a free and floating segment that moves independently producing paradoxical respiration and preventing intrathoracic negative pressure during inspiration and positive airway pressure upon exhalation which leads to a decrease in tidal volume and cough mechanism and predisposes to pneumonia and atelectasis.
Case report: The authors present a case report of an 82-year-old male patient with a history of arterial hypertension and dyspipidemia, a victim of thoracic trauma due to a traffic accident with fracture of the left costal arches and pneumothorax that resolved after chest tube placement. The patient had paradoxical breathing in the infra-clavicular pectoral region, but without functional impairment. She remained under surveillance with compressive dressing and analgesic therapy. He underwent computed tomography of the chest that allowed the anatomical definition of the costal "volet" (3rd, 4th and 5th left ribs fractured in more than one point). He underwent surgical treatment, which consisted of placing a polypropylene mesh (Marlex) to stabilize the costal grid. He was discharged 4 days after surgery, with significant improvement in pain complaints and resolution of the clinical condition.
Discussion: Initial treatment of costal "volet" consists of medical treatment with compression of the affected area, analgesia and physical therapy. Surgical indications are controversial and there is no consensus. Surgical fixation may be chosen in the first week after trauma or only when there is respiratory failure or mechanical ventilation weaning is not possible. The authors present the case by the technique used (stabilization of the costal grid with a Marlex net), which, although unconventional, led to a rapid improvement in pain complaints and resolution of the clinical condition.

Keywords: *Costal volet. Chest trauma.*

PE 126. LATE PRESENTATION OF CONGENITAL DIAPHRAGMATIC HERNIA: A CASE REPORT

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Introduction: Diaphragmatic herniation usually occurs in the diaphragm's posterolateral segments, more often on the left side (80-85%). The defect is due to the non-closure of the pleuroperitoneal canal during embryonic development (Bockdaleck's Foramen). This type of hernia was initially described by Bochdalek in 1848. It affects 1:2,200 newborns and it is rare in adults (0.17% to 6%).
Case report: Female patient with 81 years old, with past history of heart failure, atrial fibrillation and chronic kidney disease, among other cardiovascular risk factors and medicated for those diseases. Admitted to the emergency department with acute heart failure with type 1 respiratory insufficiency (pO2 51.0 mmHg), probably resulting from poor compliance to diuretic therapy. Chest x-ray showed an opacity at the right side of the heart, which was already visible since 2009, now presenting elevated hemidiaphragm. For a better understanding of this finding a CT scan was performed revealing a large Bochdalek hernia with fat content, extending from the posterior mediastinum to the carina, involving oesophagus and causing pulmonary left lower lobe atelectasis. A transthoracic echocardiogram was performed and showed aspects of pulmonary hypertension but preserved both left and right ventricular systolic function.
Discussion: The late presentation of Bochdalek hernia is rare and, therefore, a diagnostic challenge, since it has no specific signs or symptoms. Herniation of abdominal organs may occur and may cause complications. On the other hand, the presence of only adipose tissue content seems to be unusual. A large hernia can cause cardiac impairment due to extrinsic compression, which didn't happen in this case. The computed axial tomography confirms the diagnosis and some cases may require surgery.

Keywords: *Bochdalek's hernia. Late presentation.*

PE 127. HEMORRHAGIC BULLAE, AN UNUSUAL PRESENTATION OF CHICKENPOX

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Introduction: Chickenpox is an infection caused by varicella zoster virus, has a peak of incidence between 1 and 6 year old children. It results in a characteristic maculopapulovesicular disseminated skin rash. It is usually a benign but in immunocompromised individuals can lead to clinical complications.
Case report: Male, 52 years, 20 pack-year smoker, alcohol consumption of 100 g/day and a previous history of pulmonary tuberculosis 10 years in the past. He presented to the emergency room with cough and mucous sputum for the last 7 days, fever for 3 days and abdominal pain and pruriginous skin rash that started in the thorax but hastily disseminated to the entire body. At admission the patient presented pain and dyspnea, polypnea, fever, dispersed ronchi bilaterally at chest auscultation and dispersed vesicular lesions in the skin and oral mucosa with hematic content, pustules and papules. A thoracic CT scan showed peribronchovascular parenchymatous densifications with ground-glass areas suggesting an infectious

process with endobrochial dissemination. Blood tests showed cytolytic hepatitis and rhabdomyolysis. Due to the fast clinical decay, with ARDS criteria, the patient was transferred to the ICU where he started mechanical ventilation, hemodialysis for acute kidney injury and aminergic support for the septic shock. Despite these measures and treatment with acyclovir, ceftriaxone and azithromycin, the patient needed to be started on ECMO which he continued for 15 days. A bronchofibroscopy revealed scattered ulcerated lesions, septic workup from admission was sterile for bacteria, fungi and mycobacteria, serology studies for HBV, HCV and HIV were negative, immunoglobulin and immunologic study were normal, and no relevant immunosupresion factors could be identified. Blood tests showed severe kidney, liver and hematological failure. The patient had a favorable response at day 30 of admission and was transferred to the medical wards. At hospital discharge he had no respiratory failure, had improved kidney function without the need of hemodialysis.
Discussion: This was a case of varicella zoster virus pneumonia, with severe ARDS in a young immunocompetent patient, with an uncommon severity, with no history of diseased contacts, and an unusual skin rash. In conclusion, chickenpox is an infection with a clinical diagnosis and should not be forgotten in the adult. Because of its potential medical complications it should have an adequate clinical surveillance.

Keywords: *Pneumonia. Chickenpox. ARDS. Immunocompromised.*

PE 128. IF IT IS IN THE BLOOD, IT IS EVERYWHERE. NOSOCOMIAL NECROTIZING PNEUMONIA CAUSED BY METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS

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Introduction: Methicillin-resistant Staphylococcus aureus (MRSA) is an important and growing cause of nosocomial infections and remains a public health priority. In the last few years, we have seen a large increase in cases of MRSA pneumonia in the health care setting. These infections affect mainly older patients with multiple comorbidities and prior exposure to health care facilities, including surgery. Early diagnosis and appropriate treatment are key factors for better prognosis but can be challenging. MRSA pneumonia still carries an unacceptably high morbidity and mortality rate besides considerable economic costs.
Case report: Woman, 74 years old, no relevant medical history except arterial hypertension. Transferred from the hospital in her area of residence to a tertiary hospital due to Gliosarcoma wild-type for surgical removal. On the fifth postoperative day, the patient has inflammatory signs and purulent drainage at the peripheral venous catheter insertion site, in the right upper limb. Collects blood cultures and pus for culture, removes the catheter and initiates flucloxacillin. Given MRSA isolation in the samples collected, after 3 days antibiotic therapy is adjusted for vancomycin. The patient completes 15 days of vancomycin (already with a pair of negative blood cultures collected three days before the end of the antibiotic). Transthoracic echocardiography (TTE) is performed and excludes the presence of vegetations. Two days after vancomycin withdrawal, patient re-initiates fever and elevation of inflammatory markers (C-reactive protein (CRP) goes from 79 mg/L to 203 mg/L). Without infection focus and without new microbiological isolations (including four pairs of blood cultures and urine culture), patient is transferred to the Internal Medicine service for further study. On the 49th day of hospitalization, a computed tomography (CT) of the chest reveals a cavitated lesion with nonspecific features in the left upper lobe measuring 25 mm and a left pleural effusion of moderate volume. The diagnostic hypothesis of pulmonary tuberculosis is excluded through a mycobacteriological study collected by flexible bronchoscopy. Thoracentesis is performed, which excludes empyema, and pleural effusion is compatible with transudate, with negative cytological study for malignant cells. On the 55th day of hospitalization, the remaining bacteriological results are reported, showing MRSA isolation in the samples of bronchial lavage, bronchoalveolar lavage and bronchial secretions collected by sputum. Therefore, MRSA necrotizing pneumonia is assumed and vancomycin re-initiated. All subsequent blood cultures are negative (four pairs). New TTE is performed (with good ultrasound window) that excludes infectious endocarditis. Patient presents no respiratory insufficiency, sustained apyrexia and decrease in inflammatory markers (CRP 33 mg/L). Repeats thoracic CT after 4 weeks of antibiotic documenting a reduction in the cavitated lesion (18 mm) with a predominance of fibrosis, thus suspending vancomycin. The patient is discharged after 84 days of hospitalization oriented to consultations in Pulmonology and Radiation oncology.
Discussion: MRSA is an increasing cause of nosocomial pneumonia carrying a high morbimortality rate. Improving health care is crucial to reduce selection of antimicrobial resistant strains and prevent their transmission, thereby reducing the risk of nosocomial infection and its adverse consequences.

Keywords: *Methicillin-resistant staphylococcus aureus (MRSA). Nosocomial necrotizing pneumonia. Vancomycin.*

PE 129. BENIGN TRACHEAL STENOSIS: CLINICAL CASE

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Introduction: Benign tracheal stenosis occurs in all age groups in about 1 to 4% of patients undergoing mechanical ventilation. Many factors considered are cited among them laryngeal abnormality, traumatic intubation, intubation by inexperienced professional, repeated intubations, mobilization of the endotracheal tube (ETT), decreased mucociliar transport with accumulation of secretions, infection site, gastroesophageal reflux disease, chronic or acute diseases that lead to decreased tissue perfusion, prolonged intubation time and particular characteristics of ETT.
Case report: We describe the case of a 31-year-old patient, male, diabetic, insulin-treated observed at the emergency department by diabetic ketoacidosis, hospitalized in the intensive care unit in coma, where was intubated and subjected to mechanical ventilation. On the fifth day of hospitalization was extubated and evolve with respiratory failure, intubated again having stayed for six more days. Later was extubated and transferred to the medicine room. On the sixth day of hospitalisation in the room has evolved with respiratory failure and stridor. Performed bronchoscopy which showed vocal cords and trachea wall covered with whitish thick plate and adhered to the mucosa, making reduction of tracheal lumen. The mycological examination of secretions, as well as biopsies revealed to be numerous hyphae and spores of Candida albicans. Was medicated with fluconazole and nistantin with endoscopic and clinical improvement but, about of 30 days after hospital discharge is readmitted by respiratory failure and stridor, having been emergency tracheostomized. Bronchoscopy revealed concentric stenosis of about 90% of the tracheal lumen. He remained with the tracheostomy cannula and referenced for treatment outside the country.
Discussion: The stenosis post intubation, are the most frequent. In adults are caused not only by the time of intubation, but especially by ischemia to the tracheal mucosal necrosis following tracheal cartilage and crushed by high pressure cuff of the cannula. In addition to ischemic injury there are also other factors like the tracheal infections. The strictures may originate from the action of germs gram positive or negative, specific germs as the tubercle bacilli, fungi or parasites. However these strictures are very rare and diagnosed with clinical history, chest X-ray and imaging tests for the presence of the bacterium, bacillus, fungus or parasite in

sputum, bronchial or tracheal secretions or biopsy the strictured area. Confirmed the diagnosis and if there are signs and symptoms of obstructive respiratory failure, in addition specific treatment, patients have to undergo endoscopic treatment. We believe that our patient had several risk factors for tracheal stenosis, repeated intubations, the extended time of intubation, as well as the fungal infection and no completion of endoscopic treatment for local technical difficulties on approach of these patients. Tracheal stenosis is a complication with high morbidity, but that can be prevented. In countries with few resources this complication is severe and can often be fatal. Its incidence can decrease with your knowledge of pathophysiology and care to avoid.

Keywords: *Trachea. Stenosis. Candidiasis.*

PE 130. A VIEW ON LUNG ABSCESSES AT A DISTRICT HOSPITAL

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Introduction: Lung abscesses are cavities in pulmonary parenchyma with necrotic content that occur after microbial infection. They can be classified as acute or chronic, primary or secondary. Prolonged antibiotic therapy and predisposing factors treatment are the basis of therapy.
Methods: We accessed all clinical files that were in pulmonary ward patients from 2012 to 2018 with lung abscess as main diagnosis. We selected all information related to epidemiology, symptomatology, comorbidities and treatments made.
Results: We found 23 patients, 73.9% male, mean age of 61.0 ± 18.2 years. From these, 91.3% were hospitalized through the emergency department and 87% of patients were independent in daily living activities. Cough with sputum, chest pain and fever were the most common symptoms. There were 39.1% smokers, 26.1% former smokers and 34.7% had alcoholic habits. In order of frequency the most common comorbidities were previous pulmonary pathology, diabetes mellitus, arterial hypertension and the presence of active neoplasms. Radiologically, lesions were more frequent in the right lung field (56.5%) and the most frequent analytical changes were leukocytosis and elevated CRP, which were both present in 43.7% of patients. In 4 patients a microbiological agent was isolated by culture of bronchial lavage and in 7 patients in sputum culture. Regarding treatment, the most commonly used antibiotic classes were penicillins and derivatives, followed by macrolides, carbapenems and aminoglycosides, being that 47.8% of patients were treated with 4 or more antibiotics.
Conclusions: Lung abscesses are rare, however, they remain responsible for significant morbidity and mortality, which justifies the relevance of our study.

Keywords: *Lung abscesses. Pulmonary parenchyma. Epidemiology.*

PE 131. OSTEOCHONDROPLASIC TRACHEOBRONCHOPATHY: TWO RARE CASES

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Introduction: Osteochondroplastic tracheobroncopathy (TO) is a rare, benign large airway disorder of unknown etiology characterized by an abnormal growth of numerous cartilaginous and/or bony submucosal nodules, often protruding into the tracheal lumen. They present as round osteocartilaginous projections or polypoids that cover the rough portion of the surface of the tracheobronchial mucosa and the narrow and rigid area in the respiratory tree. They are characterized by slow, progressive, focal or diffuse growth, covered by metaplastic or normal epithelium, extending from the pericondrio to the tracheal lumen along the ring path, with active hematopoietic inclusion in the nodular neoformations. Patients are commonly asymptomatic, but the TO may present clinically with sneezing, dyspnea, hemoptysis, cough or obstructive pneumonia, CT scan and bronchoscopic examination with lesion biopsy, essential for the correct diagnosis.
Case reports: Two cases are presented for their rarity and their diagnosis in a Pulmonology service in a short time. A 75-year-old man with no relevant pathological history who referred to the Emergency Department for pleuritic chest pain with cough and haemoptoic sputum. From the complementary exams of diagnoses performed, we highlight analytically increased inflammatory markers; gasometric with respiratory failure type 1 and radiographically with a condensation at the right base. He was admitted with the diagnosis of community-acquired pneumonia, initiating empirical antibiotic therapy. During his hospital stay, he underwent a chest CT scan, which showed a diffuse irregularity of the trachea and the two main bronchi. Bronchofibroscopy examination revealed several polypoid lesions with apparently normal mucosa. Bronchial biopsies showed non-specific inflammation and epidermoid metaplasia. The patient was then submitted to rigid bronchoscopy, where larger biopsies of the polypoid lesions were obtained. Histological examination showed cartilage and mature bone fragments, confirming the diagnosis of osteochondroplasic tracheobronchopathy. Autonomous 51-year-old man with a history of hypertension and obesity, nonsmoker, Septoplasty in 2009 and facial paralysis in 2016 of unknown etiology. He was referred for outpatient pulmonology consultation for progressive worsening snoring and sleep apnea episodes. The objective of the study was thoracic CT "... slight deformation of the trachea, especially at the level of the superior mediastinum with a reduced transverse diameter not exceeding 12 mm with a clear thickening and irregularity of the mucosa..." Performed Alveolar Wash Bronchofibroscopy, revealing a negative cytology for malignant cells. At the anatomopathological level, the biopsy fragment of a tracheobronchial polypoid lesion turned out to be a subacute inflammatory process, with abundant lymphocyte infiltration, reactive mucinous cell hyperplasia, and partially calcified cartilage ring. The patient remains in consultation, under surveillance, without any treatment. TO is a benign condition and often no intervention is required in asymptomatic cases. In this case treatment of underlying pneumonia resulted in resolution of all symptoms. Direct upper airway treatment was not required and the patient remains asymptomatic, with subsequent clinical surveillance and follow-up at the Outpatient Consultation.

Keywords: *Dyspnea. Tracheal diseases. Bronchoscopy.*

PE 132. WHEN PECIES DON'T MATCH

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CHBV-Aveiro.

Introduction: The major causes of refractory hypoxemia (hypoxemia without response to high oxygen flows) are usually secondary to pulmonary pathology (pulmonary thromboembolism and respiratory distress syndrome) or less frequently due to heart disease, with right-left shunt.
Case report: The authors present a case of a 71 years old men, admitted in orthopaedics to elective left hip arthroplasty, on spinal anaesthesia. As medical history he had hypertension and type 2 mellitus diabetes, without previous pulmonary or heart disease. Seven days after surgery he started with dyspnea, cough and expectoration, with hypoxemia and rise of inflammatory parameters (leukocytes 29.1×10^9/L and reactive C protein 34 mg/dL). Was assumed a health care associated respiratory infection and was initiated piperacillin/tazobactam with resolution of the infection. Although

he maintained hypoxemia with elevated shunt fraction (arterial-alveolar gradient of 538, paO2 43 mmHg, paCO2 28 mmHg with FiO2 0.85-0.90), needing high flow oxygen (30 L/min). Complementary exams were preformed: chest radiography doesn't show alterations; angiothomography excluded pulmonary thromboembolism or fat emboly; ventilation/perfusion scintigraphy also excluded pulmonary embolism but revealed a dubious sign of right-left shunt; transthoracic echocardiography didn't show intracardiac shunt, with normal ventricular systolic function and without signs of pulmonary hypertension. Due to persistent hypoxemia he was submitted to a transesophageal echocardiography that showed an interauricular septum aneurism. The agitated saline test demonstrated the presence of the right-left shunt (with or without Valsava manoeuvre) and a patent foramen ovale (PFO) was diagnosed. Right heart catheterisation confirmed the absence of pulmonary hypertension and he was submitted to percutaneous closure of interatrial defect with complete resolution of the hypoxemia. Transesophageal echocardiography didn't present residual shunt. The patient was discharged, maintaining follow up in cardiology.
Discussion: The differential diagnostic of intracardiac shunt is of the utmost importance in the study of refractory hypoxemia. This diagnostic can be facilitated by the presence of platypnea, but due to the fact that the patient was submitted to orthopaedic surgery it was impossible to evaluate that clinical sign. The definitive treatment of the intracardiac shunt is the percutaneous closure of the PFO.

Keywords: *Refractory hypoxemia. FOP.*

PE 133. SHRINKING LUNG SYNDROME: A RARE MANIFESTATION OF SYSTEMIC LUPUS ERYTHEMATOSUS

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Introduction: Respiratory involvement in systemic lupus erythematosus (SLE) is common, consisting mainly of pleural involvement, alveolar hemorrhage, pulmonary thromboembolism (PTE), pulmonary hypertension, and diffuse pulmonary disease. Shrinking lung syndrome (SLS) is a rare manifestation of SLE (1% of patients). It is manifested by progressive dyspnea and chest pain, with reduced lung volumes -associated with diaphragm elevation and restrictive ventilatory deffect- in the absence of parenchymal changes and other causes of restriction. The pathophysiology is unclear. There are several hypotheses: inhibition of diaphragmatic activation reflexes due to pleuritic pain; diaphragmatic myopathy; surfactant deficit; pleural adhesions; chest wall dysfunction; and phrenic nerve paralysis. The treatment is not well established, but is based on immunosuppression - corticosteroids, azathioprine, cyclophosphamide and methotrexate. The prognosis is good, with clinical and functional improvement, although elevation of the diaphragm persists. There is a long delay in diagnosis due to lack of alertness for the syndrome.
Case report: We present the case of a 76-year-old female patient with SLE diagnosed at 38 years of age, manifested by arthritis, pericarditis and pleural effusion. She started therapy with prednisolone and azathioprine achieving disease control. At the age of 73, she started dyspnea on moderate exertion. She underwent thoracic CT, without pleuro-parenchymal alterations, and respiratory function tests, which revealed restrictive ventilatory deffect (TLC 72% of predicted), which was not explained by other causes. Azathioprine dose was increased, with clinical improvement. At 74 years old, she underwent aortic valve replacement because of stenosis. Posterior radiographs remained similar, excluding iatrogeny. At age 75 dyspnea aggravated, arising to minimal exertion. The echocardiogram showed preserved ejection fraction. Spirometry again revealed a pattern suggestive of restrictive defect; however, it was not possible to perform plethysmography, CO diffusion study or measurement of maximal inspiratory pressure due to the patient's inability to collaborate. Thoracic CT was repeated, which only showed elevation of the right diaphragmatic hemicupula, with no other alterations. Abdominal ultrasound excluded hernia or organomegaly to justify this elevation. Inspiratory and expiratory chest radiography confirmed absence of right hemidiaphragm mobility, also corroborated by chest ultrasound. Bronchodilator therapy was optimized and physiotherapy was instituted, with significant reduction in dyspnea. Due to PTE she started anticoagulation. She is awaiting diaphragmatic electromyography to check for the presence of phrenic neuropathy, which is described in some cases of SLS. At the moment, we are considering more aggressive immunosuppression, which was delayed due to her age and recent PTE.
Discussion: This is a case of SLE with typical pulmonary manifestations - pleuritis and PTE -but also with a rare manifestation- SLS - which constitutes a diagnosis of exclusion and to which clinicians should be alert. This case demonstrates that it is always important to exclude the different manifestations of a disease that is already diagnosed, integrating the different clinical, functional and imaging data, before considering other diagnostic hypotheses.

Keywords: *Lupus. Shrinking lung syndrome. Pulmonary restriction.*

PE 134. COPD EXACERBATION WITH ACUTE GLOBAL RESPIRATORY FAILURE: THE ONE-YEAR EXPERIENCE IN A NONINVASIVE VENTILATION UNIT

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Introduction: Chronic obstructive pulmonary disease (COPD) is a major cause of morbidity and mortality worldwide. It is a systemic disease, which is usually associated with various comorbidities, with frequent exacerbations that have a significant impact on patients' quality of life and survival. Exacerbation of COPD with acute global respiratory failure is an indicator of increased risk of death and noninvasive ventilation (NIV) is the recommended treatment.
Objectives: To characterize patients with acute global respiratory failure due to COPD exacerbation admitted to a NIV unit of a central hospital during 2018.
Methods: Retrospective study of patients admitted to the NIV unit of the Pulmonology Service of a central hospital diagnosed with COPD exacerbated with acute global respiratory failure during 2018. Patients with other causes of respiratory failure were excluded. Data collection through review of the clinical computer process. Subsequent descriptive analysis of the data using SPSS Statistics v23.
Results: Sample of 43 patients (mean age 72 years, 56% male); 40% active smokers and 53% former smokers (average smoking load 50 UMAs). The most frequently found comorbidities were: hypertension (49%), heart failure (46%), dyslipidemia (42%), Diabetes mellitus (31%), atrial fibrillation (31%) and anxiety/depression disorder (22%). The average age-adjusted Charlson comorbidity index was 5 points. The mean FEV1 of the patients was 47%, the mean baseline peripheral eosinophils was 2% (144 µL) and 78% had at least 1 exacerbation requiring hospitalization in the previous year. Most exacerbations (73%) were infectious, with a mean CRP of 10mg/dL. The average APACHE score on admission was 12 points. The mean arterial pH of the sample prior to the introduction of NIV was 7.29, with paCO2 78 mmHg and pO2/FiO2 ratio of 210. In 29% of patients NIV was the therapeutic ceiling, with no indication for intubation/resuscitation. The observed mortality rate was 14% at 30 days, with predicted mortality (according to the APACHE score) of 15%.
Conclusions: The data obtained are consistent with the literature regarding the high prevalence of smoking, reinforcing the need to

continue investing in smoking cessation. The association of COPD with multiple comorbidities (resulting in a high Charlson comorbidity index) is also highlighted, which emphasize the need for the physician to investigate and treat not only COPD exacerbation but also associated comorbidities. The observed mortality was lower than expected, suggesting the quality of care provided.

***Keywords**: Global respiratory failure. Exacerbation. COPD. Comorbidities. Mortality.*

PE 135. COMMON VARIABLE IMMUNODEFICIENCY AND ALPHA-1-ANTITRYPSIN DEFICIENCY

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Case report: This case is about a woman, with a history of childhood asthma whose symptoms ceased spontaneously during adolescence. At the age of 32, a tobacco smoker for 10 years, she was hospitalized for pneumonia with pleural effusion. Since then, respiratory symptoms (dyspnea and cough with sputum production), have become recurrent and frequent. Multiple respiratory infections were diagnosed within a few years and after measuring her immunoglobulins levels, she was found to have common variable immunodeficiency (CVID), treated with subcutaneous immunoglobulin replacement. At age 57, she was tested for alpha-1 antitrypsin deficiency (AATD). The analysis showed that she had very low levels of this protein in the blood (18.7 mg/dL by nephelometry). Given that the initial genetic diagnosis of AATD was inconsistent with serum levels, a sample was sent to IPATIMUP. The reevaluation included the protein analysis by isoelectric focusing, genotyping of 4 polymorphic sites including S and Z mutations and sequencing of SERPINA1 coding region, which revealed Mmalton homozygosity (p.Phe52del in a M2 allele) as the cause for AATD. Since the patient stopped smoking more than six months earlier, and she was found to have obstructive ventilatory defect on lung function tests (FEV1 of 53%), she began A1AT augmentation therapy immediately after confirmation of the AATD diagnosis. Despite having IgA deficiency, levels were not much low and she never developed antibodies against IgA, tolerating augmentation therapy without any adverse reaction. The patient underwent a chest tomography scan (CT scan), which revealed bilateral bronchiectasis, mostly in basal regions, and centrilobular and paraseptal emphysema, mainly in superior lobes. Liver disease was assessed by FibroScan® in which the patient was found to have a liver stiffness value of 7.9kPa, a score compatible with significant fibrosis in the absence of liver cirrhosis. Another curious finding is that lung functions tests showed a remarkable increase in forced expiratory volume in one second after three years of augmentation therapy. This finding has not been described elsewhere, and it might be explained by simultaneous optimization of inhaled bronchodilators, by the fact the patient had stopped smoking only three months before the first lung function tests, inter operator dependent differences in test execution and by the variability in the capacity of execution of the tests by the patient (depending if he is in a flare of disease or in a stability period).
Discussion: Despite previous studies have attempted to find a link between CVID and AATD, there is still limited evidence that these might be somehow correlated in rare cases of lung disease. Both genes are in the same chromosome and some studies suggest that there is a genetic segregation effect for both diseases. This report emphasizes the singularity of combining two uncommon disorders, and the fact that AATD is itself caused for an extremely rare genotype (PI*Mmalton/Mmalton).

***Keywords**: Alpha-1-antitrypsin deficiency. COPD. Commom variable immunodeficiency. Mmalton.*

PE 136. MEASURING PATIENT EXPERIENCE IN THE CONTEXT OF HOME RESPIRATORY THERAPIES: A REVIEW OF INSTRUMENTS

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Introduction: The increasing number of patients receiving home respiratory therapies (HRT) in Portugal is a challenge to maintain the quality of care. Healthcare providers, administrators and policy-makers agree that the integration of patient experience with healthcare delivery is a cornerstone of personalized and high-quality healthcare. Yet it is still unknown which instruments are adequate to collect patients' perceptions of their personal experience of the healthcare received - patient-reported experience measures (PREMs)- in the context of HRT. Thus, we aimed to identify existent PREMs and check their suitability to evaluate the performance of HRT provision.
Methods: This review included searches in electronic databases (PubMed, Medline, ISI Web of Knowledge and Google Scholar), as well as hand searches (expert consultation and a review of the reference lists of related papers). The search was conducted between July and December 2018 with no time restriction, although limited to English, Portuguese, or Spanish.
Results: We have found 14 instruments assessing the patient's experience with the provision of care in different clinical settings (n = 6), hospital (n = 4), primary care (n = 2), intermediate care and community (n = 3). The majority of PREMs were generic and designed to be used for a diverse range of health conditions. However, two were specifically developed for patients with chronic diseases and one was intended particularly for patients with chronic obstructive pulmonary disease (COPD). The majority of PREMs were developed to target adult patients and tested in patients who were at least 15 years old. Only two developed instruments were tested with carers of children. English was the most common language, with some instruments also in Norwegian (n = 3), Italian (n = 2), and Spanish (n = 1). None of the instruments above were available in Portuguese neither were specifically designed to assess experience with HRT.
Conclusions: Different PREMS, used at distinct levels of healthcare, are available and some might be suitable to evaluate patient's perception of the HRT received. Nevertheless, there is a need for translation/cultural adaptation of existent PREMs to the Portuguese population and/or the development of a specific PREM for patients on HRT; and these should constitute research priorities in the upcoming years. These instruments could then be used to monitor patient experience and be integrated as quality indicators of HRT delivery.

***Keywords**: Patient experience. Quality of care. Patient-centred care. Long-term oxygen therapy. Home mechanical ventilation. Home respiratory therapies.*