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PC 001. INFLUENCE OF AGE ON ADHERENCE TO AUTO-CPAP

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Introduction: Obstructive sleep apnea (OSA) is a disorder characterized by obstructive apneas, hypopneas, and/or arousals related to respiratory effort caused by repetitive collapse of the upper airway during sleep. Left untreated, or with poor adherence to treatment, is likely to lead to negative outcomes, especially cardiac or cerebrovascular diseases. Our objective was to investigate age as a potential factor that may interfere with adherence to treatment with automatic continuous positive pressure (APAP).
Methods: This is a cross-sectional study on 1151 patients with OSA and we analyzed the adherence data of all patients who had been on APAP for at least six months during the period from July 1, 2019 to December 31, 2020 at Centro de Medicina do Sono. Spearman correlation was used in the bivariate analysis and to determine the factors associated with APAP adherence, a logistic regression was performed.
Results: Of 1,151 patients included, 780 patients were men (67.1%) and the majority was under 65 years (59.4%). APAP adherence was higher in older age groups ($p < 0.001$) and in patients with a higher AHI ($p < 0.001$), no differences were observed with regards to gender. In the multivariable regression analysis, the main factors associated with adherence were age group over 65 years (OR = 2.435; 95%CI = 1.862-3.185), AHI 15-30/h (OR = 1.733; 95%CI = 1.242-2.416), and AHI > 30/h (OR = 3.406; 95%CI = 2.426-4.782).
Conclusions: Patients older than 65 years have better adherence to APAP than younger ones and with moderate but especially severe AHI have better adherence than those with the milder form of the disease.

***Keywords**: Obstructive sleep apnea. APAP adherence. Age.*

PC 002. QUALITY OF CARE REPORTED BY PATIENTS UNDER HOME RESPIRATORY CARE IN A REGION OF LISBON: WHAT CHANGED FROM 2018 TO 2021?

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Introduction: Home respiratory care (HRC) companies play a key role in the follow-up of patients undergoing ventilation therapy. This assistance conditions the adherence and effectiveness of treatment, which is why it is essential that it be of high quality. The qualitative assessment of this service is important to ensure the necessary requirements for the provision of HRC, and the patient's perspective is also fundamental.
Objectives: To assess the quality of care provided by HRC companies in 2021 compared to 2018.
Material and methods: The same questionnaire prepared in 2018 was applied according to the specifications of HRC service providers currently in force (CP 2017/100) and focused on the quality of HRC provision, from June 1 to July 31 2021 (same period in 2018). 100 patients were randomly selected who were being followed up in the Sleep and Non-Invasive Ventilation Unit of the Pneumology service of the Centro Hospitalar Universitário Lisboa Norte, who were exclusively under ventilation therapy.
Results: All patients were diagnosed with Obstructive Sleep Apnea Syndrome with a mean age of 63.8 years. Most performed Auto-CPAP (77%), 20% fixed CPAP and 3% bilevel ventilation. The first home visit 24-hours after installation of the equipment at the hospital was carried out in 74 cases (57 in 2018), and instructions were provided about the operation, maintenance and cleaning of the equipment and interface in almost all cases(99%). In cases where the home visit was not carried out, telephone contact was made by the company. 63% claim to have received a home visit one month after starting therapy (48% in 2018). Technical problem assistance effectively solved the problems, mostly within a period of < 24h (47%) or 1-3 days(53%). 67% received an alert from the company about the need to regularize the prescription of the treatment and only 22% received a report of use for follow-up appointments (71% and 19% in 2018, respectively). 16% were unaware of the existence of 24-hour assistance and 78% of the existence of travel assistance in mainland Portugal (25% and 75% in 2018, respectively). Regarding the level of satisfaction with the service provided, on a scale of 0-10, 83% had a high level of satisfaction (> 8), similar to 2018 (79%). All companies showed predominantly high levels of satisfaction consistent with each other, even when analyzed in isolation.
Conclusions: This study allowed us to verify that even in the face of contingency measures in the context of the COVID-19 pandemic, most patients are very satisfied with the assistance provided by HRC companies. Compared to 2018, there were slight improvements, how-

ever, aspects that need to be improved continue to be identified, namely the lack of knowledge on the part of patients about the existence of permanent care and the absence of a home visit one month after the start of treatment. The most relevant aspect, however, continues to be related to the low % of patients (22%) who receive a monitoring report on the use of the equipment, an aspect that is essential for the education and reinforcement of patient adherence.

Keywords: *Home respiratory care. Assistance. Quality.*

PC 003. PERSONALIZED MEDICINE IN THE EVALUATION OF SLEEP BREATHING DISORDERS - THE CONTRIBUTION OF STOMATOLOGY

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Introduction: Sleep breathing disorders (SBD), mainly obstructive sleep apnea (OSA), are very common. Therapy is mostly based on positive airway pressure ventilation (PAP), and its success is largely dependent on patient compliance. However, the idea "one size fits all" centered on PAP is misleading. The discomfort and change of the personal image caused by masks, or the air pressure imposed by the equipment jeopardizes patient's adherence to treatment. Alternatives to PAP emerged and oral devices, although not first-line options, are valid in less severe cases or in patients that couldn't adapt to PAP. Thus, to better suit therapy to a patient, pulmonology and stomatology should work as a team.
Objectives: Evaluate the impact of oral devices as an alternative therapy for OSA.
Methods: We retrospectively assessed patients with SBD evaluated in an outpatient day stomatology clinic from 2014 to September 2020.
Results: 98 patients, 72% males, were evaluated. Mean age was 55 yo. Snoring was the cause of the referencing in 28% of the patients. 72% had OSA- 54% mild (n = 38), 38% moderate (n = 27) and 8% severe (n = 6). All cases of severe OSA were referred to stomatology due to PAP intolerance. 14% of the OSA patients (n = 10) were not candidates for mandibular advancement devices (MAD) - 7 due to absence of dental pieces and 3 due to temporomandibular joint instability. Five patients refused the device. Therapy with MAD was instituted in 45 patients, but 2 did not tolerate. Among those who adhered to therapy, 65% (n = 28) maintained a regular use of MAD. Reevaluation polysomnography with MAD was performed in 19 patients, and OSA correction was observed in 52%. The success rate of MAD therapy was higher in mild OSA.
Conclusions: This study showed the importance of a multidisciplinary approach, encouraging to the contribution of stomatology in the therapeutic process of sleep breathing disorders.

Keywords: *Sleep breathing disorders. Stomatology. Mandibular advancement devices.*

PC 004. POSITIONAL OBSTRUCTIVE SLEEP APNOEA – AN INDIVIDUALIZED PHENOTYPE

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Introduction: In some obstructive sleep apnoea (OSA) patients, the number of events depends on the sleeping position, which may be significantly reduced in non-supine position. We aimed to assess the positional OSA prevalence and understand how these patients differ from the remainder.
Methods: Retrospective analysis of OSA patients diagnosed in 2019, with level 3 sleep study and a total test time > 240 minutes. Positional OSA was defined as supine AHI ≥ 2x non-supine AHI, with at least 20 minutes of sleep in each position.
Results: A total of 122 patients were evaluated. Mean AHI was 25.2 ± 22.7 with 49% classified as mild, 21% as moderate and 30% as severe. Positional OSA was identified in 51% of the patients and 29% also had a non-supine AHI < 5. Positional OSA patients were mostly male (71% *vs*. 53%; p = 0.045), younger (53 ± 13 *vs*. 58 ± 13; p = 0.030), showed lower BMI (32 ± 5 *vs*. 35 ± 7; p = 0.005) and were less often obese (63% *vs*. 79%; p = 0.048) than non-positional OSA patients. The prevalence of comorbidities such as arterial hypertension (47% *vs*. 75%; p = 0.001), diabetes (15% *vs*. 35%; p = 0.009) and arrhythmias (11% *vs*. 30%; p = 0.010) was also significantly lower than non-positional OSA patients. They also showed lower AHI in the sleep study and most of mild and moderate OSA patients had positional OSA.
Conclusions: Positional OSA was observed in more than half of the patients, and a significant percentage showed a non-supine AHI< 5. They were younger, had milder OSA and less comorbidities than non-positional OSA patients. The identification of positional OSA has clinical impact, as positional therapy may be offered as an alternative to positive pressure, or as add-on, in order to lower pressures and increase compliance.

Keywords: *Obstructive sleep apnoea.*

PC 005. IS THE HOSPITALIZATION PERIOD A GOLDEN OPPORTUNITY TO DIAGNOSE SLEEP DISORDERED BREATHING?

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Introduction: The Centro de Responsabilidade Integrada (CRI) of Sleep and NIV of the Centro Hospitalar e Universitário de São João was created in July 2020, having the goal of providing a highly differentiated and timely response to patients with sleep-disordered breathing (SDB), chronic respiratory insufficiency of several etiologies and/or neuromuscular diseases.
Objectives: Characterize the patients and the motives of the requests for internal consultation made to the CRI of Sleep and NIV during the period of a year (July 2020 to July 2021), as well as the response that was provided to them.
Methods: Retrospective study. Clinical records were analyzed and information was gathered about demographic characteristics, mean delay in response, request motive, main complementary studies' results, and the guidance provided to the patients. Data was analyzed using Microsoft® Excel version 16.43 and IBM® SPSS® Statistics version 24.
Results: We analyzed 275 requests for internal consultation that were made during the study period. Of these, 9 were eliminated due to unavailable clinical information, resulting in a total of 266 cases. Most requests were made by the Internal Medicine Service (n = 116; 43.6%), followed by the Intermediate Care Unit (n = 23; 8.6%), Intensive Care Unit (n = 18; 6.8%) and the Cerebrovascular Accident Unit (n = 15; 5.6%). The mean delay in response (defined as the amount of time between the request and its response) was less than 1 day (0.88 days). Most patients were male (n = 149; 56.0%), the mean age was 69.2 years, and most were obese (defined as BMI ≥ 30 kg/m^2, n = 171; 64.3%). The main motive for the consultation request was the suspicion of SDB (n = 150; 56.4%), followed by respiratory insufficiency cases (acute – n = 87; 32.7% – or acute

on chronic – n = 48; 18.0%) and neuromuscular diseases (n = 28; 10.5%) of which the most frequent was amyotrophic lateral sclerosis (n = 12). A total of 159 level 3 polysomnography (PSG) were performed, allowing the *de novo* diagnosis of obstructive sleep apnea syndrome (OSAS) in 136 patients (85.5%). Of these, 22 (16.2%) presented with associated hypoventilation obesity syndrome and 17 (12.5%) with chronic obstructive pulmonary disease. The mean AHI was 35.3/h, mean SpO2 of 89.6% e mean T90 of 41.2%. Of the totality of the patients, therapy was initiated in 161 patients (60.5%), being the bilevel ventilation mode the most frequently chosen (n = 75; 46.3%). All patients were adapted to the NIV in the sleep laboratory.
Conclusions: The suspicion of SDB was the most frequent motive for internal consultation requests. Most patients had a PSG performed and a diagnosis was established precociously. The hospitalization period may constitute a valuable window of opportunity for timely intervention on these patients, potentially contributing to the reduction of the long-term risk associated with this pathology.

***Keywords**: Sleep disordered breathing. Non-invasive ventilation. Chronic respiratory insufficiency. Obesity-hypoventilation syndrome. Obstructive sleep apnea syndrome. Neuromuscular diseases.*

PC 006. SLEEP DISORDER IN CHIARI MALFORMATIONS: AN OVERLOOKED COMPLICATION

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Introduction: Chiari malformations are radiographically prevalent anomalies of the skull base and cerebellum (~ 1/1,000), characterised by displacement of cerebellar tonsils through the foramen magnum. This herniation is accompanied by bone abnormalities and may be associated with obstruction of the craniocervical junction and compression of brainstem and upper spinal cord. Anatomical location of sleep structures (i.e. lower cranial nerves and respiratory centres) in these regions helps explain the high prevalence (up to 67.4%) of respiratory sleep disorders in symptomatic patients.
Objectives: To characterise patients with Chiari malformations followed at a sleep clinic and to describe their sleeping disorders.
Methods: We retrieved clinical records of patients with a previous diagnosis of Chiari malformation and follow-up at the Centre for Sleep Medicine of the Coimbra Hospital and University Centre. Demographic data, nocturnal and diurnal symptoms, previous medical and drug history were noted. Complementary diagnostic investigation (imaging, lung function and sleep studies), prescribed treatment and outcomes were analysed.
Results: Medical records of 8 patients were retrieved, 7 of whom had a diagnosis of Chiari type 1 malformation. Clinical episodes occurred between 2003 and 2021. There was no sex predominance. Patients were referred either by the primary care physician, pulmonologist or neurosurgeon, at a median age of 40 years (32-79 years). Fatigue and excessive sleepiness were the most reported daytime symptoms, while snoring, frequent awakening and witnessed apnoeas were the most common nocturnal complaints. Three patients were taking prescribed opioids, one of whom with concomitant benzodiazepine. Lung function studies revealed mild restriction in one patient with concomitant kyphoscoliosis and heart failure. Low DLCO was detected in a patient with RB-ILD. Upon admission, three patients had undergone surgery and one did not require further sleep study due to resolved symptoms. Home respiratory polygraphy was performed in 3 patients, but all required further diagnostic and/or therapeutic laboratory testing. Four patients were diagnosed with significant non-respiratory sleep disorders, namely shift work disorder, inadequate sleep hygiene, periodic limb movement disorder (n = 2) and narcolepsy. Two patients diagnosed with obstructive sleep apnea (mild and moderate) initiated APAP therapy. Two patients with severe central sleep apnoea started adaptive servoventilation (ASV) and one BiPAP-ST, but later required switch to ASV. Symptomatic improvement as measured by clinically relevant differences in ESS, was obtained in 3 patients after PAP initiation, but sustained in only one. Favourable outcomes among patients who initiated PAP therapy were hampered by low adherence, high residual AHI and/or non-respiratory concomitant disorders.
Conclusions: Chiari malformations are frequent and carry significant sleep disease burden, not necessarily of respiratory etiology. The relatively high prevalence of the disease in literature and the residual number of patients evaluated at the CMS in the referred period raise the hypothesis of significant underdiagnosis and/or undertreatment. In spite of adaptation issues, positive pressure therapy resulted in significant symptom improvement among patients with respiratory sleep disorder, even if previous surgery. It is, thus, fundamental to promote the screening of sleep disorder-related symptoms among patients with this condition.

***Keywords**: Arnold-Chiari malformation. Sleep disorders. Sleep apnoea syndromes.*

PC 007. UNDIAGNOSED OBSTRUCTIVE SLEEP APNEA SYNDROME IN A PREOPERATIVE PULMONOLOGY CONSULT

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Introduction: Obstructive Sleep Apnea Syndrome (OSAS) is the most common sleep breathing disorder, affecting 10-25% of the general population, and is associated with increased risk of perioperative and postoperative complications. In the preoperative pulmonology consult (POPC) there is a significant number of patients proposed for surgery who present with undiagnosed OSAS.
Objectives: Characterization of the population of patients observed in POPC with suspected OSAS and associated comorbidities.
Methods: Retrospective study of POPC patients from January 2017 to June 2021 in a level II hospital. Statistical analysis with Microsoft Excel 2016® of the following variables: gender, age, weight, height and body mass index (BMI), smoking habits, type of surgery, Epworth Sleepiness Scale (ESS) and STOP-BANG, OSAS diagnosis, treatment and comorbidities.
Results: Sample of 127 patients, mean age 49.5 years and female predominance (n = 72; 56.7%), mean weight 117.9kg, with the majority (n = 119; 93.7%) having a BMI above 30. Regarding smoking habits, 41 patients (32.3%) are smokers and 29 (22.8%) are ex-smokers. To date, only 29 patients (22.8%) have undergone the surgery for which they were proposed, the majority for bariatric surgery (n = 87; 68.5%), of whom, 13 (10.2%) underwent vertical gastrectomy. Regarding the questionnaires, the majority (n = 121; 95.3%) answered more than 3 questions on the STOP-BANG, while on the ESS, 81 patients (63.8%) answered less than 9 questions. After the first POPC, 69 patients (54.3%) underwent polysomnographic sleep study (PSS), with 18 (14.2%) having mild OSAS, 21 (16.5%) moderate OSAS and 27 (21.3%) severe OSAS, with 48 (37.8%) still waiting for PSS. Following the diagnosis of OSAS, 46 patients were proposed for non-invasive ventilation (NIV), with 41 (32.3%) starting predominantly (n = 37; 80.4%) with APAP (automatic positive airway pressure). After treatment initiation, 9 patients (7.1%) repeated PSS. Among the comorbidities assessed, should be highlighted the arterial hypertension (n = 69; 53.9%), followed by diabetes mellitus (n = 34; 26.6%). Regarding to the destination of the patients, 55 (43.3%) continued to be followed-up in POPC, 45 (35.4%) were referred to sleep consult, and 17 (13.4%) were discharged.
Conclusions: In this population, most patients are obese and about 50% has arterial hypertension, two important comorbidities for OSAS. According to the STOP-BANG questionnaire, most have a high

risk for OSAS, and in this study, about 50% were diagnosed with OSAS, with one third starting NIV. However, more than a third of the patients are still waiting for the PSS to be performed, and only a small percentage repeated the PSS after the institution of NIV. Additionally, two-thirds are proposed for bariatric surgery, but only a small percentage have done the surgery. These data show that there is a significant prevalence of undiagnosed OSAS and the importance of POPC in diagnosing and instituting therapy and avoiding peri and postoperative complications. However, the current difficulty in performing PSS and subsequent diagnosis and monitoring of OSAS is equally noticeable.

Keywords: *Obstructive sleep apnea syndrome. Surgery.*

PC 008. LONG-TERM MAINTENANCE STRATEGIES AFTER PULMONARY REHABILITATION: PERSPECTIVES OF PEOPLE WITH CHRONIC RESPIRATORY DISEASES, INFORMAL CARERS AND HEALTHCARE PROFESSIONALS

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Introduction: Pulmonary rehabilitation (PR) is an effective intervention for people with chronic respiratory diseases (CRD). Benefits tend however to fade after 6 to 12 months. Community-based maintenance strategies might be a valuable opportunity to sustain PR benefits. However, the views of different stakeholders on this topic were not yet explored.
Methods: People with CRD, informal carers and healthcare professionals were recruited using purposive sampling and snowballing techniques. Focus groups were conducted with each stakeholder group using a semi-structured guide. Data were transcribed verbatim and thematically analysed.
Results: Twenty-nine people with CRD (24% female, median 69 years), 5 informal carers (100% female, median 69 years) and 16 healthcare professionals (75% female, median 36 years) were included. Three themes were identified: "Maintaining an independent and active lifestyle" which revealed common strategies adopted by people with CRD, such as walking or house chores to maintain an active lifestyle independently; "Intrinsic motivation and professional and peer support" which showed that motivation, group-based activities and having the support of a healthcare professional are key elements to maintain benefits, and that "Access to information and partnerships with city councils' physical activities" were necessary steps to take in the future to consider the preferences of patients and sustain active lifestyles.
Conclusions: This study suggests that motivation, professional and peer support are key elements to maintain the benefits of PR in people with CRD, and that different physical activity options (independent or group activities) considering peoples' preferences, should be available through partnerships with the community, namely city councils.

Keywords: *Chronic respiratory diseases. Maintenance strategies. Pulmonary rehabilitation. Physical activity.*

PC 009. DOMICILIARY PULMONARY REHABILITATION PROTOCOL: WHAT IS RECOMMENDED?

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Hospital Pedro Hispano.

Introduction: Pulmonary rehabilitation (PR) consists in an individualized intervention for patients with chronic respiratory diseases, which involves exercise training, education and behavioral changing. The ideal domiciliary PR (DPR) protocol is still unknown, as well as its efficacy, compared with the hospital PR (HPR), which remains the gold standard. Due to the scarce studies, DPR is only a reality in 5% of centers, worldwide.
Methods: Literature revision to define a protocol for DPR.
Results: Objectives: to be accessible, low-cost, include essential components of PR, easy to implement and develop equivalent benefits of HPR. Benefits: it may have functional/quality-of-life benefits comparable to HPR. Safety: DPR is safe. Studies excluded patients with contraindications to a HPR, long-term oxygen therapy, COPD acute exacerbations. An informed consent for each patient is required. Monitoring: ideally, 2 weekly sessions should be supervised. Means of monitoring: Telephone contacts (1-2/week), domiciliary visits, videocalls, clinical registries; Tablets, Smartphones or smartwatches; Patients should monitor and register vital signs and symptoms; Pedometers or accelerometers. Training progression may be based on Borg scale. Duration: usual duration is 8-12 weeks, with at least 3 weekly sessions. PR components: training protocol should be individualized, respecting each patient preferences and capacities. Include recommendations from the book Living Well With COPD. Education: promote health literacy to improve self-management capacities; Doubts should be addressed; Suggestions should be considered; Stipulate goals;Resources: books, informative pamphlets; telephone or presential contacts; tablets with videos. Ventilatory control: airway secretions clearance (if required). Warm-up, flexibility, cool-down: 5-10 min, light-moderate intensity. Balance training (if required). Endurance training: Type: Walking, bicycle. Duration: 3 sessions/week, 30 min/session. Intensity: Borg 3-4 or 4-6 (adapt); 80% 6-min walking test velocity. Resistance training: Type: stairs, sit-to-stand, weights. Duration: 3 sessions/week, up to 20 min/session. Intensity: body weight, resistance bands, water bottles, gym equipment. 60-70% maximal capacity. 10-12 reps, 1-3 sets. Evaluation: functional capacity: 6MWT, ISWT, 1-min sit-to-stand; PFTs. Symptoms: mMRC; CAT; CRQ; Global Rating of Change Questionnaire; PRAISE; HADS; LCADL. Adherence: Participation in ≥ 50-70% of calls/sessions/appointments. Training ≥ 30 min, 3 sessions/week. Feedback: Consider patients' opinions/critics.
Conclusions: The ideal DPR protocol is unknown. Most studies recommends 8-12 weeks, with at least 3 sessions/week (ideally 2 supervised), including essential components of PR. Studies demonstrate safety and comparable benefits to HPR.

Keywords: *Pulmonary rehabilitation. Domiciliary. Protocol.*

PC 010. MUSCULAR STRENGTH ASSESSMENT FOR THE DEVELOPMENT OF A PULMONARY REHABILITATION PROGRAM

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Hospital Pedro Hispano.

Introduction: Pulmonary rehabilitation (PR) consists in an individualized intervention to the chronic respiratory patients, which includes exercise training, education and behavior changing. The main goal is to promote long-term adhesion of a healthy life-style. Exercise training is a key-component of PR. In these patients, muscular weakness is common and may significantly impact the prognosis. Thus, it is crucial to define training intensity to obtain the best results and assure safety. It is more important to define the strength of a compound movement (with multiple accessory muscles) than of a single muscle group.
Methods: Literature revision on muscle strength assessment for the definition of a PR program.
Results: The results are described on the table. The protocol is evidenced on the figure.
Conclusions: To ellaborate a PR plan, it is more useful to assess the load a patient can lift for 8-12 repetitions, which corresponds to 60-80% 1MR. After the definition of the ideal load, the patient should perform 2-4 sets per exercise, 2-3 times/week, assuring at

Table 1. *Different methods of muscle strength assessment. ICU, Intensive care unit.*

Test	Advantages	Disadvantages
Manual muscle testing (MMT)	Useful in ICU Simple, easy No materials needed	Imprecise Semi-quantitative
Hand dynamometer	Quantitative Reliable Portable Cheap	Not adequate for evaluation of individual changes Only one angle evaluation
Grip dynamometer	Simple, easy Reliable, valid Portable Adequate for whole strength estimation	Only evaluates grip strength
Computerized dynamometer	Measures isometric/isokinetic strength Reliable Reproductible, standardized Evaluates many articulations	High cost Specialized equipment and staff
Tension measure	Easy, simple Portable Cheap	Requires apropriate chair
1 Maximal repetition (1MR)	Fast, easy Reliable, valid	Requires trained staff
Electric/magnetic stimulation	Objective measurement Allows diaphragm evaluation	Difficult technique Discomfort

Figure PC 010A

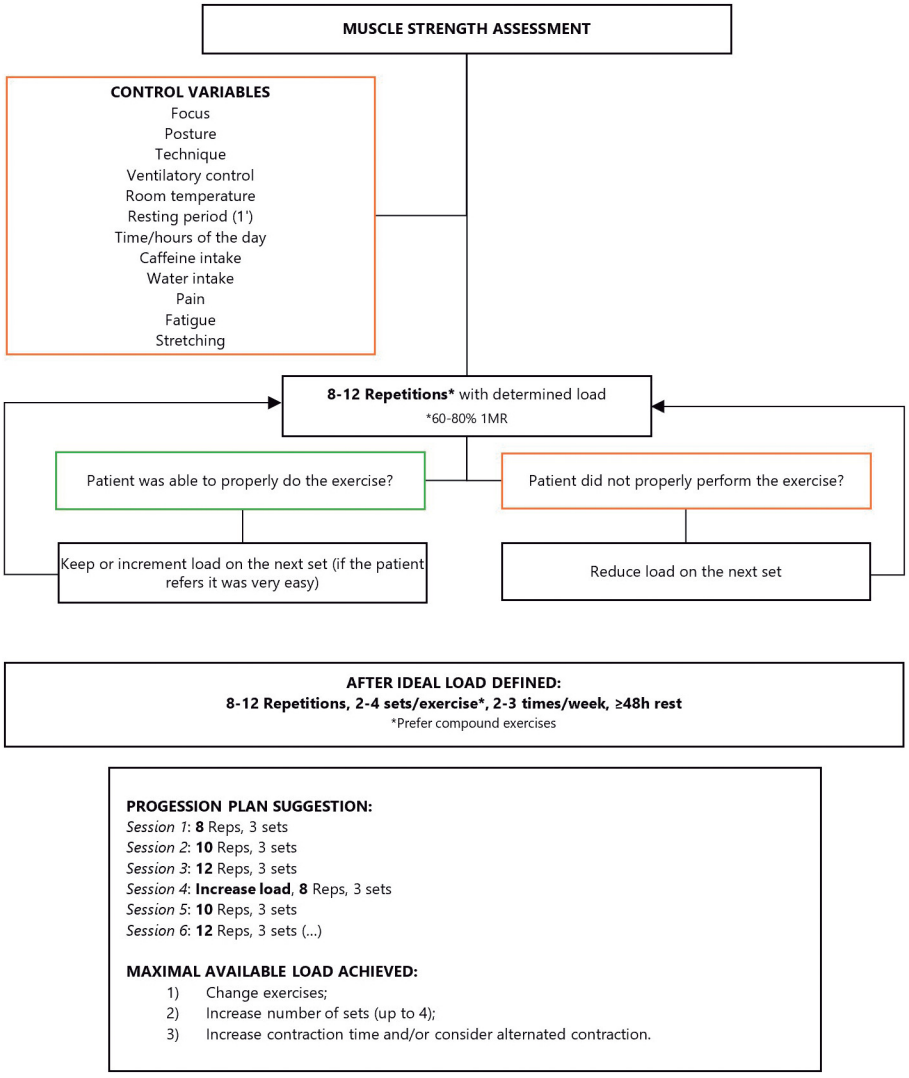

Figure PC 010B

least 48 hours of rest for each muscle group trained. This method allows for strength, size and, at some level, endurance improvement.

Keywords: *Strength. Resistance. Protocol. Pulmonary rehabilitation.*

PC 011. MAINTENANCE PULMONARY REHABILITATION PROTOCOL: WHAT IS RECOMMENDED?

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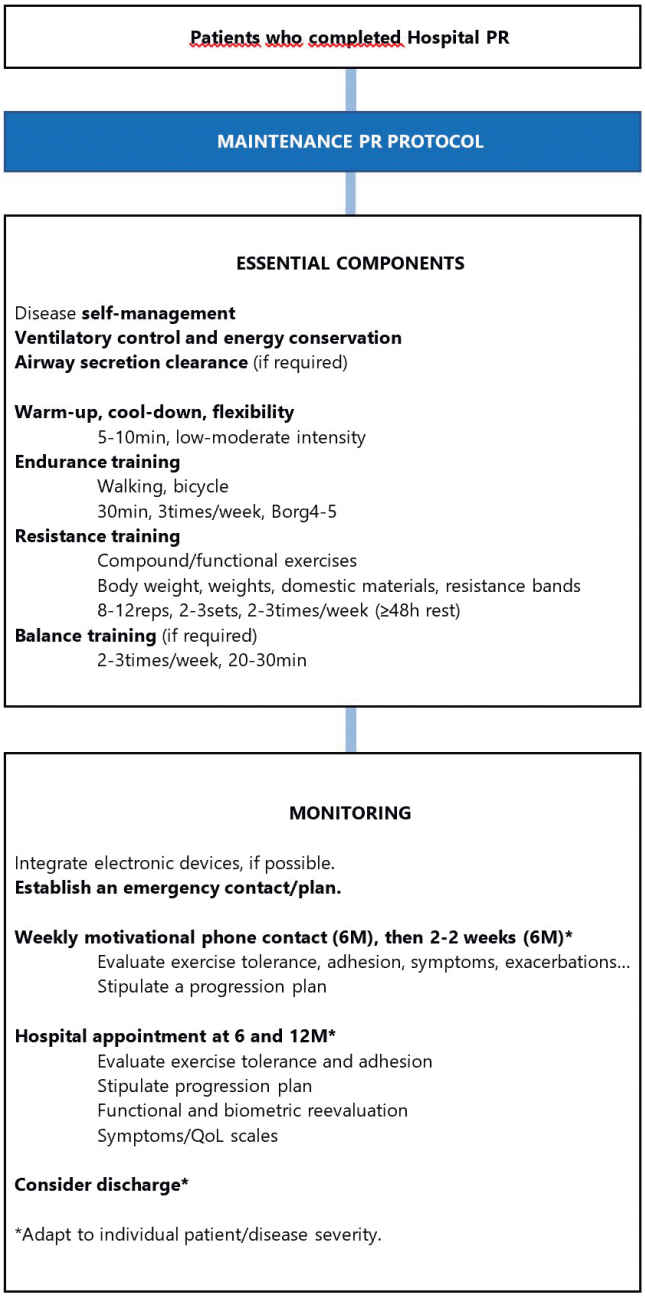
Introduction: Hospital pulmonary rehabilitation (HPR) benefits are largely known, although studies indicate that they decrease after 6-12 months. For this reason, it is recommended to maintain an active and healthy lifestyle to prolong these benefits. However, scientific evidence regarding maintenance PR (MPR) is still scarce and its benefits are not yet completely known.



Methods: Literature revision to develop a MPR protocol.
Results: Results are described on the table. The developed protocol is evidenced on the figure.
Conclusions: The ideal MPR protocol is unknown. Most studies propose 1-year duration, with 3 sessions/week, 2-4 monthly supervision, although it should be individualized.

Keywords: *Protocol. Pulmonary rehabilitation. Maintenance.*

PC 012. RESPIRATORY REHABILITATION IN PATIENTS PREVIOUSLY INFECTED WITH SARS-COV-2 AND PATIENTS WITH CHRONIC RESPIRATORY DISEASE - A COMPARATIVE ANALYSIS

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Introduction: Respiratory rehabilitation (RR) plays a key role in improving symptoms and increasing exercise tolerance in patients with chronic respiratory disease (CRD). Recently, the SARS-CoV-2 pandemic brought new challenges in this area, drastically changing the way RR centers work, and bringing them a new type of respiratory patient to treat, with particularities still under study.
Objectives: (1) Evaluate the role of a RR program in patients with SARS-CoV-2 infection (2) Compare the evolution of exercise tolerance of patients previously infected with SARS-CoV-2 with patients with CRD.
Methods: Retrospective observational study, based on the analysis of patients who participated in a RR program at Hospital Pedro Hispano, between May and July 2021. All patients with a history of hospitalization due to SARS-CoV-2 pneumonia were included (COVID group), as well as all patients diagnosed with CRD and with indication to start a RR program (CRD group). To assess exercise tolerance, the maximum metabolic equivalent of task (MET) on treadmill was calculated in all patients, at the third treatment session, and 8 weeks after the start of treatment.
Results: Twenty-one patients were included (12 patients in the COVID group and 9 patients in the CRD group), 66.7% male. The mean age was 60.2 ± 2.56 years (60.6 ± 3.56 *vs.* 59.7 ± 3.87 years in the COVID and in the CRD group, respectively, p = 0.864). Of the patients in the COVID group, none had previous respiratory disease, 41.7% were obese, and one patient was undergoing immunosuppressive therapy. All patients needed admission in Intensive Care Medicine services, and 7 (58.3%) were ventilated invasively; of these, 3 were tracheostomized and subsequently decannulated. Two patients (16.7%) were placed on ECMO. At the beginning of the RR program, a quarter of the patients needed ambulatory oxygen, and they all stopped it after finishing the program. Regarding patients with CRD, 4 patients (44.4%) had a diagnosis of COPD and 3 (33.3%) of asthma. A third of the patients were on ambulatory walking therapy, having kept it after finishing the program. The mean FEV1% in patients with obstructive pathology was 35.5 ± 2.86. During the stipulated period, the mean evolution of all patients was +1.11 METs on a treadmill. When analysing the 2 groups separately, there is a greater evolution in patients in the COVID group, compared to patients with CKD (1.35 *vs.* 0.80 METs, p = 0.011).
Conclusions: RR programs seem to have a positive effect on exercise tolerance in patients after severe SARS-CoV-2 infection, and their progression is more evident than in patients with CRD. Given the benefit in both groups, it is extremely important to properly refer respiratory patients to RR programs, and to implement strategies that allow the correct functioning of RR centers during a pandemic period.

Keywords: *Respiratory rehabilitation. COVID-19. Chronic respiratory disease.*

Study	Disorder	Duration	Protocol	Monitoring	Results
Spruit et al. 2013 (Rev)	COPD	Ideal duration unknown	Ideal protocol unknown	Supervision may improve results	Low-intensity (Borg 3-4) and low-adherence have no benefits. Supervise high-intensity exercise. Consider hobbies.
Wilson et al. 2015 (RCT)	COPD	1 year	2h (1h exercise [S and E] and 1h education), 3-3M, 1y	Programmed sessions supervised	No benefits.
Güell et al. 2017 (RCT)	COPD	3 years	Kinesitherapy (15m), Upper L (30m), Lower L (30m), ≥3t/w	Hosp visits 2-2w, alternated with Phone 2-2w	Benefits in 6MWT*, BODE index* and health-state* just for 2y. Abandonment >2y.
Andrews et al. 2017 (RCT)	COPD	≥2 years	1-2h, 3t/w	Supervision by Phisiotherapeutics and Social Assistent	Less FEV1 decline* Less exacerbations
Li et al. 2018 (RCT)	COPD	1 year	Endurance 1t/w; Resistance 1t/w; Kinesitherapy 3t/w	1) Home visits 2-2w (2M); 2) Home visits 4-4w + Phone 1t/w (4M); 3) Phone 1t/w (6M).	Benefits maintained in 6MWT*, mMRC* and CAT*. Less exacerbations*.
Spencer et al. 2019 (Rev)	COPD	Ideal duration unknown	Ideal protocol unknown	Ideal monitoring unknown. Monthly supervision has no benefits.	Promissing results with regular supervised training.
Blervaque et al. 2021 (Obs)	COPD	5 years	Exercise 42t/y, Education 6h 2t/y, Psychological sup 2.5t/y	Institutional supervision	Benefits in 6MWT* and QoL* at 4y, and MRC* at 5y. Benefits in survival at 5y. Less severe COPD has greater benefits.

** Statistically significant*

Figure PC 011B

PC 013. PULMONARY REHABILITATION IN LUNG TRANSPLANT CANDIDATES

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Introduction: The role of Pulmonary Rehabilitation (PR) in pre-lung transplant patients' is to maintain or improve exercise tolerance, ventilatory mechanics and life quality.
Objectives: Casuistic review of patients on lung transplant waiting list under PR program.
Methods: Retrospective analysis from January 1st 2015 to December 31st 2019 of patients on lung transplant waiting list under PR program. Demographic characteristics, disease responsible for transplantation, functional parameters and symptom questionnaires are described. Spirometric values, 6MWT distance, and symptom questionnaires before and after starting PR were compared.
Results: During this period, 18 patients on lung transplant waiting list were under PR program, with a mean age of 52.9 ± 10.7 and half were male. Disease underlying the referral for lung transplant: 8 with COPD, 7 with diffuse lung disease and 3 with bronchiectasis. Half of the patients had pulmonary hypertension. Most patients (n = 14) had already integrated PR program before official inclusion in the waiting list. By June 2021, 7 patients had been transplanted, with a median of 16 months (minimum 7 and maximum 24) from inclusion on the waiting list and transplantation and 16 months (minimum 7 and maximum 42) between integration on PR program and transplantation. The table shows the functional values and symptom questionnaires. There were no statistically significant differences.
Conclusions: Despite the expected unfavourable evolution expected in these patients on the waiting list for lung transplant, with PR program it was possible to stabilize exercise tolerance and symptom control, as well as functional parameters.

Keywords: *Lung transplant. Pulmonary rehabilitation.*

PC 014. CHARACTERIZATION OF VENTILATORY SUPPORT PREFERENCES AND CARE IN PATIENTS WITH ALS

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Introduction: Respiratory muscle weakness represents the leading cause of mortality in patients with amyotrophic lateral sclerosis (ALS). As a result, ventilatory support (VS) is an important part of the treat-

Table 1: Functional values and symptom questionnaires. Values are presented in median [interquartile range].

	Values before starting PR program	Values after starting PR program	p value
mMRC	2 [1]	2 [1]	0,32
CAT	20 [16]	21 [10]	0,60
BMI	26 [7]	27 [6]	0,94
FVC (L)	2,06 [0,92]	2,18 [1,27]	0,63
FVC % predicted	64 [17]	58,5 [20]	0,40
FEV1 (L)	1,03 [0,78]	0,82 [0,95]	1,0
FEV1 % predicted	36 [22]	31,5 [27]	0,81
6MWT (m)	259 [127]	334 [143]	0,33
BODE index	6 [2]	6 [3]	0,71

Figure PC 013

ment of the disease. Currently, given the diversity of protocols and the offer of resources/materials, it is imperative to understand the preferences and main complaints of these patients in order to make them adherent to therapy and an integral part of the intervention process.
Objectives: To characterize the support they receive from Respiratory Homecare (RHc), as well as to assess the preferences of ALS patients regarding ventilatory support care.
Methods: Cross-sectional descriptive study of a consecutive series of patients with ALS in home ventilation appointments from the Pulmonology service of a district hospital, between December 2020 and May 2021. The patients and IC were submitted to an interview in which a sociodemographic and technical questionnaire was applied. Of the 28 individuals with ALS, 2 were excluded for not responding to the technical questionnaire.
Results: About 86% of patients are monitored by RHc, of which 45% are ventilatordependent, 45% perform non-invasive ventilation (NIV) at night and only 9% uses less than 4 hours of therapy. All ICs consider RHc an asset to their daily lives (100%). At home, 46% are monitored every two weeks, while 17% only receive monthly or every three months' visits, 37% are monitored every six months. During the COVID-19 pandemic, this follow-up decreased for about 75% of patients. 86% of the ICs stated that their quality of life and that of the patient improved after home follow-up by the RHc, with a reduction in unscheduled visits to the hospital (41% didn't go to the hospital since the onset of VS). In the group of patients with VS, only 1 patient has invasive ventilation, by tracheostomy (5%). Of those under NIV: 20% use only nasal interface and 30% facial interface, while 20% alternate between 2 models of interfaces (nasal/facial or nasal/mouthpiece) and 25% use a combination of three different types (cushions nasal/nasal/facial and mouthpiece/nasal/facial). The most important reason mentioned by the patient for preferring the interface is leakage control (62%), followed by comfort (24%) and ease of placement (15%). The main negative aspect mentioned is the marks/lesions on the face (62%), followed by excessive leakage (29%) and difficulty in placing (10%). The predominant ventilation mode is presumetric, namely spontaneous controlled (59%) and it was found that 54% have other prescribed therapies, namely mechanically assisted cough.
Conclusions: In this sample, it demonstrates that most patients with ALS are under VS and with presumptive modes. The support provided by the RHc is considered by all patients and their ICs to be an asset, however 75% of patients reported a decrease in this follow-up during the COVID-19 pandemic. 52% of patients have more than one interface, with better leakage control being the main criterion for their preference and lesions on the face the most mentioned negative aspect.

Keywords: *Amyotrophic lateral sclerosis. Ventilatory support. Interface.*

PC 015. METIMAZOLE INDUCED EOSINOPHILIC PLEURAL EFFUSION: CASE PRESENTATION.

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Introduction: Eosinophilic pleural effusion, defined as the presence of more than 10% of eosinophils in the nucleated cell count, occurs in about 10% of exudative pleural effusions, the most common causes being malignancy related, idiopathic and infectious. The pharmacological etiology is rare, has nonspecific symptoms, can occur in the absence of peripheral eosinophilia and may exhibit a latency time between the start of therapy and its formation of days up to 1-2 years.
Case report: We present the case of an 80-year-old man, ex-smoker, with degenerative aortic valve disease, who underwent valvuloplasty with placement of a biological prosthesis. Recent diagnosis of hyperthyroidism, having been medicated with methimazole at a dose of 5 mg. He presented a 2-week course of dry, persistent cough, associated with pleuritic pain. The physical examination and chest radiography was suggestive of a right pleural effusion. The analytical study revealed peripheral eosinophilia (880 cells/L), increased total IgE (229 Ul/L), normal PNB (83.3 pg/mL) and no elevation of inflammatory parameters. Diagnostic and therapeutic thoracentesis was performed, with pleural fluid compatible with exudate with 1800 nucleated cells, 44% of which are eosinophils and 30% lymphocytes). The microbiological examination of the pleural fluid was negative and the mycobacteriological study was negative by Polymerase Chain Reaction and cultural methodologies. Cytology was negative for malignant cells, with the presence of eosinophils without cell atypia. The autoimmunity study was negative (ANA, ANCA). Given the evolving profile of peripheral blood eosinophilia growing after the introduction of methimazole, in the absence of other causes of eosinophilic pleural effusion, pleural effusion was considered to be a manifestation of a hypersensitivity reaction to the drug, which was why it was suspended. Due to persistent pleural effusion after 1 month of suspension of the suspected drug, a pleural biopsy was performed, which showed eosinophilic nonspecific pleuritis. Five 5 months after drug suspension, there was resolution of peripheral eosinophilia and a marked improvement in the volume of the pleural effusion, these findings being persistent for a period of 18 months. The diagnosis of hyperthyroidism was reviewed. Even after the suspension of methimazole, the patient remained euthyroid. The temporal relationship between the starting of the drug and the onset of pleural effusion and the resolution of the effusion after withdrawal of methimazole, without the concomitant administration of any drug, is consistent with the diagnosis of drug-induced pleural effusion, with a latency time of 4 months, in accordance with the existing literature.
Discussion: Methimazole is an exceptionally rare cause of pleural effusion, with less than 10 cases described. We emphasize the diagnostic value of a correct anamnesis that includes a careful review of the patient's usual medication as a method of evaluating patients, in order to enhance the pharmacological etiology as a cause of acute or chronic problems and can avoid lengthy diagnostic investigations sometimes painful and with high economic costs for the patient and/or the national health system.

Keywords: *Eosinophilic pleural effusion. Metimazole.*

PC 016. APPLICATION OF THE RAPID SCORE IN EMPYEMA IN A PORTUGUESE SAMPLE

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Introduction: Empyema is defined by pus appearance or a positive culture of pleural fluid (PF) and is associated with a mortality rate of 6-24%. The RAPID score is validated for predicting the risk of 3-month mortality in patients with pleural infection, based on 5 parameters (age, serum urea and albumin levels, PF purulence and infection source). The aim of the present study was to evaluate the application of this score in Portuguese patients with empyema.
Methods: A single center retrospective study in which patients with > 18 years-old admitted from January 2015 to January 2021 with empyema were included. Patients were stratified by the RAPID score into 3 groups according to 3-month mortality risk: low (0-2 points), medium (3-4 points) and high (5-7 points).
Results: We analysed 266 patients with empyema, of which 112 were considered. The diagnosis was made at a median age of 66 years (IQ 52-74) and 68% (n = 76) were men. The median length of hospital stay was 24 days (IQ 15-43) and 51% (n = 57) of patients were admitted in the Pulmonology Department, with no statistically significant differences in these variables between the 3 risk groups. There were 51% (n = 57) patients with microorganism isolation (mainly *Klebsiela pneumoniae* and *Streptococcus pneumoniae*) and 71% (n = 80) with PF purulence. Pleural pH was evaluated in 61 patients, with a me-

dian value of 7.11 (IQ 6.8-7.3), with no statistically significant differences between the 3 risk groups. Of the patients studied, 39% (n = 20), 43% (n = 48) and 39% (n = 44) were included in the low, medium and high risk groups, respectively. The PF was more frequently purulent in the low risk group (p = 0.0186). Regarding the treatment established, 68% (n = 76) responded to antibiotic therapy, 93 % (n = 104) had a chest tube placed, and 11% (n = 12) required thoracic surgery care, with no statistically significant differences between the 3 risk groups. Iatrogenic pneumothorax was found in 15 % (n = 16) of patients who had a chest tube inserted, none of whom belonged to low risk group. Mortality at 3 months was 28% (n = 31), with 15% (n = 3), 23% (n = 11) and 39% (n = 17) in the low, medium and high risk groups, respectively (p = 0.0322). There were more deaths in the group of patients who did not respond to medical therapy (64% *vs.* 11%, p < 0.001), as well as in patients with PF pH higher than 7.11 (29% *vs.* 13%, p = 0.027). In the analysis of the ROC curve for 3-month mortality using the RAPID score, we obtained an area under the curve of 0.616 (95%CI 0.507-0.725).

Conclusions: The mortality rate in the evaluated sample was slightly higher than that described in the literature. The RAPID score correlates with 3-month mortality in this sample, but with an area under the ROC curve lower than that previously described - 0.88 (95%CI 0.84-0.93) - which may translate into a lower adequacy of it to our population. There were no statistically significant differences between the 3 risk groups for any other clinical or laboratory characteristics assessed.

Keywords: *Pleural fluid. Empyema. Rapid score.*

PC 017. THE APPLICABILITY OF THE RAPID SCORE IN PATIENTS WITH PLEURAL INFECTION

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Introduction: Pleural infections are associated with significant mortality and morbidity. The RAPID score is a risk stratification score composed of the following five clinical variables: serum urea (Renal), patient age (Age), pleural fluid purulence (Purulence), infection source (community versus healthcare-acquired Infection), and serum albumin (Dietary). This score appears to predict patients with pleural infection who are at risk for increased mortality at 3 months. This score ranges from 0 to 7. Patients with rapid scores from 0 to 2 are considered to be at low risk, 3 to 4 medium risk, and 5 to 7 high risk for 3-month mortality.

Objectives: To assess the applicability of the RAPID score in adult patients with complicated parapneumonic pleural effusion or empyema.

Methods: We performed a retrospective observational study of adult patients admitted to a tertiary hospital between January 2016 and December 2020 with the diagnosis of complicated parapneumonic pleural effusion or empyema. Demographic data, the clinical variables included in the RAPID score and date of death, if applicable, were recorded.

Results: A total of 75 patients were analyzed, 79% were male; mean age was 59.6 years. Results are summarized in the table.

Table 1. RAPID score by parameter and total according to 3-month mortality.

Parameter (score)		3-month mortality		p-value
		No n=61	Yes n=14	
Renal	Serum urea			
	< 14 mg/dL (0)	22 (36.1)	3 (21.4)	-
	14-23 mg/dL (+1)	18 (29.5)	4 (28.6)	
	> 23 mg/dL (+2)	21 (34.4)	7 (50)	
	Renal Score	1[0;2]	1.5[1;2]	0.228
Age	Age, years			
	<50 (0)	22 (36.1)	0 (0)	0.003*
	50-70 (+1)	25 (41)	5 (35.7)	
	>70 (+2)	14 (23)	9 (64.3)	
	Age Score	1[0;1]	2[1;2]	0.001*
Pleural fluid purulence	Purulent (0)	26(42.6%)	11(78.6%)	0.019*
	Non purulent (+1)	35(57.4%)	3(21.4%)	
	Purulence Score	1[0;1]	0[0;0]	0.016*
Source of Infection	Community-acquired (0)	55(90.2%)	12(85.7%)	0.638
	Healthcare-acquired (+1)	6(9.8%)	2(14.3%)	
	Infection source Score	0[0;0]	0[0;0]	0.629
Dietary Factors	Serum albumin			
	≥2.7 g/dL (0)	49 (80.3)	9 (64.3)	0.196
	<2.7 g/dL (+1)	12 (19.7)	5 (35.7)	
	Diet Score	0[0;0]	0[0;1]	0.199
RAPID Score	Low-Risk (0-2)	30 (49.2)	3 (21.4)	-
	Medium-Risk (3-4)	23 (37.7)	8 (57.1)	
	High-Risk (5-7)	8 (13.1)	3 (21.4)	
	Total Score	3 [2;4]	3.5 [3;4]	0.035*

Data presented as n (%) or median [interquartile range]; *p<0.05.

Figure PC 017

Conclusions: Mortality was 18.7%. Patients with 3-month mortality were older and had a higher median RAPID score, as expected. Contrary to what the authors of the RAPID score stated, we found that patients with purulent pleural fluid had a higher mortality at 3 months. There were no statistically significant differences between groups regarding serum urea, source of infection or serum albumin.

Keywords: *Rapid score. Empyema. Complicated parapneumonic pleural effusion. Mortality.*

PC 018. PREDICTIVE FACTORS OF RESPONSE TO CONVENTIONAL TREATMENT IN PLEURAL INFECTIONS

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Introduction: Pleural infections are associated with significant mortality and morbidity. Conventional medical treatment for pleural

Table 1. Characteristics of patients with complicated parapneumonic pleural effusion or empyema according to response to treatment with antibiotics associated with pleural drainage (conventional treatment).

	Favorable response to conventional treatment		*p-value*
	No (n=29)	Yes (n=45)	
Demographic and anthropometric data			
Sex			
Female	4(13.8)	10(22.2)	0.545
Male	25(86.)	35(77.8)	
Age at diagnosis	60.2±13.8	58.7±20.1	0.695
Body mass index, kg/m2	25[21.9; 28.2]	24[20.9; 28]	0.434
Clinical characteristics and serum values at admission			
Source of infection			
Hospital	4(13.8)	5(11.1)	0.731
Community	25(86.2)	40(88.9)	
Fever at admission			0.474
No	15(51.7)	19(43.2)	
Yes	14(48.3)	25(56.8)	
Leukocytes (x10^3/µL)	14.65[10.04; 17.75]	15.95[10.60; 20.34]	0.197
Lymphocytes (%)	6.4[4.9; 8.6]	7.4[4.7; 12.7]	0.391
Neutrophils (%)	83.8[78.5; 87.3]	83.4[78.3; 88]	0.757
Monocytes (%)	6.2[4.8; 8.4]	6.1[4.6; 7.3]	0.565
C-reactive protein, mg/L	29.3±13.9	23.7±14.80	0.106
Lactate dehydrogenase, U/L	181.5[158; 226]	186[162; 240]	0.908
Albumin, g/dL	3.2±0.5	3.1±0.6	0.443
Total proteins, g/dL	6.4±1.1	6.3±0.8	0.650
Creatinine, mg/dL	0.88[0.73; 1.24]	0.76[0.6; 1.105]	0.074
Urea, mg/dL	53[29; 73]	36[28; 53]	0.117
Lactates, mmol/L	1.85[1; 2.6]	1.1[0.7; 1.7]	0.064
Respiratory failure			
No	18(62.1)	29(64.4)	0.836
Yes	11(37.9)	16(35.6)	
PaO2/FiO2 ratio	286[248.5; 318.5]	297[244; 328]	0.540
Characteristics of pleural effusion and chest drain			
Side of the effusion			
Right	14(48)	21(46.7)	0.892
Left	15(51.7)	24(53.3)	
Effusion size			
Up to hilum	21(72.4)	39(86.7)	0.126
Above hilum	8(27.6)	6(13.3)	
pH < 7			
No	12(46.2)	14(35.9)	0.408
Yes	14(53.8)	25(64.1)	
Pus in pleural fluid			
No	17(58.6)	25(55.6)	0.795
Yes	12(41.4)	20(44.4)	
Loculated effusion			
No	5(17.2)	9(20)	0.767
Yes	24(82.8)	36(80)	
Lactate dehydrogenase, U/L	971[612; 2840]	1063[575; 2760]	0.928
Glucose, mg/dL	54[10; 81]	43.5[5.5; 85.5]	0.753
Proteins, g/dL	4.5[3.8; 4.9]	4.15[3.5; 4.6]	0.298
Albumin, g/dL	2.65[2.3; 2.9]	2.4[1.9; 2.7]	0.090
Leukocytes			
Polymorphonuclear (%)	78.9[65; 91.6]	82.1[61.7; 89.2]	0.886
Mononuclear (%)	21.1[8.4; 35]	17.9[10.8; 38.3]	0.886
Adenosine deaminase, U/L	36.8[27.2; 58.1]	48.9[32.3; 91.5]	0.239
Microbiological isolation			
No	21(72.4)	27(60)	0.275
Yes	8(27.6)	18(40)	
Drain caliber*			
Small	10(37)	22(57.9)	
Medium	13(48.1)	14(36.8)	-
Large	4(14.8)	2(5.3)	
Time between initiation of antibiotic therapy and placement of chest drain, days	1[0; 9]	2[0; 6]	0.777

Data presented as n(%) or mean±standard deviation or median[AIQ]; *Drain caliber defined as: small caliber if catheter or chest drain ≤14F; moderate caliber if chest drain 16 to 22F; large caliber if chest drain 24 to 36F. FiO2: Inspired oxygen fraction; PaO2: Partial pressure of oxygen in arterial blood.

Figure PC 018

infection includes antibiotic therapy and drainage of infected pleural fluid through a chest drain. However, this is not always sufficient. Patients with poor initial response may require intrapleural instillations of fibrinolytics or surgical treatment.
Objectives: The purpose of this study was the analysis of predictive factors of response to conventional treatment in pleural infections.
Methods: We performed a retrospective observational study of adult patients admitted to a tertiary hospital between January 2016 and December 2020 with the diagnosis of complicated parapneumonic pleural effusion or empyema. Two groups were defined according to treatment: a group of 45 patients who responded to conventional treatment and another group of 29 patients who received intrapleural instillations of fibrinolytics or underwent surgical intervention. Demographic data, pleural effusion characteristics, clinical characteristics at admission, the presence of microbiological isolation in the pleural fluid, the time between initiation of antibiotic therapy and placement of chest drain, and diameter of the drain used were recorded.
Results: A total of 74 patients were analyzed. Results are summarized in the table .
Conclusions: Within the analyzed parameters, no predictors of response to conventional treatment were found, strengthening the need for close surveillance for treatment failure and need for fibrinolytics or surgical treatment.

***Keywords**: Empyema. Complicated parapneumonic effusions. Predictive factors. Treatment.*

PC 019. PROGNOSTIC SIGNIFICANCE OF THE NEUTROPHILE-LYMPHOCYTE RATIO IN MALIGNANT PLEURAL EFFUSIONS

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Introduction: The development of a malignant pleural effusion (MPE) is associated with a worse prognosis and subsequent reduction in overall survival of the patient. For the clinician it is essential to be able to reassess prognosis at the time of development of a MPE, in order to adjust treatment options in benefit of the patient. The Neutrophile-Lymphocyte ratio (NLR) has been validated as a prognostic tool in several oncologic settings. We aimed to assess prognosis of MPE patients using this ratio, calculated both from serum samples as well as from pleural fluid samples.
Methods: Retrospective study including patients with a confirmed diagnosis of MPE. The serum NLR (sNLR) and pleural fluid NLR (pNLR) were calculated by dividing the total number of Neutrophiles by the total number of Lymphocytes in the serum and pleural fluid, respectively, at the time of diagnosis of MPE. The resulting ratios were then stratified according to previously validated cutoffs taken from other studies (sNLR < 4 *vs.* ≥ 4; pNLR < 0.745 *vs.* ≥ 0.745). Spearman Rank Correlation was used to determine any relationship between both ratios. Survival was determined by Kaplan-Meier curves and compared by log-rank test. A multivariate analysis was performed using Cox proportional hazard model.
Results: We analyzed 216 patients, of which 52.2% were male; mean age at MPE diagnosis was 68 ± 12.7 years. One-third of the patients had an ECOG ≥ 2. Lung was the main primary malignancy site (54.4%), followed by breast (10.3%) and hematological (8.5%) malignancies. More than half of patients presented with large-volume pleural effusions at diagnosis; pleural fluid cytology yielded a positive result for malignancy in 96% of cases. Patients were divided into two groups according to their sNLR and pNLR scores: Good Prognosis (sNLR: n = 79; pNLR: n = 201) and Poor Prognosis (sNLR: n = 137; pNLR: n = 15). Correlation between blood and pleural fluid NLR in MPE patients was poor (rs = 0.155; p = 0.022). Overall median survival was 95 (95%CI, 66.82-123.18) days. Median survival was significantly different between sNLR score groups (Good Prognosis: 165 [95%CI, 88.06-241.95] days; Poor Prognosis: 56 [95%CI, 32.29-79.71] days; p < 0.001), but not between pNLR score groups. After adjusting for age at MPE diagnosis, sex, ECOG-PS and primary malignancy site, the sNLR score remained an independent predictor of survival among patients with MPE (Poor Prognosis *vs.* Good Prognosis: HR 1.47 [95%CI, 1.09-1.98]; p = 0.011).
Conclusions: Although there was a statistically significant correlation between the sNLR and pNLR, only the score that stratified patients according to their serum values was predictive of survival among our sample of MPE patients. Other studies are required to standardize a reproducible cutoff value for the pleural fluid ratio to better determine its prognostic capacity.

***Keywords**: Malignant pleural effusions. NLR. Cancer. Oncology. Prognosis.*

PC 020. ELECTROMAGNETIC NAVIGATION BRONCHOSCOPY – THE FIRST 3 YEARS

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Introduction: Electromagnetic navigation bronchoscopy (ENB) is a relatively recent technique, whose first human clinical trials date back to 2005. It uses a navigational assistance technology, similar to GPS, capable of localizing and giving directions in order to reach peripheral pulmonary lesion(s). It can have diagnostic or therapeutic use, such as marking nodules for surgery or radiotherapy. In IPO of Lisbon, the superDimension Electromagnetic Navigation Bronchoscopy system® is used with the patient under general anesthesia through a laryngeal mask, with the support of a cytopathologist.
Objectives: To evaluate the results of the patients who had undergone ENB in IPO of Lisbon and analyze possible predictors of the technique's success.
Methods: Retrospective analysis of patients who had undergone diagnostic ENB, since its beginning, in August 2018, to July 2021. Data of demographics, nodule characteristics, subsidiary techniques and its results, diagnostic yield and complications. Descriptive analysis was performed and multivariable binary logistic regression model was used to assess the possible factors associated with procedure's yield.
Results: A total of 55 ENB were performed, with female predominance (56.4%) and a median age of 68 years (41-84). The main indications were lung cancer suspicion in 60.0% and pulmonary metastasis (34.5%). The approached lung nodules had a mean size of 22.3 mm (± 9.64), were mainly in the upper lobes (52.8%) and 74.5% had tributary bronchus. The logistic regression model hasn't found any statistically significant associated factor. Radial EBUS was combined in 81.1% of the procedures. Different diagnostic techniques were performed: biopsy in 89.1% with an average of 8.65 samples (± 3.40); needle brush in 83.6%; transbronchial needle aspiration in 14.5%; bronchial aspirate in all. The main diagnoses were pulmonary adenocarcinoma (35.5%), squamous cell carcinoma and non-oncological diagnosis (both with 19.4%) and pulmonary metastasis (12.9%). Diagnostic yield of ENB was 60.8%. Complications of the procedure were registered in 7.3% of the patients (mild to moderate hemorrhage in 5.5% and pneumothorax in 1.8%).
Conclusions: The diagnostic yield of ENB at the IPO of Lisbon is similar to what is described in the literature. We highlight that 41.8% of the lesions approached had < 2 cm (10.9% ≤ 1 cm) and also that there was a significant reduction in the number of exams due to the pandemic, which is currently returning to the 2019 numbers. We didn't find any lesion characteristics with a statistically significant association with the diagnostic yield of this exam. This can be explained by

the slow learning curve that this ENB presents, the constant presence of a cytopathologist during the procedure and the regular use of radial EBUS. In conclusion, ENB is a relatively recent technique, still not globally used, safe, and that appears to be promising in the diagnosis of properly selected peripheral pulmonary lesions.

Keywords: *Electromagnetic navigation bronchoscopy. Peripheral pulmonary lesions. Diagnostic yield.*

PC 021. TRANSBRONCHIAL LUNG BIOPSY IN LUNG TRANSPLANT RECIPIENTS – REVIEW OF A SINGLE CENTER

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Introduction: Flexible bronchoscopy (FB) and transbronchial lung biopsy (TBLB) are important in the lung transplantation (LT) programs. It may be performed in the admitted or outpatient care (OC). Although routine TBLB is performed in many centers, its use is still controversial and the importance for routine exams is yet to be determined.
Objectives: To analyze the results and complications of TBLB in a cohort of LT recipients in a single center.
Methods: A retrospective review of all TBLB in LT recipients in 2018-19 was performed.
Results: Thirty-six LT recipients underwent TBLB, totalizing 80 procedures. Forty-one exams were performed in OC. The major indication was suspected acute rejection (AR) (n = 56; 70%). In 58 (72.5%) exams, pathologist considered the biopsy specimens eligible. Considering histopathology, 13 cases of AR were identified (A2 - 5; A1 – 4; B1 – 3; B2 – 1). Most exams were performed between first and third months after LT (n = 34) with findings of AR in 7 exams and inespecific inflamatory findings in other 7, although with no statistical significance. Moderate bleeding (MB) occurred in 5 (6%) exams - none were on anticoagulant drugs; severe hypoxemia in 3 (4%) and pneumothorax in 1 (no chest tube needed). There were no differences between OC and in admitted complications.
Conclusions: This series reinforces TBLB as a safe procedure in LT recipients and supports the possibility of performing it routinely at a predefined time period in the post-LT follow-up program within a standardized protocol. Although this may be a small sample, it suggests the period between the first and third months as critical to diagnose AR.

Keywords: *Transbronchial lung biopsy. Bronchoscopy. Lung transplant.*

PC 022. MEDICAL THORACOSCOPY – EXPERIENCE IN A TERTIARY HOSPITAL'S PNEUMOLOGY DEPARTMENT

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Introduction: Pleural disease is a significant part of the daily Pneumology clinical practice and, even though pleural fluid cellular and biomarker studies provide potentially diagnostic information, pleural tissue sampling has become increasingly important. Histopathological analysis is useful not only for diagnosis but also for further disease characterization (through complementary studies such as molecular testing). Medical thoracoscopy has been object of a notable evolution over the last few decades, allowing pneumologists to explore the pleural cavity and to perform pleural biopsies under direct view.
Methods: Data were collected from electronic medical records of all patients submitted to medical thoracoscopy at Coimbra's University Hospital Centre's Pneumology department for a period of 36 months (from August 2018 until August 2021).
Results: During the abovementioned period, 23 patients undergone medical thoracoscopy (65.2% males (n = 15) *vs.* 34.8% females (n = 8)). Population's mean age was of 72.9 years (range: 58-84 years). All of the patients presented with an exudative pleural effusion, except for one (95.7% exudate *vs.* 4.3% transudate). Note that all patients, with the exception of one, presented with a pleural effusion of unknown cause (95.7% *vs.* 4.3%). Focusing on the procedure's specific characteristics, in 95.7% of the patients a semi-rigid thoracoscope was used (n = 22), while a patient was submitted to rigid thoracoscopy (4.3% of the entire population). All patients were submitted to the procedure under conscient sedation and spontaneous ventilation. During procedure, macroscopic abnormalities of the visceral pleura were found in 16 patients (69.6%) allowing optimal biopsy location. In the remaining 7 patients (30.4%), pleural biopsies were performed iteratively in multiple locations. A definitive diagnosis was obtained in 65.2% of the patients (n = 15), but considering only patients with macroscopic abnormalities (n = 16) a definitive diagnosis was obtained in 87.5% of the cases (n = 14). In such cases where a definitive histological diagnosis wasn't obtained, the biopsy analysis provided with useful information to the diagnostic hypothesis development. Focusing only on the cytopathological studies of the pleural fluid samples, a diagnosis was obtained in just 21.7% of the population (n = 5). In these situations, the definitive diagnosis was always coincident with the pleural biopsies' histopathological results. The most frequent diagnosis was pleural involvement by lung primitive adenocarcinoma (n = 4; 17.4% of the total population); followed by pleural involvement by lymphoproliferative disorder, mesothelioma or metastasis from another organ primary cancer. Less frequent diagnosis such as pleural tuberculosis and angio-epithelial neoplasm compatible with Von Hippel-Lindau disease were also found. Intraprocedural and periprocedural hypotensive syndrome was recorded in 13.0% of the patients (n = 3), with full recovery after fluid therapy.
Conclusions: Medical thoracoscopy plays a pivotal role in minimally invasive managing of pleural disease and the semi-rigid thoracoscope development allowed this technique to become less complicated and more efficient, maintaining the diagnostic yield showed in this case series. In the future, we'll witness the growing relevance of this procedure, favored by the expanding number of pneumologists who are acquiring expertise in this specific area.

Keywords: *Medical thoracoscopy. Semi-rigid thoracoscopy. Endoscopic techniques.*

PC 023. SMALL CELL LUNG CARCINOMA – 5-YEAR SURVIVAL WITHOUT TREATMENT?

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Introduction: Pulmonary neuroendocrine tumors represent a morphological spectrum of tumors from the typical well-differentiated carcinoid tumor to the intermediate-grade atypical carcinoid tumor, to high-grade neuroendocrine carcinomas, including small cell carcinoma and large cell neuroendocrine carcinoma.
Case report: Female, 57 years old, healthy. Non-smoking. Unemployed. Referred to the Pulmonology consultation in 2015 due to hemoptysis, with no other symptoms. A chest X-ray showed homogeneous hypotransparency, with well-defined limits at the right base. Followed by a computed tomography (CT) scan of the chest that revealed "in the right lower lobe a rounded and well delimited formation of a watery nature (6.4 × 5 cm), with peripheral calcifications and marked extrinsic compression of the lower lobar bronchus, which is associated with partial atelectasis". She performed fiberoptic bronchoscopy showing "mass, vascularized, which almost completely occludes the right basal pyramid", and no biopsies were

performed due to suspicion of pulmonary sequestration. In this sense, she performed a thoracic angiography which excluded this hypothesis, suggesting a bronchogenic cyst. The clinical case was discussed in a multidisciplinary meeting and the surgical approach was decided. However, the patient refused, opting for an expectant attitude with annual reassessments. Control chest CTs remained overlapping until 2019, when there was an increase of the lung´s lesion dimensions. Case discussed again in multidisciplinary meeting, assuming it could be a typical carcinoid tumor (CT), suggesting surgery. The patient kept refusing. There was a progressive weight loss and an increasingly frequent recurrence of hemoptysis episodes. She agreed to perform PET-CT in 2020 revealing a large mass at the base of the right lung measuring about 6.3 cm and SUV of 5.55, suspected liver metastases with SUV of 8.6 and multiple bone metastases. Abdominal ultrasound confirmed lesions suggestive of liver metastasis. Therefore she performed a liver biopsy, whose histology revealed "metastasis from small cell lung carcinoma (SCLC)". Thus, she was referred to an Oncologic Pulmonology consultation to start therapy.
Discussion: SCLC patients have a poor prognosis with a 5-year survival of 5% and a median overall survival period of only 2 to 4 months for those who did not receive treatment. This case is presented, as the definitive diagnosis of the mass was only obtained after 5 years of disease, which leads us to question the longevity and stability of the disease during this time. We highlight the role of active surveillance in patients who refuse invasive approaches, in order to follow up on disease progression from an early stage.

***Keywords**: Neuroendocrine tumors. Typical carcinoid tumor. Small cell lung cancer.*

PC 024. SCLEROSING PNEUMOCYTOMA: A RARE DIAGNOSIS

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Introduction: Sclerosing pneumocytoma is a rare benign lung neoplasm, probably originating from the primitive respiratory epithelium, affecting mainly middle-aged women. Its cytomorphological characteristics make it difficult to distinguish it from adenocarcinoma.
Case report: Female, 42 years old, non-smoker, with history of pneumonia 4 years ago, with no other relevant data. She went to the family doctor due to pleuritic pain, tiredness and asthenia with a one-month evolution, having performed a chest x-ray, which motivated the performance of a chest CT, that showed "a large mass of soft tissue that extended from the hilar region, occupying the anterior segment of the right upper lobe (RUL), with some calcifications. Amputation of the anterior segmental bronchus of the RUL. Pretracheal adenopathy about 11 mm in diameter. Ganglion structures were also visible in the remaining compartments of the mediastinum, with a ganglion structure also measuring 11.5mm in diameter in the aortopulmonary window". After the chest CT result, she was referred to the emergency department. Physical examination highlighted pulmonary auscultation with reduced breath sounds in the right hemithorax. No relevant changes in blood sample. Linear EBUS was performed with infracentimetric ganglion stations and/or an unsuspected echographic aspect, so there was no directed approach to them. Videobronchoscopy was performed with the identification of an apparently pedicled nodular lesion that conditioned total obliteration of right B3. Bronchial biopsies directed to the lesion were performed, revealing non-small cell carcinoma with immunophenotypic characteristics that favored adenocarcinoma, PD-L1 expression of 2% and NGS with no targeted therapeutic mutations. The thoracic MRI that was performed revealed a mass (78 × 42 × 45 mm) with extensive mediastinal contact, but without criteria for vessel invasion, and the PET scan revealed a large malignant neoplastic lesion with a high metabolic degree (SUV 3.2) in the anterior segment of the RUL, homolateral bronchohilar lymph node metastases, right paratracheal mediastinal lymph node, peri-centrimetric, with mild 18F-FDG uptake, with nonspecific characteristics. After the therapeutic decision meeting of oncologic pulmonology, it was decided to perform neoadjuvant chemotherapy with carboplatin and paclitaxel, and she was later accepted for thoracic surgery, having undergone a right upper lobectomy and lymphadenectomy. The result of the pathological anatomy of the specimen was as follows: "Sclerosing pneumocytoma of the upper lobe of the right lung with endobronchial growth apparently developed in type I pulmonary and airway malformations" and "absence of metastases in the lymph nodes of groups 7, 9 and 10". Given the rarity of the case, review of the slides was requested, confirming the diagnosis.
Discussion: Sclerosing pneumocytoma is a benign and rare lesion, extremely difficult to be diagnosed through biopsies with small samples or cytology and can be mimicked by pulmonary adenocarcinoma. In addition, it is an over-uptake lesion on PET, being a "false positive" on this exam. It's extremely important to consider Sclerosing Pneumocytoma as a differential diagnosis of pulmonary adenocarcinoma, particularly in middle-aged women, who present a well-defined nodule/mass without invasive evidence of adjacent structures. Immunohistochemical diagnosis of this entity, prior to any treatment, is essential to avoid a more aggressive intervention by patients with this pathology.

***Keywords**: Pulmonary adenocarcinoma. Sclerosing pneumocytoma. Differential diagnosis.*

PC 025. ONCOLOGICAL EMERGENCIES IN PATIENTS WITH LUNG CANCER ADMITTED TO THE PULMONOLOGY DEPARTMENT OF HOSPITAL DE BRAGA

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Introduction: Lung cancer is the neoplasm in which there are more oncological emergencies (OE) that can manifest at presentation or during the course of the disease. An OE is an acute event that results directly or indirectly from the tumor and can lead to great morbidity and even life threatening. It can be subtle in presentation requiring a fast recognition, early diagnosis (clinical, analytical or imaging) and intervention to avoid death or permanent damage.
Objectives: Identification and characterization of OE in patients with lung cancer admitted to the Pulmonology Service of Hospital de Braga in 2019 and 2020.
Methods: Retrospective analysis of all lung cancer patients hospitalized with an OE in 2019 and 2020. Clinical, demographic, imaging and anatomopathological data were collected and analyzed by consulting the computerized clinical file.
Results: There were 82 OE. The most frequent were neurological (acute neurological deficits or seizures in patients with new cerebral metastasis) which represented 45.1% of cases, followed by superior vena cava syndrome (15.8%), cardiac tamponade (8.5%), large-volume pleural effusion causing hypoxemic respiratory failure (8.5%), central or bilateral pulmonary thromboembolism or with hemodynamic instability (7.3%), acute spinal cord syndrome (7.3%), massive hemoptysis (3.7%), stridor (2.4%) and unilateral pulmonary atelectasis (1.2%). Patients had a mean age of 64.1 (± 9) years-old with a predominance of males (73.1%). Most reported smoking habits, being 57.3% ex-smokers and 23.2% smokers. Adenocarcinoma was the most frequent histological type (71.9%), followed by small cell lung carcinoma (SCLC) (13.4%), epidermoid carcinoma (8.5%), adenosquamous (2.4%), solitary fibrous tumor (1.2%) and poorly differentiated neuroendocrine tumor (1.2%). At cancer diagnosis 86.6% of patients were in stage IV (TNM classification) followed by stages IIIB (8.5%), IIIC (2.4%), IA (1.2%) and IIIA (1.2%). OE occurred at

presentation of lung cancer in 45.2% of cases (n = 37) and in this group adenocarcinoma predominated (62.2%), followed by SCLC (10.9%). In the remaining 54.9% patients (n = 45) occurred on an average of 12.3 months after the diagnosis and in these patients the most frequent was adenocarcinoma (80%) followed by epidermoid carcinoma (4.9%) and SCLC (2.4%). In this group 28% of patients were in first-line treatment, 11% had not yet started any treatment, 9.8% in second-line, 3.7% in third-line and 2.4% in fifth-line. We observed that 65.9% of patients showed clinical improvement with the treatment of the OE, while 17.1% maintained the same condition, 1.2% became worse compared to admission and 14.6% died during hospitalization. Three months after OE 47% of patients were alive (79.5% adenocarcinoma), while at 6 months only 24.4% of patients were alive (95% adenocarcinoma).
Conclusions: Oncological emergencies occurred mainly at lung cancer presentation, in advanced disease, adenocarcinoma histology, and was associated with low survival. However, early recognition and treatment can provide less morbidity and better quality of life to patients.

***Keywords**: Oncological emergencies. Lung cancer.*

PC 026. 9-YEAR TREATMENT METASTATIC LUNG ADENOCARCINOMA - A PARADIGM OF CHRONIC DISEASE

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Introduction: The evolution of medicine has made it possible to increase the survival of patients with lung cancer through the development of targeted therapies with less toxicity, seeking to transform the prognosis of a disease that a few years ago was fatal, into a chronic disease.
Case report: We present the case of a 54-year-old female patient, active smoker (CT 50 packs-year) with no relevant medical history, who was diagnosed with stage IV lung adenocarcinoma (contralateral lung) by transthoracic aspiration puncture. She started chemotherapy with cisplatin and pemetrexed, pending the molecular study. The molecular study revealed a mutation in exon 19 of the EGFR gene, so she was under maintenance treatment with erlotinib after the 4 cycles of chemotherapy. She remained under treatment with erlotinib for 4 years, initially with disease response/stability despite maintaining her smoking habits. It progresses after 4 years with oligometastatic central nervous system (CNS) disease – two brain lesions with associated vasogenic edema. She underwent left frontal craniotomy with removal of tumor lesions and stereotaxic radiotherapy. Despite progression at the CNS level, she initially maintained erlotinib because the lung disease was stable. The T790M mutation was not detected in the liquid biopsy, but was detected in the molecular study of brain lesions, so treatment with osimertinib was started. She remained on osimertinib treatment for 3 years, with stable lung disease and no relapse of metastatic brain disease. After 3 years, she developed pulmonary progression, so a new lung biopsy was performed for molecular study that revealed a mutation in exon 2 of the KRAS gene. She was proposed for 4th line of treatment with carboplatin and pemetrexed. She underwent only two chemotherapy cycles due to grade 3 haematological and cutaneous toxicity. At this point, the pulmonary disease was stable, so she was kept under surveillance. After 3 months, she repeated CT with evidence of pulmonary progression, so she started gemcitabine as monotherapy. She underwent only two cycles of gemcitabine because she had grade III right lower limb ischemia due to obstructive peripheral arterial disease. In this context, the search for PDL1 in the last lung biopsy was requested, which was found to be 90%. Therapy with Pembrolizumab was started and the patient has had 8 cycles to date with partial response.
Discussion: This case illustrates an atypical evolution in a patient diagnosed with stage IV lung adenocarcinoma. The fact that she had an EGFR exon 19 mutation at diagnosis was unlikely as she was a patient with smoking habits. The progression with oligometastatic CNS disease, which was revealed to be a clone carrying the T790M EGFR mutation, highlights the importance of thinking about this mutation when there is progression under EGFR TKIs, even if it is not detected in the primary tumor. The response to immunotherapy, despite high PDL1 expression, would not be expected given that KRAS mutation was detected.

***Keywords**: Lung adenocarcinoma. EGFR mutation. Kras mutation.*

PC 027. LAMBERT-EATON PARANEOPLASTIC SYNDROME AS PRESENTATION OF LUNG CANCER: CASE REPORT

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Introduction: Neurological paraneoplastic syndromes are described in less than 1% of cancers and may precede diagnosis or appear in advanced stages of the disease. Clinical manifestations are not necessarily related to primary tumor reflecting the systemic character of the disease.
Case report: 64-year-old male, ex-smoker. Went to the emergency department due to progressive dyspnea with two months of evolution, worse in decubitus, pain and decreased strength in lower limbs, asthenia and anorexia. A brain tomography (CT) was performed which showed no alterations and a chest CT revealed a 49 × 26 mm mass in the left upper lobe causing atelectasis and involving bronchovascular structures and multiple pretracheal and precarinal adenopathies with intense glycolytic metabolism. Fiberoptic bronchoscopy allowed the observation of an endobronchial neoformative lesion whose histology was compatible with small cell lung carcinoma (SCLC). As this was a IIIc stage (TNM), treatment with carboplatin, etoposide and sequential chest radiotherapy was decided. During hospitalization he presented improvement in pain and worsening of generalized strength more accentuated in the lower limbs, with progressive difficulty in walking. He was observed by Neurology that given these findings, antineuronal antibodies, autoimmune study and negative infectious serologies (no result of voltage-dependent anti-calcium channel antibodies), considered the diagnosis of a paraneoplastic syndrome with presynaptic dysfunction of the neuromuscular junction - Lambert-Eaton Syndrome. Electromyography revealed a decrease in potential amplitude with repetitive stimulation, alterations compatible with the diagnosis and treatment with immunoglobulin and pyridostigmine was instituted. At discharge, the patient presented a slight improvement in neurological deficits with predominantly crural and proximal tetraparesis. He maintained treatment with pyridostigmine, monthly immunoglobulin, physiotherapy and directed towards lung cancer. He was admitted to the ER five months after diagnosis for global respiratory failure in a probable context of worsening of the Lambert-Eaton myasthenic syndrome and presented an unfavorable evolution.
Discussion: We present a case of paraneoplastic Lambert-Eaton Syndrome as presentation of SCLC and revealing the diversity of possible manifestations of this pathology.

***Keywords**: Lambert-Eaton syndrome. Lung cancer.*

PC 028. PARANEOPLASTIC TRANSVERSE MYELITIS AS PRESENTATION OF LUNG CANCER: CASE REPORT

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Introduction: Paraneoplastic syndromes occur in about 10% of lung cancers and in most cases precede the diagnosis. Can affect sev-

eral organs by the action of hormones, peptides and cytokines produced by the tumor or by immune dysregulation.
Case report: 65-year-old male, ex-smoker. Went to the ER for lower limb paresthesia with ascending progression to the dorsal level (T4) with one week of evolution with an inability to walk, urinary retention and constipation. Physical examination on admission showed symmetrical paraparesis of lower limbs with live osteotendinous reflexes, bilaterall extended cutaneous-plantar reflexes and bilateral algic hypoesthesia, motivating admission to Neurology for investigation. MRI of the brain and spinal cord and analysis of CSF were performed which did not show relevant changes, so the diagnosis of acute transverse medullary syndrome of inflammatory etiology was considered. Treatment with methylprednisolone pulses was instituted without improvement of neurological deficits and urinary retention. He went to a functional rehabilitation program but due to worsening of the neuromotor symptoms of the lower limbs (decreased strength and sensitivity), repeated medullary MRI which did not reveal any changes. Serum anti-neuronal antibodies were detected with and absence of anti-aquaporin and anti-MOG antibodies and treatment with IV immunoglobulin was started, without clinical improvement. An occult neoplasm study was carried out which revealed the presence of a solid nodule in the right superior pulmonary lobe whose transthoracic biopsy revealed a pulmonary adenocarcinoma. No other metabolic uptake sites on PET, therefore stage Ia (TNM). A curative surgical treatment was decided and the patient underwent a right upper lobectomy with mediastinal lymphadenectomy by VATS. Postoperatively, underwent three cycles of plasmapheresis and maintained functional rehabilitation. Paraplegia sequelae to paraneoplastic acute transverse myelitis was assumed in the context of lung adenocarcinoma at an early stage. The patient remains without signs of progression of the lung cancer maintaining neurological deficits in the lower limbs and need for bladder self-catheterization.
Conclusions: This neurological paraneoplastic syndrome allowed the diagnosis of lung cancer at an early and potentially curative stage highlighting the importance of early recognition and diagnosis of these conditions.

Keywords: *Transverse myelitis. Lung cancer.*

PC 029. PULMONARY ADENOSQUAMOUS CARCINOMA – PIK3CA MUTATION IN TRANSTHORACIC BIOPSY – CASE REPORT

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Introduction: PIK3CA as an important regulator of cellular growth, transformation and adhesion, as well implication in apoptosis, survival and cellular motility, became a new target. Clinical assays are conducted to clarify the adequate prescription of PI3K inhibitors. In Lung Cancer it seems that Squamous Cell Carcinoma may present with higher incidence of the PIK3CA mutations.
Methods: A 64-years-old male presented with a Left Upper Lobe tumor diagnosed as adenosquamous carcinoma with probable enteric differentiation (CDX2 expression beyond CK7, TTF1 and CK5.6) in transthoracic biopsy. Microdisected tumoral tissue/20% representation of tumoral cells was analysed by NGS, Colon/Lung panel according to manufacturer´s instruction by Ion Torrent. ALK and ROS1 translocations were also searched by FISH.
Results: NGS Lung/Colon Panel detected PIK3CA (NM_006218.4 (PIK3CA):c.1624G>A (p.Glu542Lys) mutation; all the other searched genes (EGFR, KRAS, BRAF, AKT1, ERB2, PTEN, NRAS,STK11, MAP2K1, ALK, DDR2, CTNNB1, MET, TP53, SMAD4, FBX7, FGFR3, NOTCH1, ERB4, FGFR1, FGFR2) had no clinical variation significance. There were no translocations for ALK and ROS1.
Conclusions: PIK3CA mutations are being reported in 14% of malignant solid tumors. NM_006218.4 (PIK3CA):c.1624G>A has a hotspot mutation within the PIK helical domain of the Pik3ca protein, has been determined in 2% of all malignant solid tumors. This mutation results in increased phosphorylation of Akt growth factor with acquisition of independent cellular self-survival; being rare, its determination is demanded in Clinical trials that open door for patients. The present case is particular due to either adenocarcinoma and squamous differentiation raising the question of PI3KCA mutation search in Refex Tumoral Molecular Testing.

Keywords: *Lung cancer. PI3KCA. Adenocarcinoma. Squamous cell carcinoma. Adeonsquamous carcinoma.*

PC 030. "NOT EVERYTHING IS AS IT SEEMS" - CRAZY-PAVING IN THE ACTUAL COVID-19 PANDEMIC CRISIS

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Introduction: The "crazy-paving" pattern is a radiological finding that is defined as reticular and/or interlobular septal thickening. This pattern can be associated with several pathologies, including pneumonia, pulmonary hemorrhage, diffuse alveolar lesion, carcinomatous lymphangitis, and rarely, pulmonary alveolar proteinosis. In the current context of the COVID-19 pandemic, SARS-CoV-2 pneumonia emerges as a diagnostic hypothesis, making the differential diagnosis difficult.
Case report: We present a case of a 63-year-old male patient with a history of cerebellar ischemic stroke; alcoholic liver cirrhosis and arterial hypertension. Ex-smoker (128 packs-years) and heavy alcohol habits in the past but abstinent for more than 5 years. Admitted in January 2021, with worsening of the usual dry cough and dyspnea for minor exertion with a week of evolution. He denied orthopnea, paroxysmal nocturnal dyspnea, night sweats, weight loss or hemoptysis. Objectively, polypnea and with crackles in the lung bases. Analytically with mild type 1 respiratory failure and increased C-reactive protein. A chest X-ray showed bilateral interstitial infiltrate predominantly at baseline and ill-defined limits. Chest tomography with a diffuse "crazy-paving" pattern in the right lung field (reaching greater than 50% in the upper lobe and lower lobe) and in the left superior field (20 to 50%) and the presence of a 34 mm mass in the lower lobe left with small-volume pleural effusion on the right. The SARS-CoV-2 PCR tests were negative at admission, 24 and 72 hours. Bronchoscopy was performed with bronchoalveolar lavage, which showed positive cytology for malignant cells, with cytological aspects of adenocarcinoma and with an immunophenotype compatible with pulmonary origin. Given the diagnosis, history and chest tomography imaging, extensive bilateral carcinomatous lymphangitis was presumed. Positron emission tomography showed evidence of areas of ground-glass parenchymal densification spread over both lung fields, with diffuse FDG uptake; mediastinal-hilar and supraclavicular hypermetabolic adenopathy's and skeletal uptake foci, suggesting secondary lesions. The patient evolved with an unfavorable outcome and died 3 months after the initial study.
Discussion: The authors aim to draw attention to the importance of differential diagnosis of the imaging pattern described above. The clinical and imaging presentation of the patient, as well as the epidemiological setting at the time, supported the hypothesis of SARS-COV-2 pneumonia, or other infectious conditions. In this case, contrary to what would be expected, the diagnosis was a carcinomatous lymphangitis, with contralateral involvement to the primary tumoral lesion, which makes this diagnosis unexpected.

Keywords: *Crazy-paving. Adenocarcinoma. Lymphangitis carcinomatosis.*

PC 031. MADNESS PSYCHOSIS INDUCED BY PEMBROLIZUMAB

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Introduction: Immune checkpoint inhibitors have revolutionised cancer treatment in recent years. Pembrolizumab, a monoclonal antibody, approved for the treatment of advanced-stage lung cancer, has significantly improved prognosis and the quality of life of these patients. Adverse effects related of Pembrolizumab, including endocrinopathies, are quite common with this and other PD-1 inhibitors, but myxedematous psychosis is extremely rare and almost no clinical cases have been reported to this days.
Case report: A 70-year-old woman, former smoker, followed in respiratory medicine due to stage IVA lung adenocarcinoma, under immunotherapy with pembrolizumab for 5 months, with partial response. Known history of controlled essential hypertension and no previous history of psychiatric or neurological disease. She was admitted to the Pulmonology department for psychomotor agitation, incoherent speech, altered memory, acalculia and auditory-and visual hallucinations. On admission she presented with periods of obfuscation alternating with psychomotor agitation, globally uncooperative with na unintelligible speech and delusional ideation of damage that was not very systematised in relation to the perceptive phenomena. Neurological examination showed no motor or sensory alterations, and cerebral metastasis as well as any cerebrovascular pathology was excluded after the performance of a cranioencephalic magnetic resonance (MRI). Primary parkinsonism was also excluded after observation of a single photon emission computed tomography (SPECT) without alterations, and the electroencephalogram (EEG) did not show any epileptic activity. Also any ionic or vitamin alterations and infectious signs was found. In this context a complete analytical study was performed where an increased thyroid stimulating hormone (TSH) of over 100 μU/mL and a low free thyroxine (fT4) of 0.19 ng/dL were highlighted. Anti-thyroperoxide antibodies (anti-TPO) and anti-thyroglobulin antibodies (anti-Tg) were negative. Therefore, obtaining the diagnosis of primary hypothyroidism secondary to Pembrolizumab manifested through severe psychosis. Treatment with levothyroxine and corticotherapy was started. Quetiapine and resperidone were started as well to control the psychomotor agitation and the confusional state, with good response. The patient was discharged after one month with normalised thyroid function, but still with recent memory and sleep alterations, namely initial insomnia. During the 4 months following discharge, a gradual improvement was observed - After discussion in a multidisciplinary consultation and due to stabilisation of the oncological disease with a good response prior to treatment, Pembrolizumab was reintroduced with a tight control.
Discussion: One of the remarkable features of our patient was the atypical initial manifestation of hypothyroidism. The psychosis associated with myxedema was first described in 1949, but more recently a correlation between the degree of thyroid dysfunction and the psychiatric manifestations developed in patients with severe hypothyroidism has been reported. It is now known that most psychoses associated with this pathology appear after months or years of symptoms related to thyroxine deficit, but in some exceptional cases it may have a presentation similar to the one reported.

Keywords: *Lung cancer. Pembrolizumab. Hypothiroidism.*

PC 032. A RARE PRESENTATION OF MINUTE PULMONARY MENINGOTHELIAL-LIKE NODES

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Introduction: Minute Pulmonary Meningothelial-like nodes (MPMN) are unique and benign pulmonary nodules classically diagnosed incidentally through surgical biopsies or autopsies. Although histologically they are not uncommon, their presentation as diffuse pulmonary meningotheliomatosis (DPM) is extremely rare and with few cases described in the literature. MPM is of uncertain clinical significance, characterized by bilateral proliferation of MPMN and more frequent in females, in the sixth decade.
Case report: 55-year-old female with symptoms of dry cough and wheezing that worsens at night with months of evolution, appears in the consultation for further clarification and investigation of changes in chest CT. She is a housewife and passive smoker. As personal background, a previous diagnosis of bronchial asthma allergic to mites, pollens and dog and cat allergens. On her own initiative, she discontinued treatment with ICS/LABA and kept in contact with the cat, dog and chickens. The objective examination did not reveal any abnormality and analytically, a normal PFR, positive phadiotope and an IgM deficit. Thoracic CT showed a discrete dispersed micronodular pattern with multiple bilateral and millimetric nodular formations. The largest one was located in the middle lobe and measured about 6 mm in diameter. Changes those were stable for 2 years. Follow-up characterized by multiple exacerbations and respiratory complications due to infections, which raised the suspicion of hypersensitivity pneumonitis. She performed broncoschopy for bronchoalveolar lavage with 100 cel/Ul, lymphocytes 46%, CD4/CD8 2.23 and bacteriological examination, Mycobacterium tuberculosis research and cytology were negative. The CT scans remained stable until there was a progression in a nodule size, prompting the execution of a PET scan that revealed no hypermetabolic foci. Patient was proposed for transbronchial lung biopsy which morphologically and immunohistochemically ruled out hypersensitivity pneumonia and characterized the pulmonary nodules as MPMN.
Discussion: The exact etiology of these structures remains uncertain and it is unknown why some individuals present with bilateral and diffuse dissemination of MPMN, constituting DPM, as is the case mentioned above. Although 44% of patients with disseminated pathology have a history or active malignancy. Isolated MPMNs have been shown to lack mutational damage, are uncommon findings in patients with pulmonary meningiomas, and have been described in patients with unrelated conditions such as malignancy, pulmonary thromboembolism, and infections. This corroborates the hypothesis that we are rather facing a reactive entity than neoplastic. However, further investigation is suggested for undiagnosed neoplasia in patients newly diagnosed with DPM. This case highlights the need to consider DPM in the differential diagnoses of bilateral micronodular lung diseases and that in patients with no history or no active malignancy, the diagnosis may be achievable through a less invasive method of lung biopsy such as cryobiospy.

Keywords: *Pulmonary nodes. Lung cancer. Meningotheliomatosis. Cryobiopsy.*

PC 033. DURVALUMAB AS FIRST LINE TREATMENT IN ADVANCED SMALL CELL LUNG CANCER

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Introduction: The addition of Durvalumab to the first-line chemotherapy regimen (platinum and etoposide) for the treatment of advanced-stage small cell lung cancer (SCLC) has recently been approved, showing evidence of a significant increase in overall patient survival. Given the short period of use of this association, the clinical evidence reported in the literature is limited, and the description of cases that underwent prophylactic cranial irradiation (PCI) is even rarer.
Case report: We present the case of a male patient, 57 years old, ex-smoker with 72 pack-years, who was referred to the Pulmonol-

ogy consultation through the Pulmonary Diagnostic Center (CDP). Previously healthy, he presented with a two-month evolution of progressive dyspnea, with mMRC 2, dry cough, bilateral anterior chest pain, without pleuritic characteristics, night sweats, anorexia and 5% weight loss in three months. On observation, he presented right jugular engorgement and collateral venous circulation in the anterior thorax, without apparent edema. Chest CT scan revealed a large mass encompassing the right upper lobe and large mediastinal vessels and numerous bilateral parenchymal nodules. After a transthoracic biopsy of the lung mass, the patient was diagnosed with small cell carcinoma, T4N0M1a, stage IVA, presenting at the time of diagnosis a performance status (PS) of 1. During the initial phase of the investigation at the CDP the patient was diagnosed with multisensitive pulmonary tuberculosis, for which he completed six months of targeted treatment. During the second month of anti-bacillary treatment, the patient started first-line treatment with cisplatin (80 mg/m^2) and etoposide (100 mg/m^2) from the 1st to the 6th cycle and durvalumab (1,500 mg) from the 3rd to the 6th cycle, continuing with durvalumab as maintenance treatment. Upon reassessment, after the 4th cycle, there was clinical improvement, with PS of 0, and tumor size reduction, with partial response. After two months of maintenance with durvalumab, the patient maintained PS 0 and imaging stability on CT assessment, having undergone PCI (30 Gy/15 fractions) with good tolerance. At the 3rd month of the maintenance phase, hypoaesthesia began to appear from the mammillary line to the feet, symmetrically, with reduced strength in the lower limbs and loss of balance during walking. The CT evaluation did not show cranioencephalic or cervical and dorsal spine metastases, however MRI showed several extramedullary intradural metastatic lesions at the level of the dorsal spine. The patient was started on palliative directed radiotherapy of the spine, however, due to worsening of his clinical condition, the patient died after eight months of treatment.

Discussion: The authors present this case of stage IVA SCLC that was treated with first-line durvalumab and classic QT, with a favorable clinical and imaging response. The patient tolerated PCI after the second month of maintenance therapy with durvalumab and died after 8 months of treatment due to leptomeningeal metastasis.

***Keywords**: Small cell lung cancer. Durvalumab. Prophylactic cranial irradiation.*

PC 034. EXPERIENCE WITH ALECTINIB IN THE TREATMENT OF ALK POSITIVE NSCLC

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Introduction: The discovery of mutations capable of modulation by tyrosine kinase inhibitors changed the treatment paradigm of NSCLC. An example is the central nervous system active and highly selective ALK inhibitor Alectinib.

Objectives: To evaluate the effectiveness of Alectinib in first or second-line treatment of ALK positive NSCLC.

Methods: Retrospective analysis of clinical data from patients with advanced-stage NSCLC and ALK rearrangement followed up in an Oncologic Pulmonary Department of CHUC.

Results: 17 patients were included, with a mean age of 59.1 years (minimum 42, maximum 86), 64.7% (n = 11) female, 88.2% (n = 15) non-smokers, 47.0% (n = 8) with performance status of 0, 41.2% (n = 7) of 1 and 11.8% (n = 2) of 2. By the time of the diagnosis, 88.2% (n = 15) were in stage IV and 11.8% (n = 2) in stage III disease. Lung, brain and bone were the most common sites of metastasis. The majority of patients, 52.9% (n = 9), started Alectinib in first-line and 47.1% (n = 8) in second-line treatment (all of them had previously received Crizotinib). The mean time of treatment was 20.2 months (minimum 4, maximum 52). Regarding the response to therapy, we found that 17.6% (n = 3) showed complete response, 47.1% (n = 8) partial response, 23.5% (n = 4) stability and 11.8% (n = 2) progression with lung, bone and liver metastasis. 23.5% (n = 4) of patients showed Alectinib-induced toxicity: interstitial pneumonitis (n = 2), liver toxicity (n = 1) and renal toxicity (n = 1). In this context, it was necessary to suspend therapy in a patient.

Conclusions: The experience of our Health Care Unit is similar to the data from other studies, highlighting the importance of Alectinib in the personalized treatment of ALK positive NSCLC for its robust antitumor efficacy, along with intracranial activity and low toxicity.

***Keywords**: ALK. Alectinib. NSCLC.*

PC 035. LUNG CANCER IN PALLIATIVE CARE

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Introduction: The symptomatic burden in patients diagnosed with advanced lung cancer is very important, with a great impact on their quality of life. Palliative Care, with its focus on symptomatic control, addressing the physical, psychosocial and spiritual dimensions, becomes indispensable in managing the needs of these patients.

Objectives: To analyze a population of patients diagnosed with lung cancer, requiring admission to a Palliative Medicine service (PMS).

Methods: Retrospective observational study, including patients admitted to hospital in the PMS and diagnosed with lung cancer, from January 2017 to December 2020. IBM SPSS statistics 23 program was used for statistical analysis. Continuous variables were expressed as median and interquartile range (IQR); categorical variables were expressed in frequency and percentage. For the comparative analysis of continuous variables, the Mann-Whitney U test was used. Categorical variables were compared between groups using the chi-square test. The level of significance was defined as $p < 0.05$.

Results: A total of 106 hospitalization episodes were identified, corresponding to 91 patients, most of them male (67%; n = 61), with a median age of 72 years (IRQ = 18). The most frequent histology was Adenocarcinoma (35.8%; n = 43). Most were stage IV at admission (78.9%, n = 94). The most commonly reported site of metastasis was bone metastization (n = 45; 37.5%), followed by brain (n = 33; 27.5%), and pleural (n = 29; 24.3%). As for autonomy and general condition, most had a PS ECOG of 3 or 4 (44.2%; n = 53 and 35.8%; n = 43, respectively) and a Palliative Performance Scale (PPS) with a median of 20% (IQR = 20). The most frequently reported symptoms, lacking control on admission, were dyspnea (n = 51; 42.5%) and pain (n = 40; 33.3%). The comparative analysis between patients with conditions for discharge *versus* patients with a fatal outcome we demonstrated that having dyspnea on admission correlated with death in this episode ($p = 0.013$). An ECOG of 4 ($p = 0.008$) also correlated with a more frequently fatal outcome. There were significant differences between the PPS of patients who evolved unfavorably and those who were able to be discharged ($p < 0.001$).

Conclusions: There was a need for hospitalization mainly in patients with advanced stages, namely with metastases, which usually implies a greater symptomatic burden and rapid progression to end of life, requiring specialized care by a multidisciplinary team. A worse general condition, with greater dependence, seems to correlate with unfavorable progression during hospitalization. Dyspnea was the most reported symptom and it was also correlated with a fatal outcome. The need for patients diagnosed with lung cancer to be followed up by a Palliative Care team becomes increasingly

pressing. An early integration after diagnosis facilitates adequate intervention, directed to the patient's needs, as well as the management of expectations and the creation of conditions that promote quality of life.

Keywords: *Lung cancer. Palliative care.*

PC 036. ECTOPIC CUSHING´S SYNDROME: A CASE OF SMALL CELL LUNG CARCINOMA

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Introduction: Small cell lung carcinoma (SCLC) belongs to the spectrum of neuroendocrine lung tumors, representing 15% of all lung tumors. However, they are the ones most frequently accompanied by paraneoplastic syndromes. Ectopic Cushing's syndrome (ECS) is the second most common paraneoplastic syndrome in SCLC, occurring in 1-5% of cases. It is a cause of hypercortisolism associated with ectopic ACTH production and is usually associated with a worse prognosis. Most patients present with severe electrolyte disturbances, refractory hypertension and difficult glycemic control.
Case report: We present the case of a 57-year-old man, smoker (20UMA) who went to the emergency department due to productive cough and asthenia with 10 days of evolution. On physical examination, a hypertensive profile (BP 205/138 mmHg), SpO2 88% and bilateral crackling rales were highlighted. Additionally, blood gas analysis with partial respiratory failure, hyperglycemia (320 mg/dL) and severe hypokalaemia 2.3 mg/dL were reported. Chest CT scan identified a right hilar lung mass (7.5 cm), amputation of the right upper lobar bronchus, and signs suggestive of bilateral pleural metastization. He was admitted to the Pulmonology Service for etiological investigation of probable lung cancer. Upon admission, lung biopsies were performed using fiberoptic bronchoscopy which revealed small cell neuroendocrine lung carcinoma. Abdominal-pelvic CT was also ordered and documented liver and bone metastases, and CE-MRI excluded brain metastases. During hospitalization, hypertension was difficult to control despite the institution of several classes of antihypertensive agents. In this context, a study was started to screen for secondary HTA, in which hypercortisolism was found (cortisol 52.4 ug/dL and ACTH 85.8 pg/mL). A cortisol suppression test with dexamethasone was performed, the values of which were: cortisol 39.7 ug/dL and ACTH 71.9 pg/mL. These alterations were framed in an Ectopic Cushing Syndrome diagnosis, which justified the hypoertensive profile, hypokalemia and new-onset diabetes. Thus, metyrapone was started, with the subsequent normalization of potassium and glucose levels and improvement in the blood pressure pattern. The patient also started chemotherapy with carboplatin and etoposide with partial response and frank improvement of the paraneoplastic syndrome, enabling the weaning of antihypertensive medication and discontinuation of metyrapone. However, 3 months after completion of chemotherapy, in an endocrinology consultation, a worsening of the ECS was detected, requiring the reinstitution of metyrapone. At that time, it was observed tumor recurrence followed by a worsening of the performance status, which prevented a new therapeutic line. The patient was then referred to palliative care.
Discussion: ECS is an entity associated with lung cancer that may not present the classic signs of Cushing's syndrome. Some studies show that controlling the level of cortisol prior to starting chemotherapy can increase the survival of these patients. The high level of clinical suspicion and early diagnosis is imperative. Treatment for unresectable tumors consists in the administration of steroidogenesis enzyme inhibitors (ketoconazole, metyrapone or etomidate). Metyrapone is sometimes preferred for its better safety profile. Clinical and analytical monitoring of the response to therapy is essential. The subsequent institution of chemotherapy is the key step in controlling the disease and SCE in the medium term.

Keywords: *Ectopic Cushing's syndrome. Small cell lung carcinoma.*

PC 037. SIMILAR IMAGES, DIFFERENT AUTHORS? ABOUT 2 CLINICAL CASES

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Introduction: Synchronous lung tumours are often a diagnostic challenge, not only due to their rarity, but because their presentation may be mistaken with advanced or metastatic disease. In case of suspicion, the acquisition of anatomopathological material of the different lesions is essential.
Case reports: Case 1. Male, 57-years-old, active smoker, history of deep vein thrombosis in the right lower limb in the previous month. He presented dysphonia with 10 months of evolution, and asthenia and weight loss (~ 20 Kg) for the last 6 months. Due to a self-limited episode of chest pain, he resorted to the emergency department and ended up having a chest CT done, which revealed a macronodular image with irregular contours in the right lower lobe (RLL), (40 mm), and a large contralateral adenopathic conglomerate (fig. 1). He was referred to the Pulmonology-Oncology consultation and performed an FDG-PET, which revealed intense mass uptake (SUV > 20) in the RLL, peribronchial and hilar homolateral adenopathic conglomerate, and contralateral mediastinal adenopathic conglomerate. Bronchoscopy was performed, showing infiltrated mucosa at the left bronchus; brushing was inconclusive. Linear EBUS was performed, identifying suspicious adenopathies in stations 4L, 11L, 7, 11R, 4R. Aspiration punctures were performed at stations 4L (rapid on-site assessment (ROSE) suggestive of lymphoma), 11R (ROSE suggestive of adenocarcinoma) and 7. The anatomopathological result revealed a large-cell neuroendocrine carcinoma at station 4L, and lung adenocarcinoma at station 11R. The patient started chemotherapy but died a few months later. Case 2. Male, 79-years-old, ex-smoker. Due to a persistent cough in 2017, he performed a chest CT that revealed a solid lesion in the left lower lobe (LLL) (44 mm), and another in the right upper lobe (RUL) (22 mm). He was referred to the Pulmonology consultation, but never did the tests requested nor has returned to the consultation. In January 2021, he visits a General Practitioner due to dysphagia. He repeated the chest CT, and multiple masses were seen in the RUL (45 mm), RLL (25 mm), and LLL (50 mm). Bronchoscopy revealed a vascularized lesion at the entrance of the right B3, which was biopsied and whose anatomopathological result revealed a carcinoid tumor. FDG-PET showed a lung mass in the LLL with moderate/intense uptake, lung densifications in the right perihilar region with mild/moderate uptake, and a lung mass in the RUL with mild uptake (fig. 2). For a better characterization of all lesions, linear EBUS was performed, and suspicious adenopathies were visualized in group 11L, which were biopsied, with negative ROSE; a radial EBUS was performed, and a concentric mass was echographically visualized in a subsegment of the posterior branch of the left basal pyramid, where distal biopsies were performed (ROSE uncertain) and in the posterior subsegment of the external branch of the left basal pyramid (positive ROSE), which revealed a lung adenocarcinoma. He started chemotherapy, but died after 3 months.
Discussion: We emphasize the importance of performing biopsies in different lesions, even after acquisition of material with the presence of malignant cells. We also highlight the role of EBUS and ROSE in the correct differential diagnosis of these lesions.

Keywords: *Syncronous lung tumours. EBUS. Rose.*

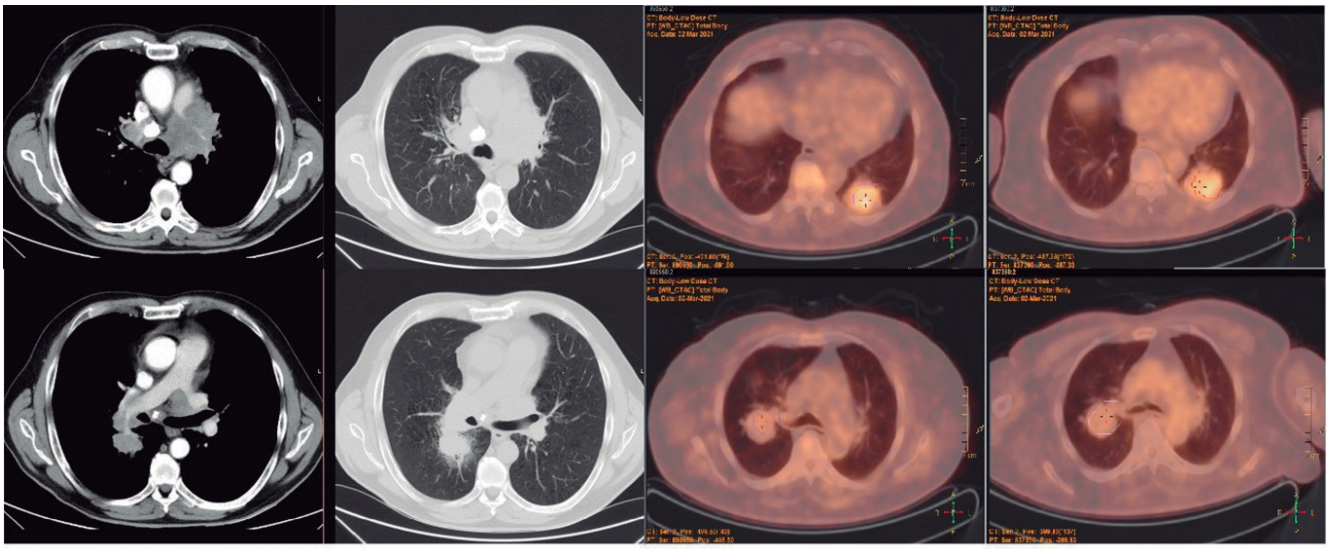

Image 1: Left adenopathic mediastinic conglomerate (up) and mass in the RLL (down)

Image 2: Mass in the LLL with moderate/intense uptake (up) and in the RUL with mild uptake (down)

Figure PC 037

PC 038. GOOD ISN'T ALWAYS GOOD

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Introduction: Good Syndrome is an adult-onset immunodeficiency, first reported in 1954, in which hypogammaglobulinemia develops and very often associated with very low levels or even absent B cells in peripheral blood. It is a rare autoimmune complication of thymomas, appearing in about 0.2 to 6% of thymoma patients, to date around 200 cases have been described in the literature worldwide and whose pathophysiological mechanisms are not yet completely understood. It is characterized by increased susceptibility to bacterial, viral and fungal infections. The authors present the clinical case of a patient diagnosed with thymoma who developed multiple infectious complications which triggered the research and identification of this rare syndrome.
Case report: MC, female, 71 years old. Personal history of multinodular goiter, chronic gastritis, dyslipidemia and personality disorder. Prolonged hospitalization (124 days) starting in December 2021 for SARS-CoV-2 pneumonia with very rapid progression to severe disease. Need for intensive care unit, prolonged invasive mechanical ventilation, curarization and periods of prone ventilation. Multiple urinary and respiratory bacterial infections during hospitalization. In the initial imaging evaluation, a mediastinal mass was found with about 8.5 × 5 cm in the longest axes, showing loss of the cleavage planes with the pericardium and heterogeneous contrast uptake, suggestive of a lesion with thymic origin. Only after stabilization of the initial condition was it possible to perform a CT-guided biopsy, which confirmed the hypothesis of thymoma with aspects that favored AB type. Very low gamma fraction detected in protein electrophoresis with low levels of IgG (294 mg/dL), IgA (48 mg/dL) and IgM (< 5 mg/dL) in addition to the almost complete absence of B lymphocytes in peripheral blood (0.01%). The patient was proposed for resection surgery with curative intent, having previously started replacement with 5% immunoglobulin G, 30g every 2 weeks. No new infectious complications reported since immunoglobulin was initiated, currently awaiting surgical intervention.
Discussion: We present this clinical case due to its rarity, highlighting the importance of not forgetting this clinical entity in patients with thymoma diagnosis. This condition may have contributed to the rapid and particularly aggressive evolution of the viral pneumonia presented and to the various infectious complications registered during hospitalization. Under immunoglobulin G replacement, clinical stability is maintained, still waiting for surgery to assess the need to maintain this therapy, since hypogammaglobulinemia may persist after thymoma excision.

Keywords: *Thymoma. Good syndrome. Immunodeficiency.*

PC 039. LATE HEPATIC TOXICITY TO IMMUNOTHERAPY - A CLINICAL CASE

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Introduction: The development and rapid advancement of immunotherapy, especially of monoclonal antibodies targeting programmed cell death protein 1 (PD-1) or its ligand (PD-L1). drastically changed the therapy strategy in small cell lung cancer, increasing the progression-free disease overall surving. However, the appearance of immune-mediated adverse events (irEA) is frequent, and such toxicities can be difficult to manage and lead to discontinuation of therapy.
Case report: 72 year old patient, retired from farmer, ex-smoker with a tobacco load of 110 units pack-year. History of arterial hypertension, dyslipidemia and bladder cancer with surgical intervention in 2011. Sent to a Pulmonology consultation in September 2020 after a chest X-ray identified a nodular lesion in the left upper lobe. The chest CT scan revealed the presence of a mass with spiculated contours in the left upper lobe, measuring 60 × 49 mm in the axial plane. In the remaining lung parenchyma, 4 micronodules were observed on the right lung, the largest with 6 mm, and 3 micronodules on the left lung, the largest with 5 mm, suggestive of secondary deposits, in addition to a small left pleural effusion. After rigid bronchoscopy with a radial miniprobe, the mass observed on CT chest was identified, and biopsies were taken from the area. The biopsies revealed a poorly differentiated adenocarcinoma, PD-L1 60-70%, without identification of target mutations. We assumed a stage IV lung cancer and Pembrolizumab was started in February 2021. The Chest CT scan reassessment in April 2021 revealed an increase in the mass, reflecting disease progression, and Carboplatin and Pemetrexed was initiated in 2nd line in early June 2021. After 3 weeks of the 1st cycle, the patient had an elevation in liver enzymes greater than 5 times the upper limit of normal (grade 3) in the analytical study. After 2 cycle delays, liver enzyme values continued to rise. Abdominal ultrasound

revealed no changes and the presence of hepatotoxic medication was excluded. After evaluation by gastroenterology, it was considered a probable late toxicity to Pembrolizumab, and the patient started corticosteroid therapy. Liver biopsy was performed to evaluate changes compatible with toxicity to immunotherapy, the results of which are still awaited to date.
Discussion: Severe (grade 3 or 4) irAEs associated with anti-PD-1/PD-L1 antibodies occur in about 7% to 12% of patients. Liver irAEs consist primarily of asymptomatic elevations in AST and ALT levels, and their incidence is estimated to be around 5%, with grade 3 or 4 events in 1-2% of patients. This toxicity occurs mainly between 8 to 12 weeks after the start of treatment, although, as in the case described, this toxicity may occur later. It is important to exclude other causes of hepatic cytolysis so that the patient can quickly return to treatment and prevent disease progression.

Keywords: *Lung cancer. Toxicity. Immunotherapy.*

PC 040. CASE REPORT – SARCOIDOSIS AS A DIFFERENTIAL DIAGNOSIS WITH LUNG CANCER PROGRESSION AFTER ADJUVANT IMMUNOTHERAPY

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Case report: A 67-year-old female patient, a retired general practitioner, second-hand smoker (her husband had died from lung cancer in 2018), sought our clinic for a second opinion consultation in October 2020. In March 2019, a routine chest x-ray detected a suspicious nodule on the lower third of the left lung. A thoracic CT scan confirmed a 20 mm nodule on the left lower lobe, followed by a transthoracic needle biopsy, which revealed a lepidic lung adenocarcinoma with EGFR del19 mutation and a PDL1 of 11%. A PET/CT scan revealed high FDG uptake over the 4R mediastinal station, with clinical staging cT1b cN3 cM0 (AJCC 8th ed). No mediastinal biopsy was done. Between 30/04 and 12/07/2019, she received treatment with cisplatin and vinorelbine, four cycles, concomitant with EBRT to the total dose of 60 cGy in 33 sessions. She completed one year of adjuvant therapy with durvalumab in October 2020. A thoracic CT scan at the end of the adjuvant treatment revealed enlargement of the mediastinal lymph nodes, with evidence of *de novo* small, bilateral lung nodules, with a radiological description of foci of lymphangitis on the right lung. Another PET/CT scan suggested pulmonary and lymphatic evidence of disease progression, and the patient was offered first-line palliative treatment with gefitinib. While telling her history, the patient reported that, during immunotherapy, she had madarosis, which she managed with skin hydration. A diagnostic procedure then ensued, and a dermatological evaluation suggested a differential diagnosis with sarcoidosis. A multi-disciplinary consultation opted to rule out systemic sarcoidosis, with dermatologic, pulmonary, and lymphatic manifestations, resulting from checkpoint inhibition therapy as a confounding factor with a malignant disease on PET/CT. An EBUS-TBNA with lymph node and lung tissue sampling confirmed non-necrotizing granulomas without histologic nor cytologic evidence of neoplastic cells. The patient started corticosteroids under specialized pulmonology consultation, with the resolution of the adenomegalies and intersticial findings, and is alive without evidence of disease progression up to this date, with no oncologic treatment.
Discussion: This case illustrates the importance of inflammatory and auto-immune conditions as confounding factors with neoplastic disease progression during and after immune-directed treatments. Knowledge of those complications is of utmost importance to avoid hindrance of overall survival and quality of life.

Keywords: *Non-small cell lung cancer. Adjuvant immunotherapy. Anti-PDL1. Sarcoidosis.*

PC 041. A RARE SITE OF DISSEMINATION OF LUNG ADENOCARCINOMA

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Introduction: Lung cancer is one of the cancers that stays asymptomatic for the longest time, leading to a great number of patients whose presentation complaints appear in an already advanced or disseminated stage. The typical sites of secondary lesions are lymph nodes, brain, bones, liver and adrenal glands. Gastrointestinal metastases are rarely described. Duodenal metastases, are even more uncommon, this portion of the small intestine being the least involved. We present the case of a man whose primary lung cancer diagnosis unexpectedly came from a rare site of dissemination – the duodenum.
Case report: An autonomous, 74-year-old male, active smoker (40UMA) was admitted to hospital with a three month long consumptive syndrome and respiratory infectious symptoms one week before admission. Clinical exam was normal, but peripheral oxygen saturation was 94%. Arterial blood gas revealed type I respiratory insufficiency. Blood work up revealed haemoglobin towards the lower limit of normal (13.6 g/dl) and elevated inflammatory parameters (12,600/mm^3 leukocytes, 7.5 mg/dl CRP). Cultural exams were negative. The chest radiography showed a suspect heterogeneous hypotransparency at the right lung base. Thoracic computed tomography then described the presence of a voluminous irregularly shaped, necrotic mediastinal mass (60 × 61 × 59 mm) and two adenopathies. Etiological investigation through bronchoscopy was inaccessible due to mass topography, therefore an endobronchial ultrasound (EBUS) biopsy was performed. After resolution of the overlapped respiratory infection, the patient was discharged from hospital, referenced to our consultation for the pulmonary mass etiological investigation. By the time of its medical appointment cerebral CT showed no evidence of secondary lesions. PET CT revealed metabolic activity of the mediastinal mass, left suprarenal gland and gastric activity of unknown origin. Progressive dysphagia has installed associated to dyspeptic symptoms and decreased status performance. An upper digestive endoscopy (UDE) has been performed and a nasogastric tube has been placed in order to maintain oral patency. UDE revealed infiltration of the oesophageal mucosa of pulmonary origin. Additionally, two atypical ulcerative lesions, one of the stomach and one of duodenum, respectively, were biopsied. Histopathological result of the gastric lesion revealed inactive non atrophic chronic gastritis with intestinal metaplasia, whereas the biopsy of the duodenum revealed a poorly differentiated carcinoma, immunohistochemically compatible with metastatic lung adenocarcinoma (TTF 1+, CK 7 +, S100, CK 20 -, CDX2 -). The anatomopathological result of the EBUS biopsy confirmed the former diagnosis.
Discussion: Although described in the literature as an extremely rare clinical entity, duodenal metastases can occur, in some cases, being responsible for the initial presentation. In our clinical case, gastrointestinal symptoms were part of the clinical evolution. What could have been a secondary diagnosis turned out to be an essential clue for our primary diagnosis.

Keywords: *Pulmonary adenocarcinoma. Rare lung cancer dissemination. Duodenal metastasis.*

PC 042. PLEUROPARENCHYMAL FIBROELASTOSIS IN YOUNG ADULTS WITH PNEUMOTHORACES ONSET – A CASE SERIES PRESENTATION FOR DISEASE RECOGNITION

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In 2013, pleuroparenchimal fibroelastosis (PPFE) was recognized as a distinct and rare pulmonary fibrotic disease (Travis et al., 2013),

and pneumothorax was recently recognized as one of the major complications in PPFE patients (Kono et al., 2021). Although spontaneous pneumothorax in young subjects is a well-known occurrence with properly characterized clinical-pathological cases reviewed in literature since the mid-20th century (Lichter & Gwynne, 1971), there are still very few reports of PPFE in young adults. In this work, we report the clinicopathological findings of PPFE occurring in five young adults observed in apical lung biopsies after pneumothoraces. All patients were aged between 16-21 years old, with one female case. All were non-smokers, and all had intricate clinical registries, most with previous pneumothoraces episodes; some patients had development and behavioral diseases, and associated connective-tissue diseases, including one case of Marfan syndrome diagnosis. On histopathological examination, all cases were similar, presenting with pleural blebs and globally maintained lung parenchyma lobular architecture. There were various small triangular subpleural scars and alveolar septal fibro-elastosis that also extended into interlobular septae. Peribronchiolar parenchyma presented various arteriolar alterations and also focal fibroblastic foci, mild inflammation, and alveolar hemorrhage. Our 5 five PPFE patients illustrate that PPFE is probably more common than previously believed and should be purposely searched in specific clinicopathological settings; pneumothorax events in very young patients may represent the already installed disease. Moreover, our patients had other diseases that can function as underlying disease-associated factors for PPFE. In our work, we highlight the need to recognize this disease, and we integrate our findings with recent literature evidence on PPFE to better characterize PPFE clinical framing and evaluate the need for follow-up for these patients.

Keywords: *Pleuroparenchymal fibroelastosis. Young adults. Pneumothorax.*

PC 043. UNCOMMON METASTASIS FROM LUNG ADENOCARCINOMA: CASE REPORT

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Approximately a century has passed since the first reports of lung cancer, which is today the leading cause of cancer-related death globally. Most patients with non-small cell lung cancer (NSCLC) are diagnosed with advanced illness. The lungs, pleura, bones, adrenal glands, liver, and brain are all common sites for metastases. Metastatic lung cancer to the uterine cervix has rarely been described, with less than 15 cases documented in the literature since 1960. Here we report the case of a 55-year-old female patient, a former smoker (20 pack-year), diagnosed with a stage IVb (cT4 cN3 cM1c) lung adenocarcinoma with an exon19 del of EGFR in July 2015. The initial diagnosis occurred after a seizure when a brain CT scan revealed multiple supra and infratentorial lesions. After whole-brain radiation therapy (WBRT), she started first-line palliative treatment with erlotinib, with a complete response in the brain and a partial response in the other metastatic sites (mediastinum, adrenal glands, and bone). Twenty-two months after diagnosis, the disease progressed to a cervical lymph node, and a liquid biopsy identified the presence of the T790M mutation. Treatment changed to 2nd line osimertinib, achieving a partial response. In July 2020, 61 months after diagnosis and asymptomatic, without clinical or radiological signs of disease progression, a routine gynaecological exam identified a cervix lesion positive for lung adenocarcinoma. A new NGS confirmed the maintenance of the exon 19 deletion EGFR mutation, and positron-emission computed tomography (PET/CT) showed no other metastatic foci. After undergoing radiosurgery with SBRT to the cervix lesion, the patient is alive under osimertinib treatment, 72 months after initial diagnosis, with a complete response to the cervix lesion and no further new disease sites. As lung cancer rates increase in the female population and new targeted therapies lead to longer survival rates, gender-specific follow-up protocols should be rediscussed, such as recommending periodic gynaecological evaluation maintenance.

Keywords: *Lung adenocarcinoma. Uncommon metastases. Uterine cervix metastasis.*

PC 044. INSIST, PERSIST AND TREAT!!! WHILE THERE IS LIFE, THERE IS HOPE

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Introduction: Lung cancer remains the world's leading cause of cancer death. Therapies targeting gene mutations have radically modified the treatment of eligible non-small cell lung cancer (NSCLC) patients.
Case report: Male, 51 years old, with a history of asthma, non-smoker, chemical engineer, diagnosed with lung adenocarcinoma in May 2018, in stage IVb (pleural, pulmonary and bone metastases). Followed up in oncologic pulmonology consultation at the HEM. PD-L1 expression and negative molecular study stand out. He completed 6 cycles of chemotherapy with carboplatin + pemetrexed, with good clinical tolerance but with self-limited hematological and renal toxicity. Following clinical and imaging reassessment, a partial response was assumed, having started a maintenance regimen with pemetrexed, which was suspended after 2 cycles due to nephrotoxicity. On imaging reassessment: normal Head-CT and PET-CT showing active disease and new intense areas at the lower costophrenic pleura and right thyroid lobe. He was proposed to start 2nd-line with Nivolumab and investigate thyroid lesion. Papillary Thyroid Carcinoma (pT1b-N1a) diagnosis was made, and he undergone total thyroidectomy and radioactive iodine. After 6 cycles of nivolumab an abdominal pain in the upper quadrants came up with stony painful palpation. Thoracoabdominal-CT scan showed basal left pleural nodules that extended contiguously to the paracardiac fat, left diaphragma and superior abdomen, accompanied by extensive thickening of the greater omentum, of apparent metastatic nature (omental cake). Bone scintigraphy revealed extensive osteoblastic spread. Abdominal mass biopsy confirmed metastasis of lung adenocarcinoma. The mutational study identified ALK rearrangement and was proposed for alectinib therapy. Initially with good tolerance but worsening of the general condition. During 3rd cycle he presented with pain in the left flank and weight loss. Imaging confirmed the progression of the disease with ascites and worsening of metastatic disease (greater omentum and bone). The case was discussed within the team and with the patient and it was decided to continue therapy with alectinib. There was progressive clinical improvement, weight gain and recovery of quality of life, and after 10 cycles, Head-CT remained unchanged, and the PET-CT revealed absence of metabolic activity suggestive of malignancy.
Discussion: The authors present this case because of the daily struggle that a patient with lung cancer goes through. This is a patient diagnosed with advanced disease, with no mutations identified at the initial diagnosis, treated with first-line therapy. As the disease progresses, it proceeds to second-line therapy. Concomitantly, he is diagnosed with a thyroid neoplasm, which, despite stage IV lung cancer, is treated surgically and with iodine. Again, due to disease progression, it was decided to biopsy the abdominal lesion. An ALK rearrangement was identified enabling the use of targeted oral therapy, to which he presented an excellent response. Thus, we want to demonstrate that a patient with stage IV lung cancer, with excellent PS, does not have a closed prognosis in relation to other diseases (even oncological), that can and should be treated, and that it is essential that we repeat biopsies towards disease progressions due to the possibility of presenting positivity of new treatable mutations/rearrangements.

Keywords: *Lung adenocarcinoma. ALK. Lung cancer.*

PC 045. LUNG CANCER: PRECISION MEDICINE SUCCESS!

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Introduction: According to the WHO, lung cancer is the type of cancer with the highest number of new cases and the highest number of deaths in the world. Adenocarcinoma is the most prevalent histological type, sometimes associated with molecular alterations, namely genetic mutations. Mutation in the EGFR gene is the most frequent, enabling treatment with targeted therapies.
Case report: The authors present the case of a 46-year-old woman, PS0, non-smoker, with a history of asthma and rhinosinusitis, who went to the ER for dry cough associated with fatigue for light exertion with 2 months of evolution. Previously adjusted asthma therapy and antibiotic therapy cycle without improvement. SARS-CoV-2 infection was excluded. For etiological investigation she performed: GSA with type I respiratory failure, blood tests with positive D-dimer and chest X-ray with hypotransparency in the lower 2/3 of the right hemithorax and a homolateral parahilar mass. CT-angiography of the chest: pulmonary thromboembolism, right pleural effusion, right parahilar mass (4 cm) with irregular contour, pulmonary parenchymal nodules, and pleural and paracardiac implants. She performed diagnostic/evacuator thoracentesis and was hospitalized for etiological study. Head-CT revealed no metastatic lesions. Bronchoscopy with suspected right bronchial tree involvement, but negative BS and bronchial biopsy cytology. She had pleural biopsies and new thoracentesis that were compatible with lung adenocarcinoma, PD-L1 +5%, with EGFR mutation (exon 19 deletion). PET/CT was performed, which allowed us to assume stage IVb (T4 N3 M1c) due to lymph node, pleural, diaphragmatic, peritoneal, retroperitoneal and bone metastases. The patient was discharged from the pulmonology service, under LTOT with 1L/min at rest and POC InogenOneG3 - setting 2 on exertion and was referred to oncology pulmonology consultation where she promptly started Osimertinib. Excellent tolerance stands out, with no appreciable side effects and a gradual reduction in the need for oxygen, which was suspended at the beginning of the 4th cycle of Osimertinib. The frank reduction in pleural effusion was also notorious (without requiring further thoracentesis). In the first reassessment (4th/5th Osimertinib cycle) by PET/CT, the disappearance of the majority of anomalous pulmonary, pleural, diaphragmatic, peritoneal, ganglionic and osteo-medullary hypermetabolism foci is highlighted, reflecting a very good response to therapy, with only slight hyperuptake at right hilum, axillary nodes and homolateral pleural effusion (max SUV 2.8), suggestive of an inflammatory etiology.
Discussion: The authors highlight this case because of the exuberant presentation of this lung cancer (multi-metastasized), in a young patient, who, due to a genomic mutation, was able to perform therapy with a TKI, with excellent tolerability, great and precocious response, possibility of suspension of LTOT and "almost complete" disappearance of disease after 4/5 cycles. We emphasize the success of these targeted therapies, which changed the paradigm of Lung Cancer treatment, exponentially improving the prognosis while maintaining quality of life. It seems to us that research in the genetic/molecular area should continue, with the identification of new genetic alterations and targeted therapies, so that we can replicate successful cases as described, always keeping in mind the patient is our priority - extending life with quality.

Keywords: *Lung cancer. EGFR. TKI.*

PC 046. TRICKY TUMOR: THE IMPORTANCE OF A RIGHT DIAGNOSIS

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Introduction: Pulmonary sclerosing pneumocytoma (PSP) is a rare benign tumor of primitive respiratory epithelial origin. It usually presents as an incidental solitary well-defined lung nodule. The incidence remains unclear because it can be misdiagnosed as primary pulmonary neoplasms and treated as such. Surgical resection is the recommended treatment. The prognosis is favorable with neglectable recurrences rate.
Case report: A 42-year-old female patient with no previous medical history was referred by her family physician for a mass in her right lung detected in a chest X-ray. She complained of right chest pain and fatigue for medium efforts for the past month. CT scan showed a large heterogeneous soft-tissue mass located in the anterior segment of the right upper lobe (RUL) with obliteration of the ipsilateral upper lobar bronchus, causing atelectasis of that lobe. A mass with a lobulated contour in RUL and with evidence of increased FDG uptake (SUVmax 3.2) and hilar and mediastinal enlarged lymph nodes were detected on PET scan. Thoracic MRI revealed a central RUL lesion (78 × 42 × 45 mm) without distinguishable plane of cleavage with superior vena cava. The patient was diagnosed with non-small cell lung carcinoma with immunophenotypic features that favored adenocarcinoma, PD-L1 2%, NGS without directed therapeutic target by endobronchial biopsy. EBUS showed no ganglion representation at stations 4L and 7. This cased was reviewed at the multidisciplinary tumor board of our hospital, staging cT4N0M0, stage IIIA and the patient was proposed for neoadjuvant treatment with carboplatin and paclitaxel. Due to intolerance to paclitaxel, a second cycle of chemotherapy with carboplatin + vinorelbine was initiated. Control imaging study showed no response to treatment. The patient was then referred to thoracic surgery who proceeded with intraoperative videomediastinoscopy staging with lymph node dissection of stations 4R and 4L, which showed no evidence of neoplastic cells. After nodal staging was confirmed, the surgeon proceeded with a right posterolateral thoracotomy for right upper lobectomy and mediastinal lymphadenectomy. A mass greater than 8 cm, hard-elastic consistency, irregular edges, was found in the anterior segment of the RUL, causing atelectasis extending to hilum, without macroscopic invasion of bronchovascular structures. Histological examination identified two cell types: surface cuboidal and round cells, distinct histologic patterns: papillary, sclerotic, and hemorrhagic, without lymph node metastases. Immunohistochemistry analysis of the resected lesion showed positive TTF-1, weak expression of CAM5.2, CK7 and Napsin-A consistent with sclerosing pneumocytoma. She had deep vein thrombosis 3 weeks post operatively. No further treatment was required and the patient had no evidence of recurrence on 3-month follow-up.
Discussion: This case presents a rare, benign disease that is frequently confused with malignancy. Preoperative PSP diagnosis can be critically difficult in small biopsies and cytology because there is the possibility of being confused with adenocarcinoma and carcinoid tumors. It is a challenging diagnosis, but surgical excision alone is sufficient for treatment. This case highlights the relevance of a methodical assessment and the importance of multidisciplinary discussions that help prevent a misdiagnosis and unnecessary aggressive treatment.

Keywords: *Pulmonary sclerosing pneumocytoma. Lung tumor. Benign.*

PC 047. PULMONARY SARCOMATOID CARCINOMA: ABOUT TWO CLINICAL CASES

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Introduction: Sarcomatoid lung tumors are a heterogeneous group of poorly differentiated non-small cell lung carcinomas (NSCLC) that have a sarcoma component or sarcoma-like elements. They constitute less than 1% of lung tumors, are more prevalent in males and are associated with smoking; the average age at diagnosis is between 60-70 years old. Two clinical cases are presented:

Case reports: First case: Male, 62 years old, smoker with a mass in the upper right lobe detected by chest CT. PET-CT was performed, which was compatible with malignancy of a mass in the upper right lobe and 3 homolateral nodules, stage III-a (T4,N0,M0). Surgery was performed (upper right lobectomy, atypical resection of the nodule in the right lower lobe and lymph node dissection), the histology was compatible with undifferentiated giant cell sarcomatoid carcinoma. The mass contacted with the visceral pleura, PET-CT after surgery revealed malignancy of the pleural and lymph node, stage IV-a (T4, N0,M1a). The patient started chemotherapy with carboplatin and paclitaxel, which continues with stability of the disease. Second case: Female, 75 years old, non-smoker, followed in general pulmonology consultation due to cough and hemoptysis. A chest CT was performed showing an irregular mass in the right lower lobe (41x33mm), it was done a bronchial biopsy by bronchoscopy: morphological and cytochemical pattern compatible with a diagnosis of sarcomatoid carcinoma. PET-CT confirmed the presence of this neoformation in the right lower lobe, showing extensive mediastinal lymph node involvement with metastasis in the left adrenal, retroperitoneal and bone, stage IV-b (T2b, N2, M1c). She started carboplatin and paclitaxel, and in the meanwhile, she has performed a cycle of chemotherapy.
Discussion: Sarcomatoid tumors are aggressive, at diagnosis they are often locally advanced and/or with metastases, as in the two clinical cases presented. They have a worse prognosis when compared to other NSCLC. Surgical treatment is reported as the best option for these tumors, however non-surgical treatments such as chemotherapy are recommended for patients with advanced disease.

***Keywords**: Sarcomatoid lung tumor. Undifferentiated giant cell sarcomatoid carcinoma. Non-small cell lung carcinomas.*

PC 048. ENDOBRONCHIAL PULMONARY SCLEROSING PNEUMOCYTOMA – CASE REPORT

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Introduction: Pulmonary sclerosing pneumocytoma (PSP) is a rare neoplasm that predominantly affects middle-aged adults, with a significant predilection for women. The tumor is usually peripheric and typically smaller than 3 cm. Although benign, it can have an aggressive presentation (Dantis et al., 2021). Here we report an atypical PSP with associated congenital pulmonary adenomatoid malformation (CPAM) type 1 lesion.
Case report: We received a right upper lobectomy of a 42-years woman with a previous external diagnosis of non-small cell carcinoma. On gross examination, we found a 6 cm well-circumscribed tumoral lesion with prominent polypoid intrabronchial growth that also grow connected with a caveated 4 cm diameter space near the bronchial resection line. The tumoral lesion was mainly brownish with hemorrhagic areas and tan-yellow cut surface. On histopathological examination, we reported a PSP with the typical dual cell type population: cuboidal surface cells similar to type II pneumocytes and round stromal cells, both with bland cytological features. The tumor had a predominance of sclerotic pattern with some solid and papillary areas. On immunohistochemistry, both cellular populations expressed EMA and TTF1; the surface cells were positive for CK7 and CK8/18, while the round cells were positive for PR. The proliferative index evaluated with ki67 was about 1%. The large cyst into which the tumor grew was lined by pseudostratified ciliated cells interspersed with mucus cells, interpreted as a type 1 CPAM lesion.
Discussion: We report a case of a large and centrally located PSP with endobronchial and endocystic growth, which is uncommon and probably contributed to the previous misdiagnosis. Moreover, to our knowledge, this is the first time that a PSP is reported with CPAM lesions. Due to the treatment and prognostic implications, it is essential to consider PSP diagnosis, even in more atypical scenarios.

***Keywords**: Congenital pulmonary adenomatoid malformation. Pulmonary sclerosing pneumocytoma.*

PC 049. LUNG CANCER SCREENING - PRESENTATION OF A PILOT PROGRAM

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Introduction: Lung cancer is currently one of the most frequent cancers in Portugal and the worldwide leading cause of death due to cancer. In recent years, published studies, namely the NSLT and the NELSON study, showed that lung cancer screening in populations with risk factors reduces mortality. Despite this, this screening is not yet implemented on a large scale in Portugal.
Methods: At Hospital da Luz - Arrábida a lung cancer screening and follow up program was developed. After multidisciplinary discussion and based on the NSLT and NELSON studies, the following inclusion criteria were decided: smokers or ex-smokers for less than 10 years, who have smoked ≥ 20 UMA until the screening date, aged between 50 and 75 years old. Patients with ECOG 3-4, life expectancy shorter than 1 year, active cancer or in clinical follow-up of some cancer are excluded. For patients with these criteria the screening program is offered and a low-dose computed tomography (CT) scan is prescribed. Low-dose chest CT is evaluated by a radiologist dedicated to this screening and the report is structured in accordance with international recommendations. If pulmonary nodules are present, they will be classified according to the Lung-RADS classification. For Lung-RADS 0, 1 or 2, the follow up will be done by the attending physician who will follow the screening protocol, repeating low dose chest CT, yearly, for at least 3 years. For Lung-RADS 3, 4 or S, the clinical case will be discussed in a multidisciplinary meeting to decide how the patient will be studied or monitored. Since the main known risk factor for lung cancer is smoking, smokers will always be offered the opportunity of joining a smoking cessation program. All patients who are included in the screening program sign an informed consent expressing their authorization to perform a low-dose chest CT, for the program results to be evaluated, and for allowing contact by the Institution's professionals so that, in case of abnormal results patients are referred for a specific consultation in this area or, if the screening is negative, patients are reminded of the next reassessments. The scientific evolution and the results of this program may justify its adjustment, and therefore it will be reviewed regularly.
Conclusions: The implementation of lung cancer screening in Europe will be inevitable but may still take time; in the US it took 3 years to be implemented after the NLST study. Until there are conditions to create a lung cancer screening program at a national level, it is essential to create pilot programs that, on the one hand, raise awareness of the population for this type of screening and, on the other hand, enable testing the practical issues of its implementation in the real world. In this sense, we intend not only to allow patients to access to lung cancer screening, but also to promote discussion in the Portuguese medical community.

***Keywords**: Lung cancer. Screening. Low dose CT scan. Smoking habits.*

PC 050. POLYNEUROPATHY AND DERMATOMYOSITIS: AN UNUSUAL LUNG CANCER PRESENTATION

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Introduction: Lung cancer usually presents with signs and symptoms resulting from the direct effect of the tumor by local compression, obstruction or metastasis. Less frequently, lung cancer presents

with a paraneoplastic syndrome, a consequence of both an inappropriate tumor-induced hormone production and an autoimmune response targeting antigens that are shared by the tumor, nervous tissue, skin and muscle.
Case report: 62-year-old male, independent patient. Former smoker, with no relevant personal of family medical history, was admitted to Neurology ward due to subacute onset, progressively increasing imbalance and decreasing muscle strength in the upper and lower limbs, leading to loss of autonomy for the performance of activities of daily living. He had no respiratory symptoms. Upon admission, physical examination revealed reduced muscle strength of the scapular and pelvic girdles, lower limb hyporeflexia, abnormal gait and positive Gowers sign, suggesting myopathy. A desquamating skin rash was noted on the dorsal side of the hand, over the metacarpophalangeal and interphalangeal joints, as well as overgrown nail cuticles. The skin appearance, associated with muscle symptoms, led to the diagnostic hypothesis of dermatomyositis. EMG was performed, compatible with inflammatory myopathy and demyelinating sensorimotor polyneuropathy. The hypothesis of a paraneoplastic syndrome was considered, reinforced by past smoking history. Laboratory studies showed positive onconeural antibodies (CV2/CRMP5 and Hu) and anti-TIF1 gamma, highly specific for paraneoplastic neuropathy and dermatomyositis, respectively. During further workup for occult malignancy, the diagnosis of stage IIIB Small Cell Lung Carcinoma (SCLC) was made. Combination CT-RT was started, resulting in transient neurological improvement. The patient died after the 4th cycle of treatment with Carboplatin and Etoposide.
Discussion: Paraneoplastic syndromes may precede the common clinical presentation of lung cancer from weeks to months. We intend to draw attention to the need of a high suspicion level when facing such a clinical picture of neuromuscular involvement, especially in the presence of past smoking history, reducing as much as possible the time until a definitive diagnosis is made.

Keywords: *Lung cancer. Paraneoplastic syndrome. Small cell.*

PC 051. CHARACTERIZATION OF PATIENTS WITH ROS1 POSITIVE NON-SMALL CELL LUNG CARCINOMA IN CLINICAL PRACTICE

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Introduction: Currently, the identification of the ROS1 gene rearrangement is useful to discern patients with potential therapeutic target in non-small cell lung cancer (NSCLC) and greater probability of effective response to treatment. Epidemiological data point to an occurrence mainly in women, with reduced exposure to smoking and, predominantly, with a histological type of adenocarcinoma. However, as it occurs in only 1-2% of all NSCLC cases, an accurate characterization of this group of patients is limited.
Objectives: To understand the characteristics and clinical outcomes of patients with ROS1-positive NSCLC in clinical practice.
Methods: Retrospective analysis of clinical and pathological data from 14 cases of NSCLC with ROS1 rearrangements identified in two hospital centers (Coimbra and Covilhã), and evaluation of the clinical outcome at the time of this study.
Results: The majority of patients were female (57%), with a median age of 65 years at diagnosis, in a range between 39 and 87 years, non-smokers (57%) or with a median smoking load of 28 pack units-year among those with smoking history. The uniquely identified histological type was adenocarcinoma, all of which revealed a positive ROS1 rearrangement, with no other molecular therapy targets reported. At diagnosis, 79% were in stage IV, mainly due to advanced intrathoracic disease (namely with pleural and pericardial involvement), although 2 of them had metastases to the bone, liver and adrenal gland. With a performance status (Eastern Cooperative Oncology Group) mostly between 0 and 1 (93%), all started treatment (6 with chemotherapy, 7 with crizotinib and 1 lobectomy). Among the cases that showed disease progression, 5 required > 2 therapeutic lines and only 1, under ceritinib, had brain metastases. Those who had started chemotherapy with disease progression (n = 5), this occurred after a median time of 12 months. Treatment with crizotinib resulted in disease progression-free time of more than 19 months in 4 patients, and there was a need to discontinue treatment in 3 cases due to its adverse events. In this sample, there were 6 deaths within approximately 33 months of diagnosis, notably 3 due to disease progression after chemotherapy and >2 subsequent lines of treatment, and 2 in association with the development of other malignancies.
Conclusions: The data presented are similar to those described in the literature with regard to gender and histological type. Like most NSCLC, it tends to manifest itself in advanced stages and seems to encompass a wide age group, which reinforces the importance of its pre-treatment investigation. Therapies with tyrosine-kinase inhibitors seem promising and, once implemented more recently, they should justify the carrying out of follow-up, multicenter studies, for a better understanding of the respective clinical results.

Keywords: *Lung cancer. ROS1 rearrangement.*

PC 052. OSIMERTINIB-RELATED CARDIOTOXICITY – 2 CLINICAL CASES

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Introduction: Tyrosine Kinase inhibitor (TKI) – induced cardiotoxicity has been reported, comprising heart failure, atrial fibrillation, prolonged QT, myocardial infarction and pericardial effusion, more frequently with Osimertinib (6.1%) than with other TKIs (2.1%).
Case reports: Case 1. Female, 67 years old, non-smoker, with history of type 2 diabetes and dyslipidemia. Lung adenocarcinoma, stage IIIC diagnosed in May 2019. EGFR mutation detected - insertion in exon 20 - treatment with Osimertinib was started. After 2 months of treatment, there was partial response with subsequent stability. At 7 months of treatment - worsening dyspnea and wheezing. Chest X-ray showed hypotransparency on the right, empirical antibiotic therapy was started, with poor response and tolerance. Echocardiography: severe left and right heart dilation; left ventricular ejection fraction (LVEF) 27% (previously only severe left atrial dilatation and moderate decrease in LVEF 40%, interpreted in the context of ischemia). ECG in sinus rhythm, 99 bpm, QTc 480 ms. High ProBNP (4,271 pg/ml). Thus, Osimertinib was discontinued and bisoprolol and ramipril initiated. Due to persistent dyspnea on exertion, ACE inhibitor was replaced with sacubitril/valsartan and furosemide was added, with clinical improvement. Echocardiography was repeated 4 weeks after suspension, with some functional recovery, with a LVEF of 34%. Due to the maintenance of prolonged QTc, Afatinib 40 mg/day was introduced, with ventricular function stability. Case 2. Female, 77 years old, non-smoker, history of CLL under surveillance since 2016. Diagnosis of pulmonary adenocarcinoma, stage IVA (pleural metastasis) in November 2019. L858R mutation identified in exon 21 of the EGFR, and Osimertinib treatment started. After 3 weeks of treatment, the patient was hospitalized for management worsening respiratory complaints, peripheral edema, and respiratory failure; CXR: worsening of pleural effusion (previously attempted chemical pleurodesis). Good response to diuretics. Since the TKI treatment was to recent to assess oncological response and given that the worsening of complaints seemed to have an infectious context in previous heart disease, Osimertinib was maintained. Lisinopril, furosemide and spironolactone were added with improvement of complaints. Transthoracic echocardiog-

raphy at 3 months of TKI showed conserved left ventricular systolic function, LVEF 67%. Osimertinib was maintained for 12 months, with stability of disease. Then there chest CT showed new areas of consolidation with air bronchogram adjacent to known lung nodules – in relation to inflammatory changes and with uncertainty about oncological disease progression. After 14 months of treatment, there was worsening dyspnea, orthopnea and peripheric edema with associated respiratory insufficiency; CXR showed worse bilateral pleural effusion. ProBNP elevated 4,213 pg/ml (previously 210 pg/ml), normal troponins. Echocardiography: moderate to severe depression of left ventricular systolic function, LVEF 34%. ECG sinus rhythm, QTc within normal range. Therefore, treatment with Osimertinib was suspended due to disease progression and probable toxicity. 2nd line Chemotherapy was considered, but due to deterioration of the general condition, symptoms difficult to manage, and associated heart disease, best supportive case was decided.
Discussion: The cases presented illustrate the need for careful surveillance of cardiac function in patients with advanced non-small cell lung cancer under treatment with Osimertinib, pursuing an earlier diagnosis of dysfunction, and hence greater potential for reversibility.

***Keywords**: Heart failure. Osimertinib. Lung cancer.*

PC 053. ANALYSIS OF THE CLINICAL OUTCOME OF PATIENTS WITH NON-SMALL CELL PULMONARY CARCINOMA UNDERGOING PEMBROLIZUMAB IN FIRST LINE ACCORDING TO LIPS-3

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Recently, the use of a prognostic tool (lung immuno-oncology prognostic score - LIPS-3) was validated to stratify patients with advanced non-small cell lung carcinoma and PD-L1 expression greater than 50% treated with immunotherapy and ancillary , eventually, in the therapeutic decision-making. This study aims to analyze the clinical results obtained 1 year after the institution of first-line treatment with pembrolizumab in patients with advanced NSCLC from 2017 to the present at the Cova da Beira University Hospital Center, stratified according to the LIPS-3 prognostic index out of 3 groups (score 0, 1-2 and 3). Results from 23 patients with NSCLC undergoing first-line monotherapy Pembrolizumab will be included in this study.

***Keywords**: Pembrolizumab. Non-small cell pulmonary carcinoma. Prognosis. LIPS-3.*

PC 054. FIBROUS TUMOR OF THE PLEURA: A CHALLENGING DIAGNOSIS

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Introduction: Solitary fibrous tumor of the pleura (TFSP) is a rare tumor, accounting for less than 5% of all pleural tumors. It is more common in the 6th and 7th decades of life, with no gender predilection and no identified risk factors. They are normally pedicled tumors originating from the visceral pleura, of varying dimensions, but tumors larger than 10 cm are uncommon. Most of these tumors are benign, however 10% are considered malignant. Most of these tumors are asymptomatic and constitute an accidental finding. When present, the most frequently reported symptoms are: cough, chest pain and dyspnea.
Case report: 65-year-old man, non-smoker, with a history of small-volume pleural effusion for 8 years, hypertension and post-prostectomy status for prostate cancer in 2015. Observed in a Pulmonology consultation for presenting, on a chest X-ray, hypotransparency of the lower half of the left hemithorax. She reported a 15-day condition of chest pain with pleuritic characteristics and dry cough, with no other symptoms. On objective examination, decreased breath sounds on the left. Laboratory without major changes. Chest CT revealed an extensive left lung area with heterogeneous uptake, with obliteration of the left lower lobar bronchus. It is associated with heterogeneous pleural effusion. A chest ultrasound was performed, which revealed a septate pleural effusion, for which a chest tube was placed, with a small amount of serohematic fluid coming out. Fiberoptic bronchoscopy showed extrinsic compression at the level of the left lower lobar bronchus (LLB), without endobronchial damage. EBUS showed a heterogeneous lesion at the level of the BLIE where biopsies are performed. Bronchial biopsies and bronchial aspirate cytology were negative for neoplastic cells. FDG-PET showed left pleural effusion without evidence of metabolically active disease. He underwent a Transthoracic Biopsy (BPT) which revealed a TFSP. He was referred for surgery, having opted to perform a left posterolateral thoracotomy, with the finding of a very large mass occupying half of the pedicled hemithorax. He underwent exeresis of the lesion by posterolateral thoracotomy with en bloc wedge resection from the pedicle to the left lower lobe. The resected mass was approximately 3,527 grams and was sent to pathological anatomy. The postoperative period was uneventful, and he was discharged after 3 days.
Discussion: The relevance of the case presented is not only in the size of the tumor (3,527 grams), but also because of the diagnostic challenge, involving multiple tests and poor profitability of biopsies, with biopsy by BPT providing the diagnosis. In conclusion, TFSP is generally a benign and asymptomatic lesion; however, as mentioned, its evolution can be unpredictable, so complete resection and long-term follow-up is always recommended, regardless of histology. In case of recurrence, surgical treatment should also be considered as the first option.

***Keywords**: Solitary fibrous tumor of the pleura. Rare tumor. Transthoracic biopsy. Thoracotomy.*

PC 055. THORACOSCOPIC ANATOMIC SEGMENTECTOMIES: OUR EXPERIENCE

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Introduction: Lung cancer remains the leading cause of malignancy-related deaths worldwide. Lobectomy is considered the standard procedure for patients with peripheral T1 N0 NSCLC. Interest in parenchymal sparing resections has recently increased mainly due to preservation of lung parenchyma and pulmonary function while reducing postoperative morbidity without compromising oncological outcome. The usual indications for a lung segmentectomy include small and peripheral tumors less than 2 cm in diameter located within anatomic segmental boundaries.
Methods: We retrospectively analyzed data of all subjects submitted to uniportal VATS segmentectomy at Centro Hospitalar Vila Nova de Gaia/Espinho, between January 1, 2017 and July 31, 2021. The preoperative clinical and surgical data and the immediate postoperative data were retrospectively evaluated through the consultation of the clinical files and the computer registry system. We used descriptive statistics: mean or median, according to data distribution, and absolute or relative frequencies.
Results: We included 36 patients, mean age of 61 years (± 13 years) and 69% were male. The most frequent procedure was left upper trisegmentectomy (15, 41.7%) followed by right S6 segmentectomy (6, 16.7%) and lingulectomy (5, 13.9%). The median operative time was 117 minutes (min: 45; max. 154). The mean number of lymph

node stations sampled was 2 (min: 0; max: 5). The most common primary lung cancer histologic type was adenocarcinoma (n = 23), followed by carcinoid tumor (n = 6), squamous cell carcinoma (n = 3), large cell neuroendocrine tumour (n = 1) and inflammatory myofibroblastic tumour (n = 1). The only postoperative complication was prolonged air-leakage in 4 patients. The median chest drain duration and median length of stay was 3 and 4 days, respectively. In-hospital mortality and 30-day mortality did not occur. No local recurrence or distant metastization were observed. All resections were radical. Six patients underwent adjuvant therapy. Overall mortality during mean follow-up time (26 months) was 8% (3 cases).

Conclusions: Uniportal VATS anatomical segmentectomy seems a valid and safe technique in selected patients, according to our center results. Segmentectomy will most probably be a standard treatment for early NSCLC in a near future if the superior pulmonary function and noninferiority in overall survival are confirmed in further studies.

Keywords: *Sublobar ressections. Segmentectomy. Video-assisted thoracic surgery (VATS). Non-small cell lung cancer (NSCLC).*

PC 056. CASTLEMAN DISEASE: ATYPICAL CAUSE OF PNEUMONECTOMY

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Introduction: Castleman Disease is a lymphoproliferative disorder that is classified clinically as unicentric or multicentric, and histologically as hyaline vascular variant or plasma cell variant. The Unicentric Castleman Disease (UCD) often presents as an incidental mediastinal mass, but the development of UCD in the pulmonary hilum is rare.

Case report: A previously healthy 24-year-old male, smoker (4 pack-year), presented with a traumatic right humerus fracture. Preoperative chest radiography revealed a left perihilar lesion (fig. A). He had no respiratory or constitutional symptoms. The patient denied carcinoid syndrome. The physical examination was unremarkable. Laboratory data, including neuron-specific enolase and chromogranin, were normal. Chest computed tomography showed a rounded left perihilar lung mass, well-defined, with 45 × 40 mm and slight contrast uptake (fig. B). Flexible bronchoscopy revealed signs of extrinsic compression of the left main bronchus, with hypervascularization and widening of the dividing spurs. Endobronchial biopsies and brushing were negative for malignant cells. Positron emission tomography revealed increased fluorodeoxyglucose-F18 uptake (SUVmax: 5.4) in the left hilar lesion. 68Ga-DOTA-NOC PET-CT also showed an abnormal uptake from the nodular formation in left hilum, suggesting a neuroendocrine tumor. Endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) was performed with punction of left mass; TBNA samples were negative for malignancy. Lung function was normal. He was therefore referred for thoracic surgery. Given the mass location and to ensure a complete resection, the patient underwent left pneumonectomy by video-assisted thoracic surgery. Histological examination reported small and regressed germinal centers (fig. C), with follicular dendritic cell prominence, surrounded by mantle zones, containing small lymphocytes arranged in a concentric pattern (fig. D). Micro-

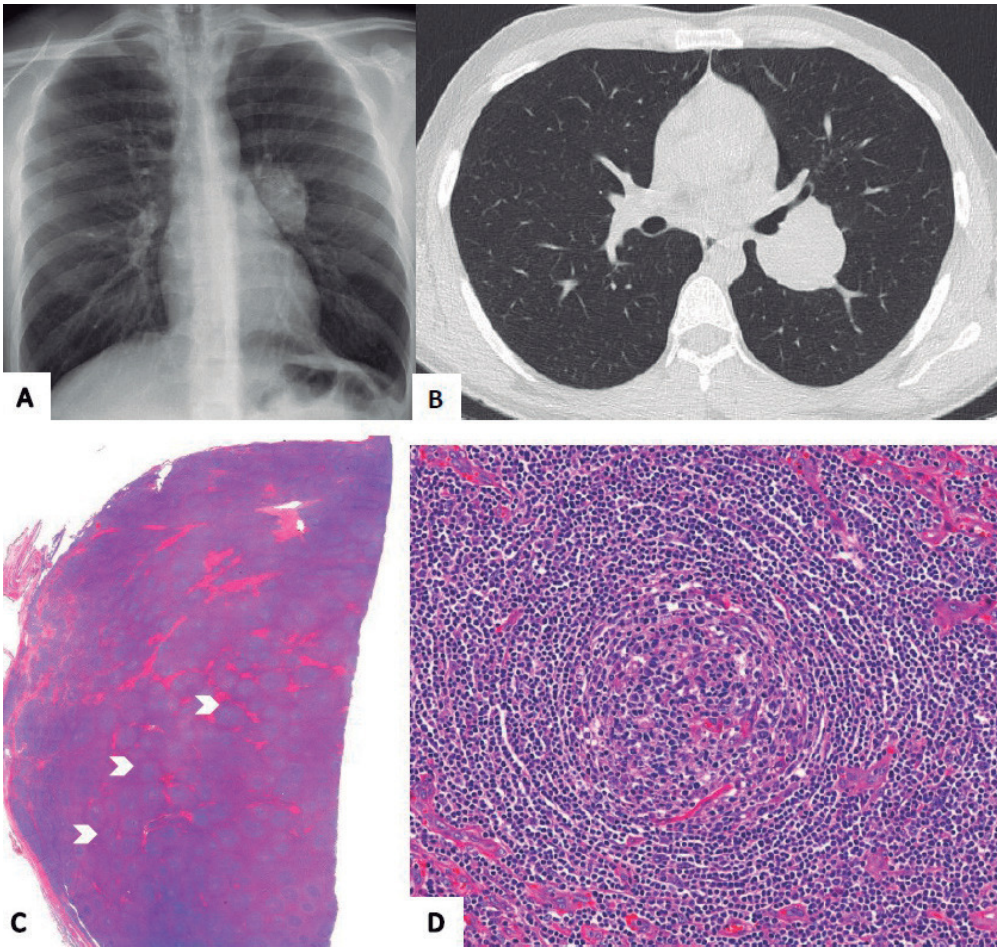

Figure PC 056

scopic features and immunostaining were consistent with the diagnosis of Castleman Disease - hyaline vascular variant. No tissue human herpesvirus 8 expression was found. Human immunodeficiency virus screening was negative. The patient received no further therapy, maintaining clinical and imaging surveillance.
Discussion: UCD frequently presents as an incidental solitary mediastinal mass, however, intrapulmonary location with hilum involvement is rare. The preoperative diagnosis can be challenging as clinical and radiological findings are nonspecific. The standard treatment for UCD is complete surgical resection. Although UCD with hilar presentation is a rare and benign condition, anatomic resection and even a pneumonectomy may be required for diagnostic and therapeutic purposes.

Keywords: *Castleman disease. Unicentric. Lung hilar mass. Pneumonectomy. Hyaline vascular variant.*

PC 057. OUTCOMES OF SURGICALLY TREATED N2-POSITIVE PATIENTS: A MULTI-CENTRIC ANALYSIS

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Introduction: The role of surgery in the treatment of stage IIB/IIIA lung cancer is still a matter of debate and controversy, as well as the need for induction chemotherapy in N2-positive surgical candidates. In order to assess the outcomes of this subpopulation of N2-positive patients, we have performed a multicentric retrospective 10-year study including all patients with histologically proven N2 disease submitted to lung resection surgery by the same surgical team.
Methods: Demographic, clinical, surgical and survival data were collected from patients' clinical registries. Patients were divided into groups according to evidence of neoadjuvant treatment and number of positive N2 stations (single *vs.* multiple). Outcomes regarding survival time within and between groups were calculated and compared. The role of pneumonectomy on post-operative outcomes was also analyzed. Statistical analysis was performed using SPSS statistics. Sixty four patients were included in our study, with a mean age of 62.2 years and a 2:1 male to female ratio. More than half of patients (64.1%) had a history of smoking, although their mean FEV1 was of 91 ± 18.4%, with a DLCO/VA mean ratio of 85.8 ± 18.7%.
Results: Only 3 patients were submitted to sublobar non-anatomical resection, while the majority (n = 46) were submitted to lobectomy, 6 to bilobectomy and 9 to pneumonectomy. Surgery was performed by uniportal VATS in 43.8% of cases. Regarding N status, a mean of 3 stations were sampled and 35 patients (54.7%) had one single positive N2 station. Post-operative complications occurred in 27% of patients while no deaths were recorded within the first 30 post-operative days. Twenty seven patients (42.2%) were submitted to neoadjuvant chemotherapy. Survival time within this group was of 67.7 ± 10.5 months. No statistical difference was found between these patients and those that did not perform pre-operative chemotherapy (survival time 48 ± 5.2 months), although, a statistically significant difference in survival was found between patients with single (survival time = 89.3 ± 9.5 months) *vs.* multiple (survival time = 49 ± 9 months) N2 positive stations. Within the group of patients with single N2 disease (n = 35), no difference in survival time between patients submitted and non-submitted to neoadjuvant treatment was found.
Conclusions: Surgery is safe in selected patients with N2 disease, particularly in those with single-N2 positive stations. Surgery should always be included in a multimodal treatment plan in these patients, although, neoadjuvant therapies did not show clear evidence of benefit regarding patients' survival time. Patients with multiple-N2 disease show a worse prognosis and surgery as first-line treatment should be carefully debated.

Keywords: *Cancer. Surgery. N2. Neoadjuvancy.*

PC 058. ONE PATIENT, TWO RARE DISEASES

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Introduction: In a period of over ten years, there have been only three confirmed cases of diffuse pulmonary neuroendocrine cell hyperplasia in our center (DIPNECH). Two of them were an accidental finding in material sent for anatomopathological study obtained during surgery for other reasons. The most recent case of DIPNECH at this center occurred in a patient with suspicion of having a solitary fibrous tumor of the pleura and is reported below.
Case report: A 65-year-old woman, non-smoker, without comorbidities or significant clinical complaints. A chest X-ray revealed a lobulated nodular opacity measuring six centimeters on the antero-basal right lung field. A thoracic computed tomography scan was performed that identified an heterogeneous solid mass, with lobulated but regular contours and well-defined borders, on the periphery of the middle lobe, close to the right cardiophrenic angle; with contact with the chest wall and mediastinum, but no signs of invasion. Magnetic resonance imaging showed a lesion of likely pleural origin, hypervascular, with heterogeneous contrast uptake. PET identified a mass with very discreet avidity for FDG. Transthoracic aspiration biopsy showed a fibrohyaline lesion with no signs of malignant disease. Due to suspicion of a solitary fibrous tumor of the pleura, the patient underwent surgical resection by thoracoscopy; the procedure was uneventful, with hospital discharge on the second postoperative day. The anatomopathological examination of the surgical specimen revealed a well-defined mesenchymal neoplasm of the visceral pleura, with no evidence of pulmonary involvement by the lesion, consistent with the initial suspicion of a solitary fibrous tumor of the pleura, but associated with diffuse pulmonary neuroendocrine cell hyperplasia – DIPNECH. Currently, the patient is in an imaging surveillance program, remaining asymptomatic and with no new findings.
Discussion: Although rare, solitary fibrous tumors of the pleura are the most common benign pleural tumor in adults. It is mostly asymptomatic and an incidental finding. It typically presents as a homogeneous, well-defined and non-invasive lesion. The treatment of choice is complete surgical resection of the tumor, which also allows the exclusion of malignancy. The prognosis is favorable in most patients but in a small percentage, the tumor may recur, metastasize or even undergo malignant transformation. Diffuse pulmonary neuroendocrine cell hyperplasia (DIPNECH), an even rarer entity, is characterized by non-productive cough and exertion dyspnea of insidious onset. It appears more frequently in middle-aged, non-smoking women, with an obstructive or mixed pattern in the respiratory function test. The most frequent radiological finding is a mosaic pattern, with small nodes that may represent a carcinoid tumor. Surgical lung biopsy is the gold-standard for diagnosis. Therapeutic options may include corticosteroid therapy, chemotherapy, and surgical pulmonary resection. Currently there is no evidence that relates both diseases. In this patient, despite the absence of clinical or radiological findings suggestive of DIPNECH, the indication for surgical treatment of the solitary fibrous tumor of the pleura allowed its diagnosis and timely follow-up. The simultaneous identification of both entities in the same patient grants particular rarity and interest to this clinical case.

Keywords: *Solitary fibrous tumors of the pleura. Diffuse pulmonary neuroendocrine cell hyperplasia in our center (DIPNECH). Thoracic surgery.*

PC 059. A DIFFERENT APPROACH TO SCHWANNOMA

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Case report: A previously healthy 57-year-old woman was sent to our hospital with complaints of pain in the right scapular region in

the last six months. After performing computerized tomography, the patient did a magnetic resonance imaging that showed a rounded cystic lesion, with six centimeters of maximum diameter, in proximity with the lateral surface of the vertebral bodies and partial extension to the intervertebral foramen of the first and second cervical vertebrae, without intracanal extension. Given the symptoms at presentation, the patient underwent a surgical removal by uniportal video-assisted thoracic surgery (VATS), which also allowed exclusion of malignancy. The lesion was adherent do the lung parenchyma and was dissected and separated from the parenchyma. After aspiration of the cystic component, the lesion was dissected from the chest wall with excision of second intercostal nerve and sympathetic nerve at the third rib, with a complete macroscopic resection of the tumor. No surgical complications occurred and the patient was discharged from the hospital three days after surgery. At histological examination, a spindle cell neoplasm was observed, with areas of myxomatous loosely arranged tissue and surrounded by lymphoplasmacytic infiltration. At the periphery of the lesion, a fibrous capsule with neural sheath tissue was identified. The definitive diagnosis was schwannoma, confirmed by immunohistochemical staining (positive for S-100 protein and negative for epithelial membrane antigen, desmin, smooth muscle actin and cluster of differentiation 34 – CD34). After a three months follow-up, there were no post-operative sequelae and the patient reported resolution of scapular pain.

Discussion: Thoracic neurogenic tumors can originate from any nervous structure within the thorax. Tumors of nerve sheath origin consist of schwannomas, neurofibromas and malignant peripheral nerve sheath tumors. Although most patients are asymptomatic at presentation, complete removal is recommended to establish a definite diagnosis and exclude malignancy. Surgical approach can be challenging during VATS, especially in cases of apical location where complete resection by VATS is even more difficult. This clinical case motivates us to keep doing minimally invasive surgery in this tumor.

Keywords: *Thoracic neurogenic tumors. Schwannoma. Video-assisted thoracic surgery.*

PC 060. COMPARATIVE FEATURES AND LONGITUDINAL BEHAVIOUR OF RHEUMATOID ARTHRITIS-ASSOCIATED UIP VERSUS IDIOPATHIC PULMONARY FIBROSIS: A SINGLE CENTRE COHORT STUDY

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Introduction: Rheumatoid arthritis (RA) is the commonest cause of connective tissue disease related ILD. Among RA-ILD the usual interstitial pneumonia (UIP) is the most frequent disease pattern and several studies have suggested that its disease course and survival may be similar to idiopathic pulmonary fibrosis (IPF). This study aimed to investigate comparative clinical features, longitudinal behaviour and consumption of healthcare resources between between local cohorts of RA-UIP and IPF patients, from a district hospital ILD outpatient clinic.

Methods: Retrospective and descriptive study including 22 IPF and 17 RA-ILD cases diagnosed between 2015 and 2020. RA diagnosis was made according to the 2010 ACR/EULAR guideline and IPF patients were diagnosed according to 2011 and then 2018 ATS/ERS/JRS/ALAT clinical guidelines, after ILD multidisciplinary team discussion comprised by an ILD dedicated pulmonologist, a rheumatologist, a radiologist and a pathologist. A descriptive analysis was performed and Mann-Whitney U and Fisher's exact test were used to compare continuous and categorical variables, respectively. A p-value less than 0.05 was considered statistically significant.

Results: RA-ILD patients were older at diagnosis, are predominantly female and 86% of patients showed preceding articular symptoms, with lung disease being diagnosed after a median of 11 years (IQ range 2-13). All patients had a UIP/probable UIP pattern in HRCT. RA-ILD patients presented less cough complaints and tendentially a lower degree of dyspnea at presentation. IPF patients presented a trend to a longer time span of symptoms before diagnosis (20.5 *vs.* 11.6 months; p = 0.09). Regarding lung function, mean FVC and DLCO values at baseline were 73% and 42% for IPF group and 91% and 60% for RA-ILD group. There were significant differences regarding FVC (p = 0.007) and DLCO (p = 0.04) and no significant survival differences (p = 0.46) between the two groups. IPF patients had a greater number of acute exacerbations (27 *vs.* 4; p = 0.06) and showed more respiratory-related emergency visits. In conclusion, compared to IPF, patients with RA-UIP presented less prevalent cough, less severe exertion dyspnea and a shorter time span of respiratory symptoms before diagnosis.

Conclusions: IPF patients showed worse lung function at diagnosis. IPF patients showed a higher tendency to acute exacerbations and had a greater unplanned health care resources utilization, namely emergency visits and unplanned hospitalizations. There was also a non-significant trend towards higher mortality during follow-up in the IPF group.

Keywords: *Interstitial lung disease.*

PC 061. SILICA AND VASCULITIS: WHAT IS THE ASSOCIATION?

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Introduction: It is known that certain environmental factors play an important role in the development of autoimmune diseases. The association between silica exposure and the development of ANCA (antineutrophil cytoplasmic antibodies) associated-vasculitis has been reported. ANCAs are valuable biomarkers, associated with small vessel vasculitis affecting multiple organs, especially kidney and lung.

Case reports: Case 1. Male, 55 years old, construction worker (for 35 years), non-smoker. Previous history of Silicosis (characterized as an occupational disease) and multidrug-resistant tuberculosis. Hospitalized for ANCA-Associated Vasculitis (anti-MPO) with renal involvement. Due to hemoptysis he was submitted to chest CT which showed mediastinal adenomegaly, traction bronchiectasis and distortion of the pulmonary architecture, compatible with progressive massive fibrosis (in a silicosis context) and expressive areas of ground glass densification in the LSD and LIE. The BAL revealed lymphocytosis, low CD4/CD8 ratio and positive hemosiderin research in the cytoplasm of macrophages (Pearls technique), compatible with alveolar hemorrhage. Case 2. Male, 49 years old, civil metalworker (for 20 years), ex-smoker (30 ONE). History of type 2 DM, positive ANCA vasculitis (anti-MPO) with associated renal insufficiency and viral myocarditis. Referred for hemoptysis and dyspnea on moderate effort. A chest CT was performed, with evidence of mediastinal adenopathies, ground glass pattern of the lower lobes and reticular densifications reflecting interstitial fibrosis phenomena. The BAL detected high cellularity, predominantly macrophages with hemosideric pigment (Perls technique), suggestive of alveolar haemorrhage. A lung biopsy by cryobiopsy revealed macrophages with birefringent salicylate-like particles under polarised light. We assumed, in both cases, the diagnosis of ANCA-Associated Vasculitis with renal and pulmonary involvement, associated with silica. Immunosuppressive therapy with cyclophosphamide and corticotherapy was instituted. Given the evidence of association between ANCA-Associated Vasculitis and silica, reports of occupational disease were performed.

Discussion: The cases presented illustrate the association between silica exposure and ANCA-Associated Vasculitis, evidencing the in-

teraction between environmental/occupational exposure and autoimmunity. Silica acts as an environmental trigger in the development of these vasculitis. A positive dose-effect relationship is assumed between exposure (particularly exposure intensity) and the presence of ANCAs. However, the pathophysiological mechanisms involved are not fully understood. We highlight that occupational exposure, in particular to silica, should be systematically explored in patients with ANCA-Associated Vasculitis.

***Keywords**: Silica exposure. Silicosis. Vasculitis. Antineutrophil cytoplasmic antibodies (ANCA). ANCA-associated vasculitis.*

PC 062. SILICOSIS IN DIFFUSE LUNG DISEASE SILICOSIS CONSULTATION: AN ANALYSIS OF TWO HOSPITAL CENTERS

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Introduction: Silicosis is a pneumoconiosis caused by the inhalation of silica particles, resulting in permanent and progressive lung damage. Despite all efforts to prevent it, silicosis affects tens of millions of workers in hazardous occupations, being the cause of death for thousands of people every year, all over the world.
Objectives: To analyze a sample of patients diagnosed with Silicosis, with follow-up in a Diffuse Lung Disease (DLD) consultation, in two hospital centers.
Methods: A descriptive retrospective observational study was designed, including patients diagnosed with Silicosis, followed in 2019 in a DPD consultation.
Results: A total of 126 patients diagnosed with silicosis were identified, of which 89.1% (n = 123) were male, with a median age of 59 years (IQR = 17) and a median of years of exposure of 27 years (IQR = 18). The most frequently reported high-risk profession was working in quarries (n = 81). Patients with complicated silicosis had more symptoms ($p < 0.001$; OR = 5.729), reporting cough ($p = 0.036$; OR = 0.425) and dyspnea ($p < 0.001$; OR = 0.173) more frequently than in simple silicosis; dyspnea was significantly more intense, with a 3-4 mMRC ($p = 0.036$; OR = 4.853). Lung function also translated into greater disease severity, with FEV1, FVC and CO SB diffusion significantly lower than in simple silicosis ($p < 0.001$; $p = 0.001$; $p = 0.027$, respectively).
Conclusions: Silicosis is a progressive disease, with severe repercussions in the patient's morbidity and mortality. The present study emphasizes complicated silicosis as more severe form of disease, implying a closer follow-up, as it confers a greater symptomatic burden, with a more important functional impairment and a worse prognosis. There is currently no effective treatment for this disease, so it is important to early identify patients who are candidates for lung transplantation.

***Keywords**: Silicosis. Diffuse lung disease. Occupational diseases.*

PC 063. NINTEDANIB VS. PIRFENIDONE IN FUNCTIONAL DISEASE PROGRESSION IN IDIOPATHIC PULMONARY FIBROSIS

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Introduction: Similar effectiveness in functional disease progression has been described for Pirfenidone and Nintendanib, two antifibrotics approved for idiopathic pulmonary fibrosis (IPF).
Objectives: To assess differences in functional disease progression at one year follow-up (FU) in IPF patients under therapy with Pirfenidone or Nintedanib.
Methods: Retrospective analysis of the medical records from IPF patients under treatment with one antifibrotic at our Interstitial Lung Diseases Center, from January 1st, 2014 to 31st December, 2019. Only the records of whom lung function tests (LFT) and six-minutes walking tests (6MWT) were performed at the beginning of therapy and at one year FU were selected and compared. For statistical analysis we used the Mann-Whitney test for independent samples.
Results: A total of 18 patients were identified: 9 in the Nintedanib group (GN) and 9 in the Pirfenidone (GP) group. In GN, 4 patients were on a reduced dose of therapy due to adverse effects. Both groups had male predominance (88.9% and 77.8%). There were no statistically significant differences between the two groups regarding age, height, weight and BMI ($p > 0.05$). Concerning FVC and DLco, a mean decline of 322 ml and 0.42 mmol/min.kPa.L was observed in NG, and in GP of 444 ml and 0.49 mmol/min.kPa.L, respectively. With regard to TLC and PM6M, there was an average increase in GN of 172 mL and 22.4 m and in GP of 256 mL and 7.75 m, respectively. The differences found did not reach statistical significance ($p > 0.05$). In both GN and GP there were 2 patients who had a reduction in FVC > 10%. Regarding DLco, in the NG, 5 individuals were identified with a reduction in DLco > 10%, while in the PG, 6.
Conclusions: Both groups showed the same trends in results in what concerns to respiratory functional variables and distance walked in the 6MWT, but it is noteworthy that 4 individuals from the NG were taking a reduced dose of the drug. These results highlight the importance of developing studies that include a greater number of patients with IPF taking antifibrotics and the possibility of considering an extended follow-up period.

***Keywords**: Antifibrotics. Idiopathic pulmonary fibrosis. Interstitial lung diseases.*

PC 064. HYPERSENSITIVITY PNEUMONITIS AND FACTORS ASSOCIATED WITH FIBROTIC PHENOTYPE - A RETROSPECTIVE ANALYSIS

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Introduction: Hypersensitivity pneumonitis (HP) is an underestimated disease. Its prevalence tends to increase with age and varies according to the geographic region. After the INBUILD study, the recognition of the progressive fibrotic phenotype became of great clinical and therapeutic importance. Defining predictive criteria for fibrotic progression specific for HP is of extreme importance.
Objectives: Characterization of factors associated with fibrotic HP (HPf) in a population of patients followed in a Diffuse Parenchymal Lung Disease Outpatient Clinic, during 2020 and 2021, at Centro Hospitalar de Setúbal (CHS).
Methods: Observational, retrospective clinical study, using statistical analysis with the Mann-Whitney U test (comparing medians of bronchoalveolar lavage lymphocytosis (BAL), percentage of carbon monoxide diffusion capacity (DLCO) and GAP-ILD in patients with HPf and non-fibrotic), Chi-square test (in the variables: Lower distribution of imaging findings and Female gender) and Fisher's exact test (in the variables Smoker/ex-smoker, Chronic respiratory failure (CRF) and Cardiovascular pathology).
Results: From a sample of 43 patients, 60.5% were women and the mean age was 73.19 years ($\sigma = 7.72$). The majority (86.1%) had an identified etiology, namely exposure to birds (81.4%) or byssinosis (4.7%). Twelve patients (27.9%) were smokers/ex-smokers. The most frequent comorbidities were cardiovascular disease (81.4%), diabetes mellitus (32.6%) and gastroesophageal reflux (23.3%). Female gender ($p = 0.01$), cardiovascular disease ($p = 0.036$) and smoking ($p = 0.033$) were associated with HPf. Regarding radiology, 65.1% had findings compatible with HPf. A predominantly basal distribution was related to a fibrotic phenotype ($p = 0.019$). BAL had

an average percentage of lymphocytes of 30.4% (σ = 21.5). BAL lymphocyte count was lower in patients with HPf (p = 0.03). The GAP-ILD index was higher in patients with HPf (p = 0.005), while the percentage of DLCO was lower (p = 0.016). There was no statistically significant difference regarding the TORVAN index. Three out of every four patients ceased antigen exposure and 50% of patients with HPf were on medication - 42.9% with corticosteroids, 14.3% with mycophenolate mofetil and 3.6% with nintedanib. One in five patients had CRF, which was associated with HPf (p = 0.036).
Conclusions: HP prevalence studies in other countries range from 1.67 to 2.71/100,000 inhabitants. A sample of 43 patients diagnosed with HP, in which 41 belong to the area covered by the CHS (with a population of 236,786 inhabitants), represent 17.3 patients under follow-up per 100,000 inhabitants. Poor prognostic factors in HP include smoking, reduced vital capacity, absence of lymphocytosis in BAL and continuation or non-identification of antigenic exposure. In the present study, there was an association in agreement with the literature regarding smoking and lymphocytosis in BAL. In addition, factors associated with HPf were female gender, cardiovascular pathology, lower distribution of imaging findings, higher GAP-ILD index, lower DLCO and CRF. The take-home message is that the early identification of risk factors for HPf could be a bridge to delineate specific criteria of fibrotic phenotype in this disease.

Keywords: *Hypersensitivity pneumonitis. Fibrotic. Interstitial lung disease.*

PC 065. ALVEOLAR PULMONARY PROTEINOSIS: CHARACTERIZATION AND EVALUATION OF A CASE SERIES

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Introduction: Pulmonary alveolar proteinosis (PAP) is a rare respiratory pathology characterized by the alveolar accumulation of surfactant lipoproteins. PAP can be primary, secondary or congenital. Primary autoimmune PAP is the most frequent and can be expressed insidiously. The therapeutic approach is related to the form and severity of the disease.
Objectives: To characterize and evaluate the progression of PAP in patients followed in the Interstitial Lung Disease consultation.
Methods: Data were collected from clinical records. Statistical analysis was performed using SPSS (version 28.0.0.0). The Wilcoxon test was used to compare the different parameters of the respiratory function tests at the date of diagnosis and the latest available data at the current date. A p value < 0.05 was considered statistically significant.
Results: 16 patients were included, 81.25 % were male. The mean age at diagnosis was 48.9 ± 7 years. Of these patients, 68.75% had previous or current smoking habits and 81.25% had some type of exposure (poultry, silica, cement, asbestos, ceramics, paints, aluminum, granite, iron, stainless steel). Regarding diagnosis, 14 patients were diagnosed with primary autoimmune PAP, 1 was awaiting the result of GM-CSF autoantibodies and 1 had unclassifiable PAP. At diagnosis, 100% of patients had dyspnea, 75% cough and 18.75% sputum. On physical examination, 18.75% had basal crackles on pulmonary auscultation. The initial mean SpO2 was 92.6%, where 6 patients had an SpO2 ≤ 90%. Analysis of the CT images at the time of diagnosis revealed that 93.75% of the patients had ground-glass pattern, 81.25% interlobular septal thickening and 75% crazy paving. Respiratory functional assessment is summarized in table 1. All bronchoalveolar lavages performed were compatible with PAP, namely with abundant PAS+ material. During the course of the disease, 31.25% of patients had infectious complications, with identification of the following agents: *Mycobacterium avium, Mycobacterium scrofulaceum, Pseudomonas aeruginosa, Staphylococcus aureus, Streptococcus pneumoniae, Klebsiella oxytoca* and SARS-COV-2. Regarding therapy, 11 patients (68.75%) underwent total lung lavage (LPT). Of these, 2 patients had a total of 7 LPT, 1 patient had 3 LPT, 1 patient had 2 LPT and 7 patients had 1 LPT. Two patients have been treated with inhaled molgramostim therapy since 2018 and 2 patients were treated with rituximab, one in 2012 and the other in 2014. The mean total follow-up time was 6.4 ± 4.4 years. At the time of the data analysis, two patients had died, one from causes unrelated to PAP and the other one year after lung transplantation, 10 patients had stable disease and 4 were in progressive deterioration, 3 of which were proposed for LPT.

Table 1.

	Baseline	Most recent results	p
FEV1/FVC	78,9 ± 13,3	78,1 ± 16,7	0,534
FEV1, %	77,5 ± 21,5	81,9 ± 27,3	0,433
FVC, L	3,06 ± 0,78	3,11 ± 0,98	0,093
FVC, %	80,7 ± 15,7	84,7 ± 23,2	0,131
TLC, %	80,5 ± 15,5	92,5 ± 16,8	0,026
DLCO, L	4,78 ± 1,91	5,64 ± 1,74	0,463
DLCO, %	55,1 ± 21,7	68,3 ± 16,5	0,241
KCO, %	68,1 ± 11,1	85,8 ± 16,8	0,011
pO2, mmHg[a]	59,9 ± 9,8	78,3 ± 9,4	0,050

FEV1 - forced expiratory volume in the 1st second; FVC – forced vital capacity; TLC – total lung capacity; DLCO - pulmonary diffusion of carbon monoxide; KCO - diffusion coefficient.
[a]room air.

Conclusions: It was found that most patients presented at the time of diagnosis with dyspnea and cough, which is compatible with the sociodemographic and imaging aspects described in the literature. Primary autoimmune PAP was the most frequent diagnosis, showing that LPT remains the preferred treatment for disease stabilization.

Keywords: *Alveolar pulmonary proteinosis. GM-CSF autoantibodies. Total lung lavage.*

PC 066. GENETIC ALTERATIONS IN PLEUROPARENCHYMAL FIBROELASTOSIS: REPORT OF FIVE CASES

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Introduction: Genetic mutations may be detected in patients with pleuroparenchymal fibroelastosis (PPFE) even when a family history of lung disease is absent. Studies found associations with mutations in genes involved in telomere homeostasis, including TERT, TERC, or RTEL1 genes.
Objectives: To analyse the genetic alterations detected through next-generation sequencing in patients with suspected or diagnosed PPFE.
Methods: A cases review was conducted in patients followed in ILD outpatient clinic, with suspected or diagnosed PPFE, who performed genetic testing between 2017 and 2021. Demographic, clinical, functional, radiological, and histopathological data, genetic testing results, and therapeutic approach were recorded.
Results: Genetic tests were performed on a total of 7 patients; in 5 an alteration was detected in at least one gene of the total of genes analysed with known association with lung disease. The results are summarized in the following table.
Conclusions: At diagnosis of PPFE, most patients were under 60 years of age. No patient included had a known family history of ILD. Of the genes with detected genetic alterations, none were involved in telomere homeostasis. Patients with more than one mutation detected were observed. All patients presented variants in heterozygosity and, most variants were classified as a variant of uncertain significance. One patient had hypersensitivity pneumonitis as an

associated condition, in which the two genes with mutations are associated with dysfunction of pulmonary surfactant metabolism.

Keywords: *Pleuroparenchymal fibroelastosis. Genetic.*

PC 067. PROGRESSIVE FIBROSING INTERSTITIAL PULMONARY DISEASE: ANALYSIS OF PREDICTIVE FACTORS

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Introduction: A subgroup of patients with fibrotic pulmonary disease non idiopathic pulmonary fibrosis, even with optimized treatment, evolves to a progressive fibrosing phenotype (PFP), characterized by accelerated functional, clinical and radiological decline. Evidence about predictive factors are lacking.
Objectives: To identify factors present at primary diagnosis of fibrotic interstitial disease associated to a superior risk of progression to PFP.
Methods: Observational retrospective study in tertiary hospital that included: 1) patients assessed in Diffuse Pulmonary Diseases – Pulmonology consult during 2020, with at least 2 years of follow-up; 2) meeting eligibility for PFP: relative decline of forced vital capacity (FVC) > 10% of predicted with or without clinical deterioration or relative decline of FVC 5-10% of predicted with worsening of fibrosis extension in HRCT; stablished diagnosis of PFP until June 2021. The analyzed variables concerning the primary diagnosis are: gender; age; smoking status; symptoms duration until primary diagnosis; radiological pattern; cellular analysis of bronchoalveolar lavage (BAL) ; FVC and diffuse lung capacity for carbon monoxide (DLCO). The data analysis was made with software SPSS®, version 26. Evaluation of association between time until PFP diagnosis and the studied variables was done using Cox univariate regressions, with calculation of Hazard Ratios (HR). The level of significance was preferably 5%, although 10% has been considered as marginal significance.
Results: Of the 346 patients with fibrotic pulmonary disease, 29 patients were diagnosed with PFP, with the following primary diagnosis: hypersensitivity pneumonitis (62.07%; n = 18); unclassifiable interstitial lung disease (10.34%; n = 3); interstitial disease associated to connective tissue disease (CTD-ILD) (10.34%; n = 3); idiopathic nonspecific interstitial pneumonia (NSIP) (6.90%; n = 2); familial pulmonary fibrosis (6.90%; n = 2) and sarcoidosis stage IV (3.45%; n = 1). Most patients were female (55.2%; n = 16), nonsmoker (59.3%; n = 16), with mean age at primary diagnosis 63.61 ± 1.70 years. Median duration of symptoms until primary diagnosis was 12.5 (IIQ = [9.25;22]) months. Only 8 patients had radiological pattern usual interstitial pneumonia (UIP) (27.6%). The BAL characteristics were: mean count of macrophages 62.91+-5.23%; median count of lymphocytes 15.8% (IIQ = [8.4;37]); neutrophils 6.3% (IIQ = 1.80;12.45]) e eosinophils 2.5% (IIQ = [0.5;6.75]). Median follow-up time between primary diagnosis and PFP was 3.0 (IIQ = [2.0;5.5]) years. In the analysis of predictive factors of PFP, patients without lymphocytosis in BAL had a three times higher risk of this phenotype, comparing with patients with lymphocytosis (≥ 15%) (HR = 2.99, p = 0.039). The presence of eosinophilia in BAL (≥ 1%) was associated with a higher risk of PFP diagnosis FFP (HR = 1.11, p =.049), namely 11% additional risk for each percentual point of eosinophils.
Conclusions: The absence of lymphocytosis and increasing levels of eosinophils in BAL might be associated with greater risk of evolution to PFP in fibrotic interstitial lung diseases. It will be necessary additional studies with a larger patient sample to a better characterization of this phenotype, even in different disease types.

Keywords: *Fibrotic interstitial disease. Progressive fibrosing phenotype. Bronchoalveolar lavage.*

PC 068. PULMONARY FIBROSIS AND ITS RELATIONSHIP WITH HIATAL HERNIA

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Introduction: Previous studies have shown that gastroesophageal reflux disease (GERD) and hiatal hernia are more common in patients with FPI. The hypothesis of fibrotic remodelling due to frequent alveolar inflammation secondary to micro aspiration episodes has been studied. The causal relation of these diseases is uncertain and its unknown if this inflammation mechanism predisposes to a more severe fibrotic pulmonary disease. We propose to study the relationship between the severity of fibrotic pulmonary disease and the presence of hiatal hernia, which is easily diagnosed in this set of patients due to frequent chest CT studies.
Methods: Retrospective study of patients with fibrotic pulmonary disease observed in an outpatient consultation of interstitial lung diseases in CHUC. Patients were compared in accordance to the presence of hiatal hernia described in chest CT studies.
Results: Sixty five patients were included, 50.8% were women, with a median age of 66.9 ± 10.2 years old. Every patient had a diagnosis of fibrotic lung disease being the most common fibrotic hypersensitivity pneumonitis (43.1%), idiopathic interstitial fibrosis (16.9%), sarcoidosis stage IV (15.4%) and UIP pattern secondary to connective tissue disease (10.8%). The majority of these diagnosis were obtained by multidisciplinary meeting discussion (73.8%) and about half were submitted to surgical lung biopsy or cryobiopsy (46.9%). The median years since diagnosis were 4 years (min 0; max 20). The treatment with antifibrotics was made in 10 patients with Nintedanib and 5 with Pirfenidone. The presence of hiatal hernia was evidenced in 21.5% of the sample. The presence of this condition was not associated with age, gender, years since diagnosis of fibrotic disease, antifibrotic therapy or exacerbations in the last year. The median TLC value was 72.3 ± 19.9% predicted and the FVC was 74.8 ± 23.1% predicted. Both without association with the presence of hiatal hernia. DLCO values were lower in patients with hiatal hernia (46.0% *vs.* 56.6%; p = 0.088) as well as distance walked in 6 minute walking test (6MWT) (343m *vs.* 428m; p = 0.138). Dessaturation in 6MWT or a decrease of at least 10% DLCO in the last year was not related with the presence of this disease. Evaluating the prognosis GAP index of patients with FPI (median 3.8 ± 0.9) and the ILD-GAP index (median 2.1 ± 1.6) we did not verify higher scores for patients with hiatal hernia.
Conclusions: In this sample, we observed lower DLCO values and distance walked in the 6MWT in patients with hiatal hernia. We did not necessarily identified more severe fibrotic lung disease in these patients. Although hiatal hernia is an easily identified condition in our clinical practice by chest CT, it may not be always related with GERD. The causal relationship study of both conditions is important to evaluate its impact on the progression of fibrotic lung disease.

Keywords: *Pulmonary fibrosis. Hiatal hernia. Gastroesophageal reflux disease.*

PC 069. PROGRESSIVE FIBROSING INTERSTITIAL LUNG DISEASES: EXPERIENCE OF A TERTIARY HOSPITAL

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Introduction: Fibrotic interstitial lung diseases other than non-Idiopathic Pulmonary Fibrosis (IPF) have a heterogeneous pathophysiology, clinical presentation and evolution. A subgroup of patients has a progressive fibrosing phenotype (FFP), similar to that seen in IPF.

Objectives: To evaluate the proportion and characteristics of patients with fibrotic interstitial lung pathology and FFP observed over a 12-month period in a tertiary hospital.
Methods: Retrospective observational study that included: 1) patients evaluated in a Pulmonology – Diffuse Lung Diseases consultation during the year 2020, with at least 2 years of follow-up; 2) with eligibility criteria for FFP, considered in the INBUILD clinical trial: relative decline in forced vital capacity (FVC) > 10% of predicted with or without clinical deterioration or relative decline in FVC 5-10% of predicted with worsening of respiratory symptoms or increased extent of fibrosis on HRCT scans; 3) and FFP diagnosis established until June 2021, inclusive. Demographic, clinical, radiological, functional variables and those related to the treatment and evolution of the disease were evaluated. Statistical analysis was performed using SPSS Statistic v26 software.
Results: A total of 1,133 patients were observed, of these 346 had non-IPF fibrotic interstitial lung disease. Within this group, 29 (8.38%) met FFP criteria. Most were female (55.17%; n = 16) with a mean age at primary diagnosis of 63.61+-1.70 years and nonsmokers (55.17%; n = 16). The observed diagnoses were: hypersensitivity pneumonitis (62.07%; n = 18); unclassifiable interstitial lung disease (10.34%; n = 3); interstitial disease associated with connective tissue disease (10.34%; n = 3); idiopathic nonspecific interstitial pneumonia (NSIP) (6.90%; n = 2); familial pulmonary fibrosis (6.90%; n = 2) and stage IV sarcoidosis (3.45%; n = 1). Only 8 patients had the usual interstitial pneumonia (UIP) imaging pattern (27.58%). At primary diagnosis, they had the following functional parameters: mean FVC 84.32 ± 3.49% of predicted value; and the alveolar-capillary transfer capacity by carbon monoxide (DLCO-SB) mean 50.85 ± 3.47%. Regarding the FFP criteria applied: 27.6% (n = 8) had a relative decline in FVC > 10% with or without clinical deterioration and 72.4% (n = 21) relative decline in FVC between 5 to 10% of the predicted with worsening respiratory symptoms or increased extent of fibrosis on HRCT scan. The median follow-up time between primary diagnosis and FFP was 3.00 (IIQ = [2.00;5.50]) years. At the date of FFP diagnosis, the mean FVC was 66.96 ± 3.33% and the mean DLCO-SB was 34.32 ± 3.26% of predicted value; that is, between the primary diagnosis and the FFP diagnosis, there was a drop of 20.6% in FVC (532 ± 72 mL) and about 32.5% in DLCO. Regarding immunosuppressive therapy, 89.7% (n = 26) completed corticosteroid therapy; 79.3% (n = 23) mycophenolate mofetil; 44.8% (n = 13) azathioprine; 17.2% (n = 5) rituximab; 10.3% (n = 3) cyclophosphamide and 10.3% (n = 3) methotrexate. Upon diagnosis of FFP, 11 patients started antifibrotic, 34.5% (n = 10) with nintedanib and 3.4% (n = 1) with pirfenidone. During follow-up, 37.9% (n = 11) required ambulatory oxygen and/or long-term oxygen therapy.
Conclusions: The progressive fibrosing phenotype is characterized by a rapid functional, clinical and/or imaging decline, underlining the importance of monitoring these parameters for early diagnosis recognition, early institution of antifibrotic therapy and consequent improvement in prognosis.

Keywords: *Interstitial fibrotic diseases. Progressive phenotype. FVC. DLCO.*

PC 070. MICROBIOME STUDY IN BRONCHIECTASIS BY BRONCHOSCOPY

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Introduction: Bronchiectasis are defined as irreversible airway dilatation and compromised mucociliar clearance, thus causing a vicious cycle of inflammation, infection and distortion of the bronchi wall. Even though 45% are idiopathic, there are innumerous etiological causes for their appearance. Bronchoscopy has a major role not only in the etiological diagnosis, but also in the identification of microorganisms responsible for infectious exacerbations and/or colonization, as well as management of possible complications.
Methods: A retrospective study was conducted, and all clinical processes of patients with bronchiectasis who underwent bronchoscopy in Beatriz Ângelo Hospital, between May 2012 and May 2021 were analyzed. Their demographic, clinical and imagiological features, as well as microbiologic pathogens were described.
Results: A total of 120 patients were selected, with a total of 164 bronchoscopies. The mean age was 61.45 ± 13.02 years (from 16 to 89 years), and most patients were female (54.2%). Regarding smoking habits, 10% were active smokers, 30% former smokers and the remaining 60% were nonsmokers. The most common comorbidities found were: 37.5% had tuberculosis in the past, 20.8% had history of asthma and 10.8% COPD, 18.3% gastroesophageal reflux, 17.5% had childhood respiratory infections (3.3% had measles), 10% had at least one pneumonia in the past, 10% some sort of auto-immune disease, 5% cancer and 2.5% with alpha-1-antitrypsine deficiency. Only 2 patients were HIV positive. At the time of the bronchoscopic procedure, most patients (84.2%) presented with cough, which was productive in 62.5% of cases, 47.5% were exacerbated and 25% had hemoptysis. The majority of bronchiectasis were found on both lungs (58.3%). The upper lobe was usually the most affected (44.2%), followed by the inferior lobe (42.5%). Concerning microbiologic pathogens, there was a positive identification in 59.1%, being *Haemophilus influenzae* the most common (40.2%), followed by *Pseudomonas aeruginosa* (19.6%), *Staphylococcus aureus* (16.5%), *Mycobacterium tuberculosis* (7.2%), *Streptococcus pneumoniae* (4.1%) and *Klebsiella pneumoniae* (3.1%). Rarer pathogens (only 1 isolation) were also identified: *Stenotrophomonas maltophilia, Streptococcus constellatus, Streptococcus parasanguinis, Mycobacterium intracellulare, Mycobacterium abscessus* and *Aspergillus fumigatus*.
Conclusions: In most cases, microbiologic identification was possible when bronchoscopy was performed, and the pathogens found were identical to those described in literature: *Haemophilus influenzae* and *Pseudomonas aeruginosa* being the most prevalent bacteria. We highlight that most of our patients have post infectious bronchiectasis, including tuberculosis.

Keywords: *Bronchiectasis. Bronchoscopy. Microbiology.*

PC 071. BRONCHIECTASIS AND THORACIC DEFORMITY – A LITTLE KNOWN RELATION?

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Introduction: Bronchiectasis (BC) is an important cause of morbidity, associated with an increasing prevalence. Several etiologies are described in literature, including previous respiratory infection such as tuberculosis, aspiration, immunodeficiencies, connective tissue disease, being idiopathic in up to half of the individuals. Severe kyphoscoliosis, especially with a Cobb angle > 100º, leads to the risk of dyspnea, recurrent respiratory infections and BC, with possible progression to respiratory failure.
Case reports: Case 1. A 62-year-old woman, non-smoker, history of congenital dorsal kyphoscoliosis, childhood respiratory bronchiolitis and recurrent respiratory infections, especially in the last year, requiring hospitalization. Chest computed tomography (CT) scan revealed marked dorsal kyphoscoliosis with left convexity and slight mediastinal shift to the left; cylindrical and cystic BC in right upper lobe and basal segments of both lower lobes, with 11 × 6.5 cm cystic lesion in left lung base with air-fluid level (fig. 1). Pseudomonas aeruginosa was isolated in sputum having completed eradication therapy. Respiratory functional tests (RFT) revealed severe restrictive ventilatory disorder, also needing oxygen therapy at walk and blood

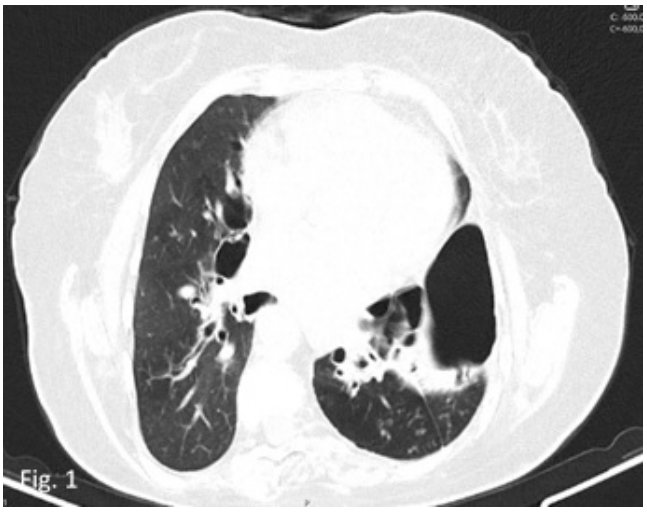

Figure 1

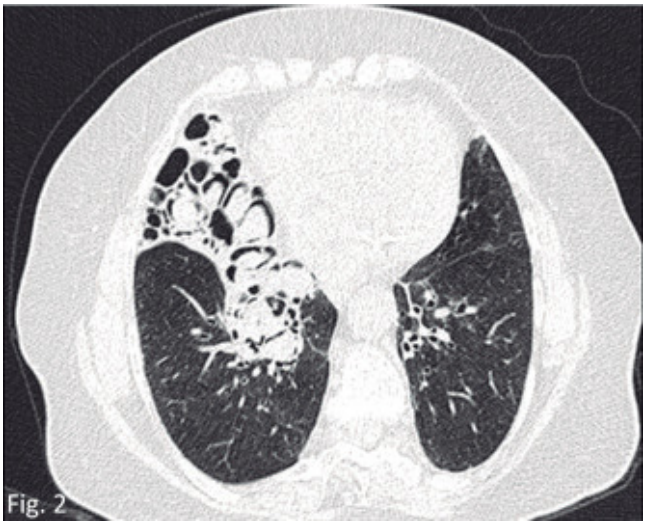

Figure 2

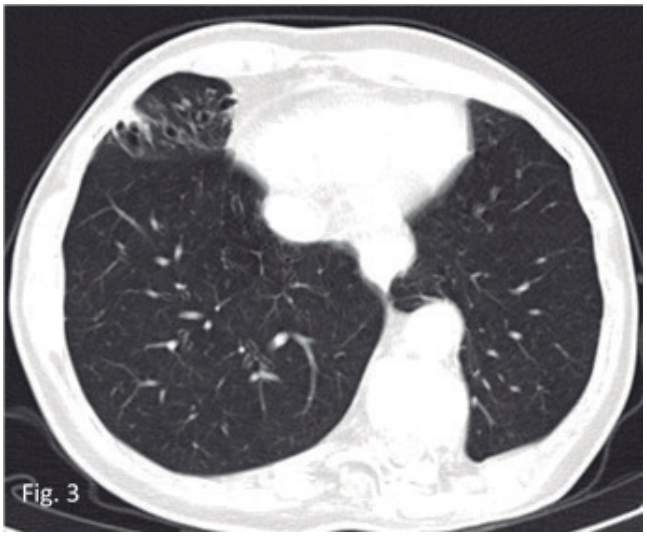

Figure 3

gas analysis with hypercapnic chronic respiratory failure (CRF). Case 2. A 85-year-old female, non-smoker, history of dorsal kyphoscoliosis, recurrent respiratory infections since childhood, with progressive worsening in last 20 years. Chest CT scan revealed marked dorsal kyphoscoliosis with right convexity and slight mediastinal shift to the right; BC and clustering of cystic lesions in middle and right lower lobes, compatible with multiple aspergillomas (fig. 2). *Aspergillus fumigatus* was isolated in sputum with elevation of IgG of aspergillus, having fulfilled itraconazole. Currently, presents chronic infection due to *Klebsiella oxytoca*. RFT revealed mild restrictive ventilatory disorder. No CRF criteria. Case 3. A 71-year-old woman, non-smoker, history of dorsal-lumbar scoliosis and recurrent respiratory infections since childhood, with worsening of bronchorrhea in last 10 years. Chest CT scan revealed dorsal-lumbar scoliosis with marked left convexity and slight mediastinal shift to the right; multiple cylindrical BC in middle and right lower lobe (Fig. 3). Chronic infection due to *Pseudomonas aeruginosa* was diagnosed. RFT revealed moderate decrease of diffusing capacity. No CRF criteria.

Discussion: In clinical cases of thoracic deformity and history of recurrent respiratory infections and/or chronic bronchorrhea, it is important to suspect and investigate the presence of BC. As demonstrated in the cases described, this is a structural pulmonary alteration that tends to be localized, in relation to the convexity of scoliosis and consequent mediastinal shift. In these cases, it is important to investigate and treat respiratory failure, as well as to carry out regular clinical monitoring and early integration into respiratory rehabilitation program, improving prognosis and quality of life.

Keywords: *Bronchiectasis. Thoracic deformity. Respiratory failure.*

PC 072. ECMO, A BRIDGE FOR LUNG TRANSPLANTATION – A CLINICAL REPORT

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Introduction: Lung transplantation (LT) is indicated in chronic and terminal respiratory failure when no other strategies are sufficient. In those patients with interstitial pulmonary disease flares, mechanical ventilation is difficult to manage and may increase parenchymal lesion. Veno-venous-Extracorporeal membrane oxygenation (ECMO-VV) grants lung support. Therefore, it has been applied as bridge strategy in those patients where flares determine the need for LT

Case report: Male patient of 43 years old, former smoker with previous medical history of unclassifiable fibrotic pneumonitis in LT outpatient clinic. He was under nintedanib, prednisolone, hidroxicloroquine, tiotropium bromide, salmeterol and fluticasone. He had the need for long-term-oxygen-therapy (LTOT) with 6 L/min at rest and 10 L/min at effort. Because of respiratory worsening, prior to the outpatient appointment, there was a need to increase LTOT. On the day of clinical evaluation, presented himself with increased dyspnea, chest pain and hypoxemia. He was admitted to the pulmonology ward and submitted to high concentration oxygen mask followed by the need to institute high-flow-nasal oxygen (HNFC) at 60 L/100%. However, due to severe respiratory failure with increased work of breathing, he was transferred to the polyvalent intensive care unit (ICU) so patient could be submitted to awaken ECMO-VV as a bridge for LT. During ICU stay, patient was under HNFC and ECMO-VV, allowing for daily rehabilitation and physiotherapy that was progressively better tolerated. With the help of medical and nursing team, patient even tolerated walking up to a maximum of 50 m towards the hospital exterior. A maximum of 9 L/min of sweep gas flow and 2.8 L/min of flow rate were needed. There were no complications during this period. Because of donor availability,

on the 16th day of ECMO-VV support, patient was submitted to sequential LT surgery under the support of ECMO. The histopathological examination of the pneumectomy pieces revealed usual interstitial pneumonia pattern. At the fourth day after surgery decannulation. In post-LT period, protocol for post-LT surgery was fulfilled win no complications. On the 8th day after-LT a tracheotomy was performed which permitted and adequate ventilatory weaning and subsequent decannulation. On the 22nd day after-LT he was transferred to the pulmonology ward and maintained pulmonary rehabilitation. He had hospital discharge on the 64th day of admission and 41st day after-LT. At the present time patient is being accompanied on rehabilitation and does not need any oxygen support. It's important to highlight that patient undertook antibiotics because of isolation of *Enterobacter cloacae* and *Klebisella pneumoniae* on bronchoalveolar lavage and *Enterococcus faecium* on bronchial biopsy, respectively.
Discussion: A highly skilled multidisciplinary team is fundamental for the success of ECMO-VV as a bridge for LT. Rehabilitation is also possible while under awaken ECMO. This determines an optimized physical condition at the time of the surgery increasing LT outcomes. Therefore, this bridging strategy demands for continuous education and foundation of multidisciplinary ECMO capable teams in dedicated areas for LT candidates who are under severe respiratory failure.

Keywords: *ECMO. Transplant.*

PC 073. COVID-19-ASSOCIATED PULMONARY ASPERGILLOSIS (CAPA): THE EXPERIENCE OF AN ICU

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Introduction: Invasive pulmonary aspergillosis has been increasingly reported in patients with severe SARS-CoV-2 infection, with a significant impact on morbidity and mortality in this population, worsening the prognosis of patients with COVID-19 admitted to an intensive care unit (ICU). The recognition of the association between COVID-19 and this fungal superinfection is reflected in the appearance of a clinical entity called COVID-19-associated pulmonary aspergillosis (CAPA). In addition to the epithelial damage and changes in the inflammatory cascade caused by SARS-CoV-2, the prolonged hospitalization of critically ill patients with COVID-19 and the use of steroids lead to superinfection by Aspergillus spp. The diagnosis of CAPA is challenging, not only for the not uncommon absence of identifiable risk factors for aspergillosis in the host, but also for the absence of specific imaging alterations, in addition it depends on the use of biomarkers not yet fully validated in this population and in the performance of aerosol generating procedures, not recommended in the COVID-19 context. In this study we present a review of CAPA cases registered in a level 3 ICU.
Methods: Retrospective observational study including all patients admitted to the ICU between October 1, 2020 and July 1, 2021 with COVID-19 (PCR SARS-CoV-2 positive in nasopharyngeal exudate) and the presumed diagnosis of Invasive Pulmonary Aspergillosis.
Results: A total of 258 patients were admitted with COVID-19 to the ICU in the period reported above. The diagnosis of CAPA was considered in 11 patients and admitted in 8 of them (3 probable cases and 5 possible cases considering the ECMM/ISHAM consensus criteria (Lancet, 2020)). Theyhad a mean age of 68 years old [55-81 years], 5 males. 5 patients were immunodepressed prior to admission: 4 in the context of renal transplantation, 1 under prolonged corticosteroid therapy for Rhupus. On average, the diagnosis of CAPA was considered 6 days after admission to the ICU [1-15 days]. Microbiological isolation was possible in 6 patients (*Aspergillus fumigatus* (2), *A. niger* (1), *A. flavus* (1), *A. terreus* (1), *Aspergillus* spp (1)), although only 3 in lower respiratory samples (bronchoalveolar lavage(BAL)/bronchial secretions). Galactomannan test was positive in 4 patients (3 in BAL, and 1 in serum). All patients started voriconazole. In this cohort there were 3 deaths (mortality rate of 37.5%).
Conclusions: CAPA is an increasingly recognized entity, complicating the course of COVID-19 in critically ill patients. In this cohort we report an incidence of 3.1% (lower than in other international series) and a mortality rate of 37.5%, which emphasizes not only a probable underdiagnosis, but also the poor prognosis associated with CAPA, requiring a early suspicion, optimization of diagnostic strategies and timely institution of effective therapy.

Keywords: *Pulmonary aspergillosis. COVID-19. Intensive care unit.*

PC 074. HOSPITALIZED PATIENTS WITH TUBERCULOSIS – CASUISTIC REPORT OF A TERTIARY HOSPITAL

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Introduction: Pulmonary tuberculosis is an ongoing Public Health issue in Portugal, with a higher reported incidence compared to the rest of Western Europe. The development of specialized institutions, such as the Pneumological Diagnosis Centers, ensures adequate follow-up in the majority of cases; however, a more severe presentation may elicit the need for in-hospital management.
Objectives: Profiling the population of tuberculosis patients who require hospital admission.
Methods: This study is a retrospective study including patients admitted to the Pulmonology ward at Centro Hospitalar Universitário do Porto (CHUPorto) with a diagnosis of pulmonary and/or pleural tuberculosis between January 2017 and June 2021. Demographic and clinical data were retrieved from consultation of the patients' clinical files.
Keywords: A total of 25 patients were admitted to the Pulmonology ward of CHUPorto; sixteen (66.7%) were male, with an average age of 61.4 ± 18.5 years. About a third of cases occurred in the first semester of 2021. The average length of hospital stay was 21.3 ± 21.1 days; in 4 patients, diagnosis was made before in-hospital admission. The most common presentation was pulmonary (88%), with about half presenting with cavitating lesions. Seven patients presented pleural involvement. The most identified comorbidity was tobacco smoking (52%), followed by malnutrition (37.5%) e chronic alcohol consumption (33.3%); the presence of comorbidities was significantly associated with a lengthier in-hospital stay (p = 0.039). The most frequently reported symptom at admission was excessive night-time sweating (79.2%), followed by fever and dyspnea (62.5%). Ten patients presented with acute hypoxemic respiratory failure. Eight patients initiated antibiotics due to evidence of bacterian superinfection. Diagnosis was achieved following direct examination of sputum in 13 cases, with an additional 12 cases requiring optic bronchoscopy to achieve diagnosis. Phenotypic resistance testing detected 3 events of streptomycin-resistant infections. 24 patients initiated appropriate antibiotic treatment; the remaining patient did not initiate treatment due to being placed on end-of-life care. Three deaths were reported (mortality rate of 12%), with tuberculosis being considered cause of death in one of those cases.
Conclusions: Regardless of the sustained decline in annual reported incidence, pulmonary tuberculosis remains a serious infection requiring immediate intervention, as delay in diagnosis and treatment initiation, particularly in people with comorbidities, could preclude serious morbidity and mortality rates. The pandemic we are currently experiencing could possibly have a negative impact on tuberculosis management on years to come.

Keywords: *Pulmonary tuberculosis. Pleural tuberculosis.*

PC 075. TUBERCULOSIS DIAGNOSIS AND HOSPITALIZATIONS DURING THE RESTRUCTURATION OF A PULMONOLOGY DEPARTMENT IN RESPONSE TO COVID-19 PANDEMIC

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Introduction: The COVID-19 pandemic has imposed an extraordinary burden on the National Health System, forcing a rapid restructuring of hospital departments. Pulmonology has been playing a cornerstone role in the first-line response to COVID-19, while continuing to ensure the management of non-COVID-19 patients, including those with tuberculosis (TB).
Objectives and methods: In order to analyze the trends in TB diagnosis and hospitalizations during the rearrangement strategy implemented in the Pulmonology Department of Centro Hospitalar de Vila Nova de Gaia/Espinho (CHVNG/E) (Portugal) in response to the COVID-19 outbreak, we conducted a retrospective study comparing outpatient activity, overall hospitalizations, bronchoscopic procedures, TB outpatient clinic (TBOC) of Vila Nova de Gaia/Espinho consultations, TB diagnosis and hospitalizations and laboratory identification of Mycobacterium tuberculosis complex over the first semesters of 2019, 2020 and 2021.
Results: Several measures were adopted by the Pulmonology Department of CHVNG/E in response to COVID-19 pandemic: reduction or suspension of all non-urgent clinical activity, implementation of tele-consultation as the favored mean of contact, reduction of time of physicians to activities of Pulmonology Department in order to integrate teams in COVID-19 wards, restriction of inpatients visits and reinforcement of personal protective equipment according to the instructions of the Portuguese General Health Direction. Over the first semesters of 2019 and 2020, we found an expected decrease in all sectors of activity of Pulmonology Department: overall hospital outpatient consultations (17.1%), day hospital (20.2%), overall hospitalizations (17.1%) and bronchoscopic procedures (36.5%). This reduction was accompanied by a decrease in the number of consultations at the tuberculosis outpatient clinic (TBOC) of Vila Nova de Gaia/Espinho (35.1%) and in laboratory identification of Mycobacterium tuberculosis complex at the Clinical Pathology Department of CHVNG/E (27.6%). Over the first semesters of 2020 and 2021, a reduction in the number of overall hospitalizations (31.7%) and consultations at the TBOC of Vila Nova de Gaia/Espinho (16.1%) was documented. However, we found an increase in pulmonology outpatient clinic consultations (21.4%), bronchoscopic procedures (45.0%) and laboratory isolation of Mycobacterium tuberculosis complex (19.0%). Despite the progressive reduction in the number of overall hospitalizations, we found a growth trend of the number of TB inpatients (n = 6, 2019; n = 11, 2020; n = 10, 2021), which could suggest a concerning increase in the severity of new cases of TB.
Conclusions: Our study presents the volume of inpatient and outpatient clinical activity of Pulmonology Department of CHVNG/E and trends in TB diagnosis and hospitalizations since the beggining of COVID-19 outbreak. As expected, an overall reduction in all sectors of acitivity was found after the first "Emergency State" declared in March 2020. In the first semester of 2021, we found a trend toward an increase in the outpatient consultations and bronchoscopic procedures, which most likely reflects an attempt to recover the usual levels of clinical productivity and compensate the diagnostic and therapeutic delay of all non-COVID-19 respiratory diseases. We found a trend toward an increase of TB hospitalizations, reinforcing the need of not neglect the allocation of adequate resources for diagnosis, treatment and prevention of TB, while fighting against COVID-19.

Keywords: *Tuberculosis. COVID-19. Healthcare utilization.*

PC 076. BCGITIS: A CLINICAL CASE

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Introduction: Intravesical instillation of the bacillus Calmette-Guérin (BCG) in the treatment of bladder carcinoma is highly effective, allowing the eradication of the residual tumor after resection, delaying disease progression, reducing the need for cystectomy and prolonging survival. Treatment is usually well tolerated, however local and systemic complications can occur. Some studies suggest the existence of an association between complications of intravesical instillation of BCG and a previous diagnosis of tuberculosis.
Case report: 72-year-old male, with a history of bladder carcinoma, underwent intravesical instillations of BCG between 2016 and 2019. In December 2020, he was submitted to a right orchidectomy for suspected testicular cancer. The histology of the surgical specimen revealed a necrotizing granulomatous inflammatory lesion. The patient denied a personal history of tuberculosis, as well as any suggestive symptoms, with the exception of occasional mucous productive cough. Due to the suspicion of genitourinary tuberculosis, an AFB test was performed on the surgical specimen, which was negative. Cultural examination was not requested. The patient was referred to the Centro de diagnóstico Pneumológico (CDP) in Lamego, and a Mycobacterium tuberculosis complex (MTC) nucleic acid amplification test (NAAT) was requested on the surgical specimen, which was positive. HRZE therapy was started on the presumption of probable BCGitis. Urine analysis was performed, and the cultural examination revealed the presence of AFB bacilli, however NAAT for MTC and non-tuberculous mycobacteria (GenoType CM) was negative. New urine samples were collected, whose cultural examination was negative. Pulmonary tuberculosis was excluded by means of sputum collection, with negative Ziehl-Neelsen stain, negative NAAT and cultural examination, and by imagiological study, which did not reveal compatible findings. The patient completed treatment with 183 DOT (108 HRZE and 75 HRE).
Discussion: Intravesical immunotherapy with BCG is an effective therapy but, although rarely, may be associated with complications that can appear days to years after instillation. A high index of suspicion is necessary for its diagnosis in patients undergoing this type of treatment. This case illustrates the importance of an adequate clinical history for the diagnosis of BCGitis, which is usually challenging due to the difficulty in obtaining positive cultural tests or NAATs. Tissue biopsies are a fundamental element, and it is crucial to send them for anatomopathological and cultural examination.

Keywords: *BCGItis. Tuberculosis. Bladder cancer.*

PC 077. TUBERCULOSIS IN THE AGE OF BIOTECHNOLOGY

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Introduction: Tuberculosis (TB), an infection caused by *Mycobacterium tuberculosis* complex (MTC), is one of the ten leading causes of death worldwide. It is estimated that 25% of the world population is infected with MTC and that 5-10% will develop the disease during their lifetime, a percentage that increases significantly in immunocompromised patients. We present two cases of TB after starting therapy with biotechnological agents (anti-TNFα).
Case reports: Case 1. Female, 82 years old, with a history of pulmonary TB treated in childhood, type 2 diabetes and rheumatoid arthritis. Medicated with adalimumab since 12/2019. She had a negative IGRA in 11/2019. In 12/2020, she started with dyspnea,

cough with mucous sputum, chest pain and asthenia. Analytically, she presented thrombocytosis, PCR 7.25 mg/dL and HIV negative serology. Chest-CT angiography showed an acute PE involving the left pulmonary artery, bilateral pleural effusion, bilateral centrilobular micronodules and mediastinal adenopathies. A thoracentesis was performed with pleural fluid compatible with exudate and a predominance of lymphocytes and a bronchoscopy with BAL. Both products with negative AFB and liquid culture positive for MTC at 21 days, monoresistant to streptomycin. He started therapy with HRZE, currently in the 5th month of treatment, already in the maintenance phase with HR, with clinical and radiological improvement. Case 2. Male, 64 years old, former smoker, with a history of Crohn's disease, treated with adalimumab since 06/2020. He had a negative IGRA in 01/2020. Reference to a contact with a co-worker with pulmonary TB 4 years before. After 1 month of therapy, he started with asthenia, dyspnea on exertion, anorexia and evening fever. From the investigation he performed stands out lymphopenia 730/uL, HIV negative serology and a positive IGRA. Chest-CT revealed right pleural effusion, mediastinal adenopathies and incipient micronodular pattern in the upper lobes. He underwent two diagnostic thoracenteses, with negative AFB smear and MTC PCR and pleural biopsies without granulomas or AFB. Two bronchoscopies with LBA were also performed, with negative culture. Eventually, a multisensitive MTC was isolated in the pleural fluid, confirming the diagnosis of pulmonary, intrathoracic lymph node and pleural TB. Medicated with HRZE, later switched to RZE/levofloxacin because of neurological toxicity of Isoniazid. Currently with 8 months of treatment and practically complete clinical and radiological resolution.
Discussion: The diagnosis of TB is often late. The population under biotech is particularly susceptible to developing TB due to the pivotal role of TNF in granuloma formation and development of an effective immune response. Screening for latent infection (TST, IGRA, imaging and investigation of epidemiological risk factors) is recommended before starting biotechnology. The treatment of latent TB reduces the risk of reactivation by up to 74%. However, studies show poor adherence to these recommendations, in most cases due to the use of inadequate screening tests, incorrect treatment or late initiation of treatment. Training in this area is, therefore, essential, given the growing use of these therapies.

Keywords: *Latent tuberculosis and biological therapy.*

PC 078. DETERMINING FACTORS ASSOCIATED WITH INHALED THERAPY ADHERENCE ON ASTHMA AND COPD: A SYSTEMATIC REVIEW AND META-ANALYSIS OF THE GLOBAL LITERATURE

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Introduction: Adherence to therapy has been reported worldwide as a major problem, and that is particularly relevant on inhaled therapy for Asthma and Chronic Obstructive Pulmonary Disease (COPD), considering its barriers and features. It was synthesized the global literature reporting the main determinants for adherence on these patients.
Methods: Searches were made in Cochrane Library, MEDLINE, EMBASE and ISI Web of Science databases. Analytical observational epidemiological studies (cohort, case-control and cross-sectional studies) were included, reporting association between any type of determinant and the adherence for inhaler therapy on Asthma or COPD. Random-effects meta-analysis were used to summarize the numerical effect estimates.
Results: 47 studies were included, giving a total of 54,765 participants. In meta-analyses, the significant determinants of adherence to inhaled therapy were: higher age [RR = 1.07 (1.03-1.10); I2 = 94; p < 0.0001] good disease knowledge/literacy [RR = 1.37 (1.28-1.47); I2 = 14; p = 0.33]; obesity [RR = 1.30 (1.12-1.50); I2 = 0; p = 0.37]; good cognitive performance [RR = 1.28 (1.17-1.40); I2 = 0; p = 0.62]; higher income [RR = 1.63 (1.05-2.56); I2 = 0;p = 0.52]; being employed [RR = 0.87 (0.83-0.90); I2 = 0; p = 0.76] and using multiple drugs/inhalers [RR = 0.81 (0.79-0.84); I2 = 0; p = 0.80]. Overall, the strength of the underlying evidence was only low to moderate.
Conclusions: Many determinants may be associated, either to better adherence, such as age, good disease knowledge/literacy, obesity, good cognitive performance and higher income; either to poor adherence, such as being employed or using multiple inhalers. Personalized interventions should be taken in clinical practice to address patient's adherence according to such features.

Keywords: *Asthma. COPD. Adherence. Inhalers.*

PC 079. BETREAT: A RETROSPECTIVE OBSERVATIONAL STUDY TO DESCRIBE THE CHARACTERISTICS, TREATMENT PATTERNS AND OUTCOMES IN PATIENTS TREATED WITH BENRALIZUMAB IN PORTUGUESE HOSPITALS

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Introduction: Benralizumab is indicated as an add-on maintenance treatment in adult patients with severe eosinophilic asthma inadequately controlled despite high-dose of inhaled corticosteroids plus long-acting beta-agonists. Benralizumab has been reimbursed in Portugal since May 2019 and, as such, there is a crucial need to generate local real-world evidence.
Objectives: (I) to describe baseline demographic and clinical characteristics of severe eosinophilic asthma patients treated with benralizumab. (II) to describe the background treatment patterns of severe eosinophilic asthma patients at baseline and after benralizumab initiation and treatment duration with benralizumab.
Methods: BETREAT is a real-world retrospective, observational study, based on secondary data collection from medical records and patient reported outcomes, from 17 investigational sites in Portugal. Inclusion criteria are adult patients with severe eosinophilic asthma who have initiated benralizumab treatment between July 2019 and October 2020. Data will be obtained for baseline (up to 12 months prior to treatment initiation or at first assessment in the asthma consultation if < 12 months), date of first benralizumab dose (index date) and at 3-, 6-, 12-, and 24-months follow-up visit.
Results: 85 patients will be enrolled in this study and retrospective data collection and analyses is ongoing. Demographic characteristics to be collected are: gender, age, body-mass index, smoking history, and age of asthma diagnosis. Patient-reported outcomes recorded at index date using ACT and CARAT scores will be analyzed. Clinical characteristics collected at index date to be analyzed are: blood eosinophil count, FeNO, lung function (FEV1), FVC, reversibility of FEV1, total IgE in peripheral blood, and skin PRICK test. The frequency of asthma exacerbations (overall, leading to emergency room visit, hospitalization and treatment with OCS) in the previous year to index date and the baseline key comorbidities (asthma related, OCS related and other) will be collected and analyzed. The medication history of baseline treatment patterns (type, doses, and treatment duration) up to index date will be collected and analyzed including: concurrent respiratory medication, OCS, and biologics. The proportion of patients with biologic discontinuation and reasons for discontinuation will be analyzed. The benralizumab treatment pattern will be characterized as follows: treatment duration, discontinuation rates and reasons for discontinuation, time to treatment discontinuation, and frequency and type of concurrent respiratory medication and background asthma medication.

Conclusions: The data collected with the BETREAT study will describe severe asthma patients treated with benralizumab and provide insights into benralizumab real-life treatment patterns in Portugal. It is imperative to generate real-world evidence to understand and describe benralizumab clinical outcomes, treatment patterns and in-depth description of the patients treated with benralizumab in Portugal. These data will generate evidence of benralizumab use and associated clinical outcomes outside a clinical trial setting. This study will also generate early insights into patients' treatment experience on benralizumab.

***Keywords**: Severe asthma. Benralizumab.*

PC 080. CONVENTIONAL PSYCHOEDUCATIONAL PROGRAMS VERSUS INTERACTIVE PSYCHOEDUCATIONAL PROGRAMS IN CHILDREN AND ADOLESCENTS WITH ASTHMA: SYSTEMATIC REVIEW

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Introduction: Asthma is characterized as being a chronic inflammatory pulmonary disease that can lead to structural and functional changes resulting from obstruction of airflow and bronchial hyperactivity. The hospitalization's recurrence of the pediatric population (ages ≤ 18 years) with asthma represents the majority of hospitalizations due to respiratory diseases in Portugal.
Objectives: To explore the psychoeducational programs currently implemented, to compare the effects of conventional psychoeducational programs versus interactive psychoeducational programs in children and adolescents with asthma, to identify the impact of this type of program in the pediatric population and finally, to define new strategic axes for clinical practice.
Methods: The online database PubMed and PEDro were used to carry out the research, from the month of November 2017 until the end of December 2017. A total of 107 studies were identified, of which only 7 studies were included in the review.
Conclusions: The present systematic review has shown some prevalence in the efficacy of interactive psychoeducational programs compared to conventional psychoeducational programs in the pediatric population with asthma. However, some limitations prevent to establish clearly scientific evidence.

***Keywords**: Asthma. Children and adolescents. Interactive psychoeducational programs. Conventional psychoeducational programs.*

PC 081. ASSESSMENT OF THE RESPONSE TO TREATMENT WITH MEPOLIZUMAB IN A COHORT OF PATIENTS WITH SEVERE ASTHMA

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Introduction: Patients with severe asthma, despite adequate treatment and good therapeutic adherence, have high rates of exacerbations and poor quality of life. Mepolizumab is an anti-IL5 monoclonal antibody approved for the treatment of severe eosinophilic asthma in step 5 of GINA. It showed the ability to change the rate of exacerbations in asthmatic patients with improvement in symptoms and quality of life.
Objectives: Evaluation of the response to treatment with mepolizumab in lung function tests (through FEV1, FVC and FeNO), analytical (peripheral blood eosinophils) and clinical (analysis of exacerbations).
Methods: Retrospective observational study of a cohort of patients with severe asthma who started treatment with Mepolizumab.
Results: A total of 28 patients were followed with a mean age of 55.1 years (minimum 20 years and maximum 78 years), mostly female patients (78.6% *versus* 21.4%). Most were patients with a diagnosis of non-allergic asthma (67.9%). At the time of Mepolizumab introduction, patients had a diagnosis of severe asthma defined by the GINA criteria and 42.9% were receiving low dose oral corticosteroid therapy. Evaluating functionally the patients before biological treatment, the mean FeNo (Fractional exhaled nitric oxide) of the patients was 60.2 ppb and in the first evaluation after starting therapy it was 58.8 ppb. This variation was not statistically significant. As for the functional respiratory tests, before the introduction of mepolizumab the mean value of FEV1 was 1.65 liters (66.3%) and in the post-treatment control it was 1.88 liters (77.1%) not statistically significant. As for FVC before starting treatment, the mean value was 2.61 liters (82.2%) and after treatment 2.83 L (91.3%), also without statistical significance. Analytically evaluating the patients for eosinophil values in peripheral blood, they had a mean of 793.6×10^9/L pre-treatment and 117.9×10^9/L in the post-treatment control. This difference was statistically significant (p value < 0.01). Prior to initiation of therapy with Mepolizumab, the mean number of acute exacerbations without hospital admission was 3.9 per patient and exacerbations requiring hospitalization was 0.4 per patient. Post-treatment and in the follow-up period, the mean number of exacerbations without admission was 0.5 per patient and with admission was 0.07. These differences were statistically significant (p < 0.05) for cases with and without hospitalization.
Conclusions: Mepolizumab is a treatment with the potential to provide symptomatic improvement in patients with severe asthma, allowing better control of the disease. In this study it was demonstrated that the number and severity of exacerbations and the number of eosinophils in peripheral blood were significantly reduced after initiation of treatment. Despite the functional improvement in these patients, this was not considered statistically significant.

***Keywords**: Severe asthma. Mepolizumab. Lung function. Eosinophils.*

PC 082. BIOLOGIC THERAPY FOR ASTHMA: EXPERIENCE FROM A SEVERE ASTHMA CENTER

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Introduction: Severe asthma affects 3.7% of adults and associates with higher healthcare costs, impairment of quality of life and medication side effects, particularly with chronic corticotherapy. Biologic therapy has represented a change in the course of severe asthma.
Objectives: Evaluation of the phenotypic characteristics, lung function, radiologic findings, therapeutic and disease control in patients with severe asthma medicated with biologic therapies.
Methods: Retrospective observational study revising the medical records of patients with severe asthma medicated with biologic therapies, followed in the asthma outpatient clinic from our Pulmonology Department, during October 2013 to December 2020.
Results: During this period, 45 patients were medicated with biologic therapies to asthma, 54% of whom with mepolizumab (46% at home, with the autoinjector), 33% with omalizumab and 13% with benralizumab. In three cases, therapy was suspended due to omalizumab side effects: two cases of severe arthralgias (associated with total alopecia in one case) and one case of serum sickness-like reaction. There was the need to exchange biologic therapy in two cases: omalizumab to mepolizumab due to arthralgias; and omalizumab to benralizumab, due to anaphylaxis to omalizumab. The mean age was 51 ± 14 years. Patients were mainly females (70%), Caucasians (91%) and non-smokers (84%). The most frequent comor-

bidities were: rhinosinusitis (n = 32) associated with nasal polyposis in 8 cases; gastroesophageal reflux disease (n = 20); obesity (n = 11); arterial hypertension (n = 11); and hiatal hernia (n = 8). All patients presented a Th2-high endotype (type 2 inflammation), with an eosinophilic phenotype in 37%, atopic phenotype in 23% and overlap eosinophilic and atopic phenotype in 40%. There were two cases of eosinophilic granulomatosis with polyangiitis, five cases of allergic bronchopulmonary aspergillosis and two cases of chronic eosinophilic pneumonia. All patients presented uncontrolled asthma before starting biologic therapy, after which 72% presented well controlled disease and 28% partially controlled. All patients receiving anti-IL5 and IL-5R presented > 150 eosinophils in peripheral blood (> 300 eosinophils in 97%). Patients with > 500 eosinophils seem to present an improved asthma control compared with patients with < 500 eosinophils (73% versus 63%). Concerning anti-IgE therapy, baseline total serum IgE > 500 UI/L was not associated with improved disease control after starting biologic treatment. There was a respiratory functional impairment in 80% of the patients, of whom 55% with moderate to severe obstruction; after biologic treatment, there was a functional improvement in 55% of the patients and normalization of the respiratory function in one third. The most frequent radiologic findings in the CT of the chest were: bronchial wall thickening (n = 20); bronchiectasis (n = 18); small airways disease (n = 12).
Conclusions: Biologic treatment played an important role in the symptomatic control of patients with severe asthma, which was acquired in 72%, as well as improvement in lung function, which normalized in one third of the patients. Although rare, and just identified in five cases, side effects from the biologic treatment should be monitored. More studies are necessary to identify biomarkers that predict greater response to treatment.

Keywords: *Severe asthma. Biologic therapy. Biomarkers. Phenotypes.*

PC 083. COMPARING ORAL CORTICOSTEROIDS USERS AND NON-USERS AMONG GINA'S STEP 3, 4 AND 5 PATIENTS: A CROSS-SECTIONAL STUDY IN PORTUGUESE COMMUNITY PHARMACIES (EMOCS STUDY)

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Introduction: Although treated with a medium- or high-dose ICS/LABA, some patients in GINA's higher treatment steps still experience episodes of poor asthma symptom control. These exacerbations often need treatment with oral corticosteroids (OCS). OCS have a significant side-effect profile either in short and long-term utilization, being associated with increased susceptibility to infections, osteoporosis, obesity, diabetes, heart failure and other systemic corticosteroid-related morbidities.
Objectives: To characterize and compare the OCS users and non-users in the population of adult asthma patients (≥ 18 years) treated with inhaled corticosteroids combined with long-acting beta-agonists (ICS/LABA), regarding the sociodemographic and clinical characteristics, as well as asthma treatment regimen and asthma control.
Methods: EmOCS is a cross-sectional study conducted in Portuguese community pharmacies affiliated to the National Association of Pharmacies (ANF). Data was collected through a two-part questionnaire: I) Paper-based interview delivered by a trained pharmacist, collecting data about patient sociodemographic characteristics and asthma treatment regimen, II) A telephone-based interview, that collected data about smoking history, comorbidities, BMI, history of exacerbations, asthma control (CARAT®), and asthma-related healthcare utilization in the previous 12 months. Patients were categorized as OCS users if they had at least one episode of exposure to OCS in the previous year (either chronic or acute users). The appropriate tests for mean and proportion comparisons between the OCS users and non-users were performed, considering a significance level of 0.05.
Results: Among the 347 eligible patients included in the study, 86 (24.8%) had been exposed to OCS in the previous 12 months, either as add-on controller therapy (n = 21, 6.1%) or exacerbation treatment (n = 65, 18.7%). Patients were mostly females (71.7% of non-OCS users; 70.9% of OCS users), with an average age of 56.3 years (SD = 16.2) in the OCS-exposed group, and 60.5 years (SD = 15.0) in the non-OCS users' group. There were no statistically significant differences between both groups regarding, sex, age, BMI, smoking history and ICS/LABA utilization (p > 0.05). The average number of comorbidities was similar between both groups (3.0 for non-OCS, and 3.3 for OS users), but we found significantly higher proportions (p-value < 0.05) of patients reporting conjunctivitis (33.3% *vs.* 18.6%), osteoporosis (33.3% *vs.* 16.6%), arthritis (19.1% *vs.* 8.5%), and gastrointestinal disease (20.6% *vs.* 10.1%) among those treated with OCS. A greater proportion of OCS patients reported having at least one unscheduled consultation (33.3% *vs.* 9.3%) or emergency room visit (32.1% *vs.* 12.1%) due to asthma, compared to non-OCS users (p < 0.0001). Regarding asthma control, the CARAT® test revealed a high proportion of patients with poorly controlled disease (score < 25) in both groups, although significantly higher in the OCS users' group (85.2% *vs.* 72.9% in the non-OCS group, p < 0.05).
Conclusions: Patients exposed to OCS among those on GINA'S higher treatment steps have poorer asthma outcomes than those not using OCS, in terms of disease control, health care resource utilization and OCS-related comorbidity profile.

Keywords: *Asthma. Oral corticosteroids.*

PC 084. QUALITY OF ASTHMA RELIEF THERAPEUTIC PRESCRIPTION IN A PRIMARY HEALTH CARE UNIT

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Introduction: Asthma is a public health concern that affects all age groups worldwide and whose prevalence has been increasing in many countries, with an estimated prevalence of 6.8% in Portugal. Exacerbations represent an acute or subacute worsening of symptoms and pulmonary function compared to the patient's basal condition, and may be the first manifestation. The 2019 update of the Global Initiative for Asthma (GINA) brought new updates regarding the pharmacological management of these patients. Noteworthy is the recommendation of inhaled corticosteroids (ICS) as a control therapy to reduce the exacerbation risk for ages above 12 years old, as well as the caution about the inherent risk concerning the isolated use of short-acting beta-agonists (SABA) as a relief therapy, as it should be replaced or associated with ICS from the earliest stages of the disease. The aim of this study was to assess the quality of the prescription of relief therapy for mild-to-moderate asthma in a Primary Health Care unit. Simultaneously, the analysis of demographic data, risk factors, pulmonary function tests, maintenance therapy for asthma and concomitant prescription of beta-blockers was carried out in the same sample.
Methods: Retrospective longitudinal study of internal evaluation that included all users enrolled in a healthcare unit, aged 12 years old and above, coded with asthma (R96 of the International Classification of Primary Care – ICPC-2) as an active problem. Those who had no relief therapy prescribed in the last 2 years, with severe form of asthma, simultaneously coded with Chronic Obstructive Pulmonary Disease or diagnosed with overlap syndrome and those

without regular follow-up in the study unit were excluded. Data was later analyzed using Microsoft Excel®, FileMaker Pro® and Jamovi®. **Results:** Of the four hundred and forty-seven users coded as asthmatics (3.55% of all patients enrolled in the studied health care unit), two hundred and seventy-one were included in the study after applying the above criteria. Most had no ICS included in relief therapy (51.8%), of which 87.8% were medicated with SABA alone. Almost half (45.8%) had no record of any previous spirometry. The most prevalent risk factors observed were allergic rhinitis (41.3%), obesity (26.9%) and smoking (13.7%). Discussion: The prescription of relief therapy for most users does not meet current international recommendations, increasing the risk of associated exacerbations, hospitalizations and mortality. It was also possible to assess the reduced codification of asthma when compared to the national prevalence, predicting a high proportion of unidentified patients; the poor assessment and/or reassessment of lung function with spirometry and the high prevalence of well-known modifiable risk factors, in which early medical intervention plays a major role. **Conclusions:** This study reinforces the importance of reviewing clinical practice in this area, in particular of family physicians, who are responsible for the majority of the diagnoses and longitudinal follow-up of most mild-moderate forms of asthma.

Keywords: *Asthma. GINA. Inhaled corticosteroid. Short-acting beta-agonists.*

PC 085. THE THERAPEUTIC SWITCH DILEMMA IN SEVERE ASTHMA

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The choice of biologic agent for severe asthma treatment is based on molecular targets and patient characteristics, using the currently available clinical, functional and inflammatory markers. The 2021 GINA report suggests a trial period of three to four months with an anti-IgE, anti-IL5, anti-IL5R or anti-IL4R agent, considering the possibility of switching in case of an unsatisfactory response evaluation. We performed retrospective analysis of the therapeutic switch made in 19 severe asthma patients, followed in a tertiary hospital (explained in table), focusing on the motives. Four of these patients switched therapeutics several times. The reasons for this decision were integrated in the individual context of each patient and included: adverse drug reactions (13%) or therapeutic failure (87%) (in functional improvement [21.7%], in exacerbation control [21.7%], in symptom control [43.4%] and/or by maintenance of high dose systemic steroids [47.8%]). The switching of biologic agents in the treatment of severe asthma patients was due, in our experience, primarily to therapeutic failure, while maintenance of high dose systemic steroids was one of the most frequent motives to take us to that conclusion. In 9 patients (47.3%) there was clinical gain with the therapeutic alteration. Four patients, still in the initial period of trial, have not yet been reevaluated after the therapeutic switch. This analysis takes us to conclude on the need for attempting for the best possible results for each patient, using the available therapeutic options, event tough these might not always be reachable with current alternatives.

Keywords: *Switch. Biologic agents. Severe asthma.*

PC 086. UNCONTROLLED ASTHMA BY... A BALL?

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Introduction: There are many factors that can be responsible for uncontrolled asthma symptoms or for exacerbations, which are not always easily identified. The most common include respiratory infections, exposure to allergens, therapeutic non-compliance or poor inhalation technique and co-morbidities. In the face of uncontrolled asthma, it is essential to recognize the possible agents involved, as it is only by acting on its correction that it will be possible to achieve control of the disease.
Case report: 75-year-old female patient with previous follow-up in a Pulmonology consultation due to mild asthma and allergic rhinitis. As she was fully controlled with fluticasone/salmeterol at a dose of 125/25 μg twice daily, she was discharged. She is again referred after 7 years for lack of symptom control. The patient, now 82 years old, presented with frequent bouts of wheezing, persistent dry cough, nasal obstruction and thick mucopurulent rhinorrhea. It was necessary to increase the dose of the inhaler to fluticasone/salmeterol 500/50 μg twice daily and to add montelukast, in addition to topical nasal corticosteroid and antihistamine therapy. Even so, complete control of symptoms was not achieved, maintaining frequent bouts of wheezing and dyspnea and requiring cycles of oral corticosteroids and an increase in the dose of inhaled corticosteroids. In addition to the revision of the inhalation technique, other possible causes for the lack of control of this previously well-controlled asthma were explored. Serial blood tests showed no increase in inflammatory parameters, the patient never had peripheral eosinophilia and total IgE measurements were always low. Heart failure and changes in thyroid function were excluded. She underwent empirical treatment for gastroesophageal reflux disease even though she didn't have compatible symptoms, with no effect. Respiratory function tests revealed reversible obstruction with FEV1 of 1,380 ml corresponding to 97% of predicted. Chest CT showed mild bilateral bronchiectasis, with no signs of mucoid impaction. The patient, however, began to report a new symptom: brownish rhinorrhea with a foul smell. CT of the paranasal sinuses was performed: "Subtotal filling of the left maxillary sinus by soft tissue density, with scattered images with calcium density, aspects sug-

			Initiated biologic agent, n (%)			
			anti-IL5		anti-IL5R	anti-IL4R
			Mepolizumab (n=7)	Reslizumab (n=3)	Benralizumab (n=8)	Dupilumab (n=5)
Suspended biologic agent, n (%)	anti -IgE	Omalizumab (n=15)	7 (30%)	2 (8,6%)	4 (17%)	2 (8,7%)
	anti -IL5	Reslizumab (n=1)	-	-	-	1 (4%) in SS
		Mepolizumab (n=7)	-	1 (4 %)	4 (17%) (includes 1 in SS)	2 (8,6%) (includes 2 in SS)

Table 1: Description of the therapeutic switch made between the available biologic agents. SS: subsequent switch.

Figure PC 085

gestive of chronic maxillary sinusopathy with fungal superinfection". The patient was then referred to the ENT and the fungal ball was surgically removed, isolating *Aspergillus fumigatus*. After surgery, almost immediate control of symptoms was achieved, enabling a rapid step-down of therapy to the initial doses of inhaled corticosteroids.
Discussion: Mycetoma or "fungal ball" is a commonly non-invasive form of fungal rhinosinusitis. It usually occurs in immunocompetent individuals, most often in the maxillary sinus. However, if a state of immunosuppression occurs, there may be progression to the invasive form, affecting the mucosa, bone and/or blood vessels. Treatment is usually surgical and, if there is complete removal of the fungal ball, systemic treatment is not indicated. This case illustrates the difficulty that we often have in clinical practice in identifying the causative agent of the exacerbation of asthma or the lack of control over symptoms, while alerting to a rare entity, that is potentially serious and treatable.

Keywords: *Asthma. Fungal ball. Mycetoma. Aspergiloma.*

PC 087. CAN ABDOMINAL SURGERY "CURE ASTHMA"?

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Case report: We report the case of a 65-year-old woman, a former smoker of 30 pack-years, with a history of urticaria and allergies to some antibiotics. In 2015, she started complaining of dyspnea, which led to hospitalization and a consequent diagnosis of asthma, having started inhaled corticosteroids. In the same year, she developed diarrhea and abdominal colic, leading to the diagnosis of Crohn's Disease (CD). She was started on mesalazine, later replaced by adalimumab in 2018. In 2020, the dose of adalimumab was increased due to poor disease control, and since then the respiratory complaints have worsened, with multiple exacerbations, characterized by dyspnea, wheezing and cough, requiring prolonged courses of oral corticosteroids. Chest CT showed tubular bronchiectasis in the lower lobes and two ground-glass areas in the right upper lobe. Analytically, she had eosinophilia (1,380/μL), slightly increased total IgE (152 U/mL) and negative PHADIATOP. Functional respiratory tests showed a decrease in MEF25 (59.7%), an increase in airway resistance (0.49 kPa/L/seg), a slight decrease in DLCO (69.8%) and a negative bronchodilation test. In April 2021, adalimumab was discontinued due to side effects of general malaise and nausea, with relief from coughing and wheezing. In June 2021, she underwent ileocecal resection due to fibrosing intestinal stenosis. After surgery, respiratory symptoms completely reversed, while still on inhaled corticosteroids but no longer with oral corticosteroids, and eosinophils decreased (770/μL). The integration of respiratory symptoms in the context of this patient's inflammatory bowel disease (IBD) raises two main diagnostic hypotheses: the pulmonary involvement of the IBD and the adverse reaction to adalimumab. Although rare, respiratory involvement has been on the list of complications of IBD since 1976, including interstitial pneumonitis, panbronchiolitis, pulmonary vasculitis, sarcoidosis, airway disease, among others. The main symptoms of small airways disease associated with IBD are cough and dyspnea and may appear before IBD. On the other hand, there are reports of cases of bronchial hyperreactivity and asthma secondary to adalimumab, some more than 1 year after its onset. Abbott Laboratories, who developed the drug, reported asthma as an adverse effect in 0.3% versus 0.1% in controls. A possible explanation is that CD is a Th1 disease, while asthma is a Th2 disease, and there may be reciprocal inhibition of the two inflammatory pathways. Thus, adalimumab, as an anti-TNFα, could allow the expression of the Th2 pathway. This hypothesis suggests a class effect, supported by reports of asthma secondary to infliximab and etanercept. As usual in Medicine, many situations have a multifactorial origin. Here, respiratory manifestations may have resulted from the combination of the disease itself with the treatment in a patient with the risk factor of smoking.
Discussion: We think this case is relevant for its rarity, regarding the pulmonary involvement in IBD, and asthma as an adverse reaction to adalimumab. It also raises the question of, in case of necessity to maintain adalimumab, how to optimize asthma therapy? The next step would be a biological but there is little literature on combining two biologicals.

Keywords: *Asthma. Adalimumab. Crohn's disease.*

PC 088. FUNCTIONAL IMPACT OF BIOLOGICAL THERAPY ON SEVERE ASTHMA

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Introduction: Biological therapy has revolutionized the control of patients with severe asthma and is being increasingly used. At Hospital Santa Maria there are currently 43 patients in Day Hospital in the Department of Pulmonology undergoing biological therapy for asthma. There was clinical improvement in all of them, with a significant reduction or even cessation of exacerbations and of the need for oral corticosteroids.
Objectives: The objective of this study was to analyze the impact of this therapy on bronchial obstruction assessed by spirometry, through the determination of FEV1 before and after the institution of biological therapy.
Methods: There are 24 patients on mepolizumab, with pre- and post-therapeutic respiratory functional assessment available in 13. 46% had a FEV1 increase of ≥ 20% (median 675mL). Of these, 100% were women, with a mean age of 50 years and a mean pre-therapeutic FEV1 of 43%. 38% had an increase in FEV1 < 20%. Of these, 80% were women, with a mean age of 62 years and a mean pre-therapeutic FEV1 of 63%. 15% had no increase in FEV1. Of these, 100% were men, with a mean age of 32 years and a mean pre-therapeutic FEV1 of 90%. There are 13 patients on omalizumab, with pre- and post-therapeutic respiratory functional assessment available in 7. 29% had a FEV1 increase of ≥ 20% (median 610mL). Of these, 50% were women, with a mean age of 54 years and a mean pre-therapeutic FEV1 of 82%. 29% had an increase in FEV1 < 20%. Of these, 100% were women, with a mean age of 63 years and a mean pre-therapeutic FEV1 of 70%. 43% had no increase in FEV1. Of these, 66% were women, with a mean age of 36 years and a mean pre-therapeutic FEV1 of 111%.
Results: There are 6 patients on benralizumab but only 1 has pre- and post-therapeutic respiratory functional assessment. This is explained by the fact that the use of benralizumab is more recent. The first patient started benralizumab in late 2019 and as the COVID-19 pandemic began shortly thereafter, the respiratory function laboratory was not able to provide as much response as previously. This patient had an improvement in FEV1 < 20% (130 mL), was a 27 year old female and pre-therapeutic FEV1 was 68%.
Conclusions: Although the sample is small and there are biases, namely because asthma is a fluctuating disease with inherent variations in spirometry, we can see that as a general rule, and especially for mepolizumab, for which we have more data, the best responders are the ones with a lower initial FEV1. This is not a surprise as those starting from a higher FEV1 have less room for improvement. In any case, it is a very satisfactory result as it shows significant functional recovery, in line with what is described in the literature, in addition to clinical improvement and quality of life. We also verified that the more responsive patients were mostly females over 50 years of age.

Keywords: *Asthma. Biologics. Respiratory function.*

PC 089. EPIDEMIOLOGICAL AND CLINICAL DESCRIPTION OF PATIENTS HOSPITALIZED WITH COVID-19 IN A NORTHERN PORTUGUESE HOSPITAL

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Introduction: The pandemic suffered by the new coronavirus SARS-CoV-2 has affected millions of people worldwide causing a serious economic, social and health crisis. This situation has affected Portugal very intensely, so the study of hospitalized patients with COVID-19 in Portugal is fundamental for an adequate management of health resources. This study aims to describe the epidemiological and clinical characteristics of patients hospitalized for COVID-19 in a hospital in Portugal during 2020.
Methods: This is a descriptive and retrospective study, which included 1110 patients hospitalised for COVID-19 in a hospital in northern Portugal, between January 1, 2020 and December 31, 2020. Cases were confirmed in real time by real-time polymerase chain reaction (RT-PCR) of nasal and pharyngeal swabs. The epidemiological, demographic and clinical characteristics of the patients were analysed , with evaluation of the severity and mortality rate and the treatment modalities adopted.
Results: Male subjects constituted 55% (n = 612) of the total. Median age was 73 (± 16.42) years. The most frequent comorbidities were: hypertension 58.29% (n = 647), obesity 25.32% (n = 281), cardiac arrhythmias 15.86% (n = 176), ischemic heart disease 10.18% (n = 113), previous stroke 10.09% (n = 112), chronic obstructive pulmonary disease (COPD) 8.92% (n = 99) and asthma 4.15% (n = 46). The individuals were classified according to the severity index as: 1 in 5.95% (n = 66), 2 in 23.15% (n = 257), 3 in 47.12% (n = 523) and 4 in 23.78 (n = 264). The respiratory support used was: no ventilatory support 24.33% (n = 270), low flow oxygen (≤ 15l/m) 50.81% (n = 564), high flow oxygen (>15l/m) 1.53% (n = 17), Non Invasive Ventilation (NIV) 2, 97% (n = 33), Helmet-CPAP 14.05% (n = 156), Helmet-BIPAP 0.54% (n = 6), Invasive Mechanical Ventilation (IMV) 5.23% (n = 58) and Extracorporeal Membrane Oxygenation (ECMO) 0.54% (n = 6). The average length of stay was 14.84 days. The mortality rate was 18.81% (95%CI 22.15;15.5) and the critical illness mortality rate was 22.22% (95%CI 16.29;28.15).
Conclusions: Our study confirms that older men with chronic diseases are more susceptible to the development of severe cases of infection, and the presence of comorbidities is an important risk factor for the clinical severity of COVID-19. Hypertension, obesity and heart disease were the most frequent risk factors for SARS-CoV-2 infection. Surprisingly, in our series, chronic respiratory diseases were not associated with the development of more severe forms of COVID-19. Clinical control of comorbidities and low-flow oxygen therapy were the most common interventions in most hospitalised patients, but for the most critical patients respiratory support with Helmet-CPAP is shown to be an effective therapy in the treatment of patients with COVID-19.

Keywords: *COVID-19. Respiratory support. Comorbidities. Helmet.*

PC 090. ANTI-COVID19 VACCINE RISK CONSULTATION - EXPERIENCE OF A RESPIRATORY ALLERGOLOGY UNIT

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Introduction: It is estimated that severe allergic reactions to anti-COVID19 vaccines occur at approximately 1.31 per 1,000,000 doses administered. Patients with a history of known allergy to one of the vaccine's excipients or a history of anaphylaxis to a previous dose of the vaccine against COVID19 should be referred for a vaccine risk consultation. Patients with a history of anaphylactic reactions to other vaccines, idiopathic anaphylaxis and patients with systemic mastocytosis should also be referred. The main excipients suspected of causing allergic reactions to these vaccines are polyethyleneglycol (Pfizer/BioNTech and Moderna), polysorbate (AstraZeneca and Johnson& Johnson) and trometamol (Modern). Patients stratified as High Risk for adverse vaccine reactions should be inoculated in a hospital setting.
Methods: A total of 250 patients were observed between April 19 and July 21, 2021, mostly women (83.2%; n = 208) with a median age of 65.6 years (minimum 23; maximum 96 years). The reasons for referring were: History/Suspected drug allergy (n = 141). History/suspicion of anaphylaxis after the 1st dose of the anti-COVID19 vaccine (n = 26). History/Suspected allergy to contrast products (n = 26). History of anaphylactic reaction to other vaccines (n = 30). History/Suspected Food Allergy (n = 11). Systemic mastocytosis (n = 5). History of idiopathic anaphylaxis (n = 3). Others (n = 8). Skin prick tests with PEG1500 were performed in 35 patients, according to a protocol of increasing concentrations at 0.1% (1 mg/mL), 1% (10 mg/mL) and 10% (100 mg/mL).
Results: Two patients tested positive at the maximum concentration, the remaining ones being negative. Most patients were instructed for vaccination in an extra-hospital environment without restrictions (n = 131), the rest were instructed for vaccination in a hospital environment with restrictions (n = 43), vaccination in an unrestricted hospital environment (n = 41) and out-of-hospital vaccination with restrictions (n = 35). To date, 78 vaccines have been administered in hospital, some patients with indication for premedication and fractional administration of the vaccine in 2 doses with an interval of 30 minutes. There were 6 adverse reactions during the surveillance period, all of them mild and resolved with medical treatment. The distribution of administered vaccines was as follows: Pfizer/BioNTech (n = 100), Johnson&Johnson (n = 74), Modern (n = 32), AstraZeneca (n = 15), awaiting vaccination (n = 24), refusal of vaccine (n = 5).
Conclusions: The anti-COVID19 vaccine risk consultation aims to identify patients at high risk of anaphylaxis to the main excipients of vaccines and guide them to administration in a hospital environment, avoiding the excipient involved. Most of the patients referred had suspicion of drug allergy (eg. allergy to beta-lactams and hypersensitivity to anti-inflammatory drugs), not being a contraindication for the administration of vaccines, nor does it imply administration in the hospital environment. The PEG1500 skin prick test is not available in most centers, but it is very useful both in confirming hypersensitivity to the excipient, as well as in ruling out increased risk for mRNA vaccines containing polyethyleneglycol. Most patients were indicated for vaccination in an out-of-hospital environment without the need for eviction of any of the vaccines. There were only 2.4% of adverse reactions to the administration of the vaccines, all of them mild.

Keywords: *Vaccine risk. COVID-19. Anaphylaxis. Polyethyleneglycol. Polysorbate. Trometamol. Skin prick tests.*

PC 091. PULMONARY THROMBOEMBOLISM IN PATIENTS WITH COVID-19 IN AN INTENSIVE CARE UNIT

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Introduction: COVID-19, a disease caused by the SARS-CoV-2 virus, is associated with a hypercoagulable state, increasing the risk of venous thromboembolism, namely pulmonary thromboembolism (PTE).

Tabela	
Análises laboratoriais	**Média (N=7)**
D-dímeros à admissão	**18969 ng/mL**
D-dímeros ao Dx TEP	67050 ng/mL
Fibrinogénio clauss	**415 mg/dL**
TP	14 seg
INR	**1**
aPTT	30 seg
Plaquetas	**171714 /mcL**
Troponina I	182 ng/L
NT-proBNP	**6488 pg/mL**
PCR	12 mg/dL
Procalcitonina	**0,4 ng/mL**
Ferritina	1409 ng/mL
IL-6	**961 pg/mL**

Methods: Retrospective study of patients admitted to an intensive care unit (ICU) with a diagnosis of COVID-19 between April 2020 and May 2021, with PTE confirmed by pulmonary computed tomography angiography (CTA).
Results: A total of 59 patients with COVID-19 were admitted to our ICU. 16 had a pulmonary CTA due to worsening respiratory failure, hypocapnia, tachycardia and/or hypotension. PTE was confirmed in 7 patients (incidence of 11.9%), corresponding to 43.8% of CTA. These patients were on average 67 years-old (31 to 86 years-old), with a male predominance (5 patients). PTE occurred, on average, 14 days after symptom onset, 11 days after hospitalization, and 8 days after ICU admission. 2 cases had proximal thrombosis, 1 lobar and 4 segmental. 4 patients had concomitant worsening of parenchymal involvement. 2 patients had signs of right ventricular dysfunction on transthoracic echocardiography. All patients had thromboprophylaxis with subcutaneous enoxaparin during hospital stay. Hypocoagulation was subsequently adjusted to enoxaparin in therapeutic dose (1 mg/Kg 12/12h), except in 2 patients with renal damage and 1 patient with heparin-induced thrombocytopenia who received fondaparinux. No patient met criteria for thrombolysis. TEP probability by Wells and Geneva score was moderate in all patients. Using the sPESI (Simplified pulmonary embolism severity index), 6 patients had PTE with a high risk of death and complications. All patients had positive age-adjusted D-dimers, with increase from the value at admission. Increased values of ferritin and IL-6 were also observed in all patients (table). Average BMI was 28 kg/m^2, with 5 patients with overweight or obesity. The most frequent comorbidities were diabetes mellitus (3), hypertension (3), dyslipidaemia (3) and osteoarticular diseases (3). 2 patients had immunosuppressive therapy (anti-TNF and IFN beta) and 1 had active neoplasia. All patients presented ARDS and 4 patients were with invasive mechanical ventilation at diagnosis. Other complications included shock requiring vasopressor (4) and kidney failure requiring haemodialysis (3). Patients with PTE remained, on average, 26 days in the ICU, versus an average of 11 days in the remaining ones. There were 5 deaths in patients with COVID-19 and PTE, representing a mortality rate of 71.4%, much higher than in patients without PTE (30.5%).
Conclusions: The incidence of PTE observed in this study is similar to the weighted average incidence reported in a recent meta-analysis (11.1%). (Ng et al., 2021). In addition to COVID-19, immobility, invasive mechanical ventilation, and comorbidities may have contributed to the thrombotic event. Higher mortality must be interpreted with care given the severity of respiratory and multiorgan dysfunction. PTE occurred in 7 patients with COVID-19, on average 8 days after admission to the ICU, despite standard thromboprophylaxis. Patients with PTE had a longer hospital stay and higher mortality.

Keywords: *COVID-19. Pulmonary thromboembolism. Thromboprophylaxis.*

PC 092. HIGH-FLOW NASAL CANNULA IN ICU PATIENTS WITH COVID-19 PNEUMONIA AND RESPIRATORY FAILURE

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Introduction: High-flow nasal cannula (HFNC) is an effective non-invasive respiratory support strategy for patients with COVID-19 and acute hypoxemic respiratory failure. However, concerns have been raised about identifying those failing HFNC since delay in intubation and institution of invasive mechanical ventilation (IMV) may be associated with worse clinical outcomes. ROX index can help identify patients at low and high risk of progression to IMV.
Objectives: Analyze the effectiveness of HFNC treatment and evaluate the accuracy of ROX index in predicting treatment failure.
Methods: Retrospective study of patients admitted to the intensive care service with COVID-19 and moderate to severe hypoxemic respiratory failure treated with HFNC between November 2020 and March 2021. ROX index ([SpO2/FiO2]/RR) was evaluated to predict the need for intubation and IMV.
Results: The study included 48 patients admitted for therapy with HFNC. Mean age was 60 ± 11 years and 67% were male. The mean PaO2/FiO2 ratio was 110 ± 35 mmHg (not possible to obtain information in 5 patients due to rapid clinical deterioration) and the mean duration of treatment with HFNC was 3 days (1-20 days). Of the total number of patients, 21% were successfully treated with HFNC, 12% escalated to non-invasive ventilation (NIV) therapy and 77% required intubation and IMV (67% after only HFNC failure and 10% after sequence of HFNC and NIV failure). The vast majority of patients with treatment failure and need of IMV (76%) experienced early failure (≤ 48 hours), while the remaining patients with late failure (> 48 hours) progressed to IMV after an average of 5 days (1.5- 13 days). A ROX index < 3.85 at 2, 6, and 12 hours after starting HFNC successfully identified patients in need of IMV (OR 8,308; 95%CI 1,557-44,320, p = 0.013). On the other hand, a ROX index ≥ 4.88 did not accurately identify patients at low risk of IMV (p < 0.05). With regard to hospital mortality, this was 9% in the group of patients with HFNC versus 32% in the HFNC group that progressed to IMV. There was a statistically significant difference in mortality between those with early HFNC failure and those with late failure (28% *vs*. 67%, p = 0.036).
Conclusions: The use of ONAF in patients with hypoxemic respiratory failure due to COVID-19 seems to reduce the need for intubation and IMV. However, late failure of this therapy is associated with a higher in-hospital mortality rate. The variation in the ROX index can be used at the patient's bedside as a monitoring tool in patients under ONAF, and in this study, a ROX index < 3.85 predicts the failure of this therapy and the need for intubation and IMV.

Keywords: *High-flow nasal cannula. COVID-19.*

PC 093. BAROTRAUMA IN PATIENTS WITH COVID-19 IN AN INTENSIVE CARE UNIT

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Introduction: About one-quarter of hospitalized patients with COVID-19 need to be admitted to an intensive care unit (ICU), most commonly due to acute respiratory distress syndrome (ARDS). Some studies describe a higher risk of pneumothorax and other forms of barotrauma in these patients compared to other causes of ARDS. Pulmonary barotrauma occurs during ventilation due to an increased transalveolar pressure with air leak to the tissues.
Methods: Retrospective study of patients admitted to an ICU diagnosed with COVID-19 and barotrauma between April 2020 and May 2021.
Results: Of the 59 patients admitted with COVID-19 in our ICU, 52.5% required invasive mechanical ventilation (IMV) and 20.3% underwent non-invasive ventilation (NIV). Barotrauma was identified in 5 patients (8.5%), including pneumothorax (4), subcutaneous emphysema (4), pneumomediastinum (3) and pneumoperitoneum (2) (figs.). These patients had a mean age of 64 years-old and 3 were female. Only one patient had history of smoking and none had known previous lung disease nor structural lung abnormalities. 4 patients had at least 1 major comorbidity, most commonly diabetes mellitus (3) and arterial hypertension (2). 3 patients were on IMV, with an average of 7 days between orotracheal intubation and barotrauma. In the previous 24 hours, patients were ventilated in volume-controlled, with a Vt of 6ml/kg of ideal weight, with a mean Plateau pressure of 31 cmH2O (table). 2 patients were ventilated non-invasively in CPAP for less than 24 hours when barotrauma was identified, with pressures between 10 and 14 cmH2O and different interfaces (face mask and helmet). 1 of these patients required IMV due to respiratory failure. 2 cases with pneumothorax required chest drainage. The remaining mantained vigilance and ventilation parameters were adjusted. Several complications were observed during hospitalization, namely opportunistic infections (3), shock requiring vasopressor (3), pulmonary thromboembolism (3), ventilator-associated pneumonia (2) and renal failure with renal replacement technique (2). Mean total duration of IMV was 19 days (2 to 48 days). Average length of stay in the ICU was 30 days, which is higher than patients without barotrauma (11 days). All the 5 patients with barotrauma died.

Tabela 1

VMI (24h antes)	Média (N=5)
PEEP	**11 cm H2O**
Pressão de pico	32 cm H2O
Pressão de platô	**31 cm H2O**
Compliance	28 ml/cm H2O
Volume corrente	**6 ml/Kg peso ideal**
Frequência respiratória	28 rpm
FiO2	**76 %**

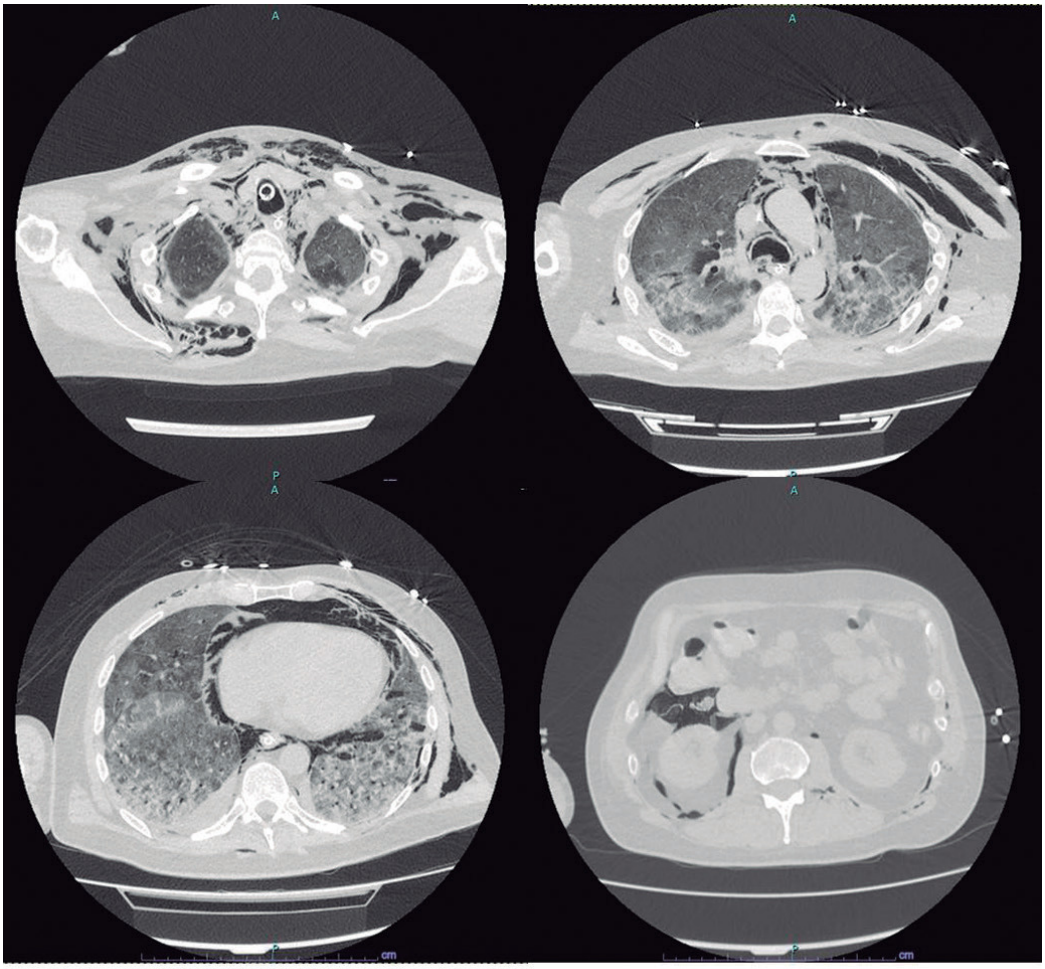

Fig.1 – Homem, 65 anos, sob VMI. Enfisema subcutâneo, pneumotórax, pneumomediastino e pneumoperitoneu.

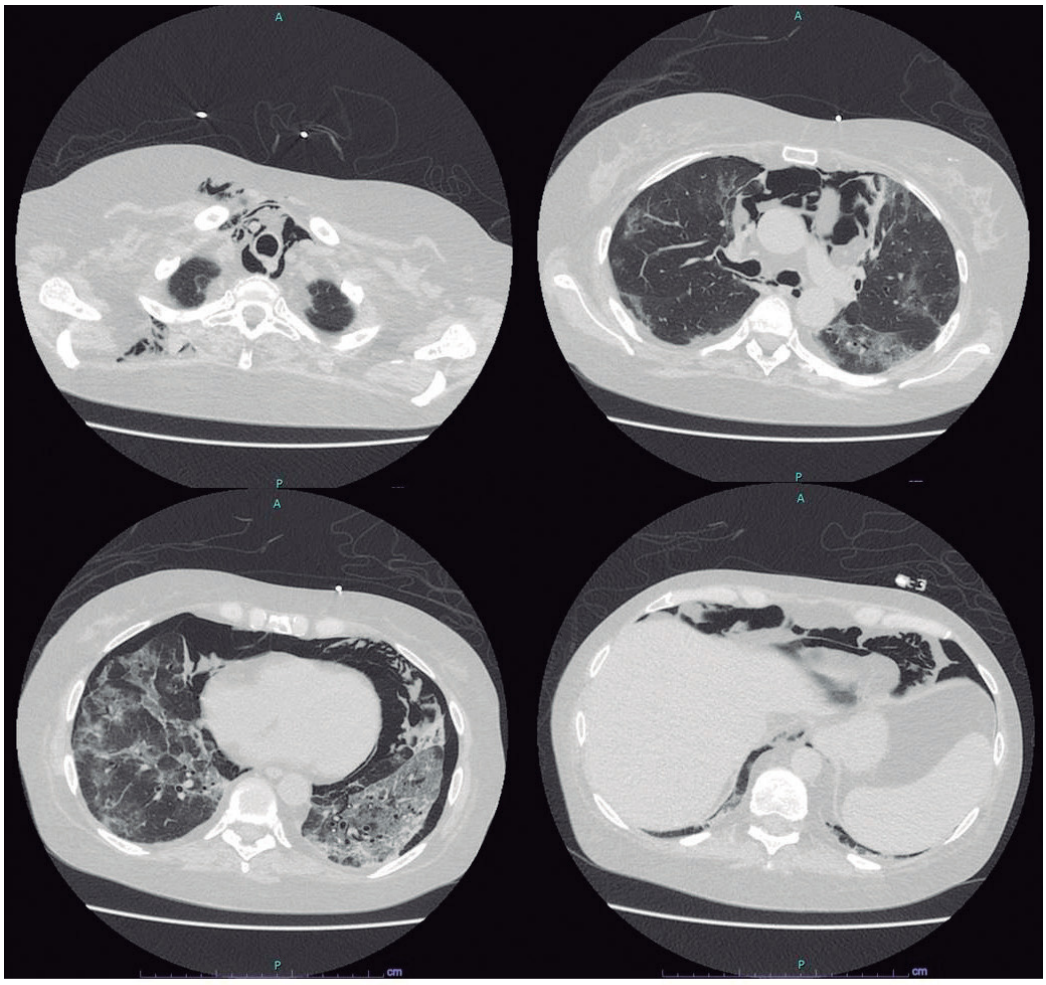

Fig.2 – Mulher, 48 anos, sob CPAP. Pneumotórax e pneumomediastino.

Figure PC 093C

Conclusions: The incidence of barotrauma in patients with COVID-19 is variable, but can reach 40%. This complication can occur even with protective ventilation and is associated with longer hospital stay and higher mortality. (McGuinness et al., 2020; Udi et al., 2021). Despite the high mortality observed, barotrauma does not seem to have caused dead directly, which may reflect the greater disease severity and greater susceptibility to complications. Barotrauma was observed in 5 patients with ARDS by COVID-19, 3 with IMV and 2 with CPAP. These patients had a longer hospital stay with multiple complications that culminated in death.

Keywords: *COVID-19. Barotrauma. Pneumothorax. Intensive care.*

PC 094. ANALYSIS OF MORTALITY PREDICTORS IN PATIENTS WITH SAS HOSPITALIZED DUE TO SARS-COV-2 INFECTION

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Objectives: Evaluate in patients with Sleep apnea hospitalized with SARS-CoV-2 infection, in 2020 and 2021, the characteristics and mortality predictors.
Methods: Retrospective study including patients with SAS, hospitalized with SARS-CoV-2 infection. We reviewed 1115 clinical processes. 79 of those patients needed to be hospitalized due to SARS-CoV-2 infection. We analyzed demographic data, apnea severity, adherence and mortality predictors. We used Microsoft Excel® and IBM SPSS Statistics v.23®.
Results: Of the 51 patients with OSAS hospitalized with SARS-CoV-2 infection, 74.5% were men, with a mean age of 68 years. 47% (n = 24) of patients had no treatment for SAS, 37.3% (n = 19) of patients were treated with CPAP, 11.8% (n = 6) with BIPAP, 1 patient with ASV and 1 with postural conditioning with tennis ball. The mean AHI of the studied patients was 33/h, and 39.2% (n = 20) with nocturnal hypoventilation, defined as peripheral oxygen saturation time below 90% of 20% or greater. Of untreated patients, 25.5% had moderate or severe SAS. Of patients under treatment with positive pressure, 41.2% (n = 21) had good adherence to therapy, defined by days of use of at least 70% and average daily use greater than 4 hours. The mortality rate in the study group was 15.7% (n = 8), with these patients having a mean age of 79 years old. When compared to the group of hospitalized patients who survived (n = 43), patients who died had only a statistically significant difference regarding the existence of CV disease ($p < 0.05$), with no significant difference regarding the cerebrovascular disease or age ($p > 0.05$). All patients who died were obese. Regarding the severity of SAS, all patients who died had moderate to severe SAS, with mean AHI of 47/h (*vs.* 31/h in patients who survived). Of studied patients 84.3% were obese (defined as BMI > 30 kg/m^2), 72.5% had hypertension, 51% had Mellitus Diabetes, 33.3% had heart disease and about 17.6% had a history of cerebrovascular disease. Of the 51 hospitalized patients, 92.2% required at least oxygen supplementation, 19.6% 19.6% re-

quired high-flow oxygen therapy, 27.5% were ventilated non-invasively and 13.7% required invasive ventilation. Of these last ones, only 1 patient died.
Conclusions: 15.7% of patients followed by SAS and hospitalized for SARS-CoV-2 infection died. All patients had moderate to severe SAS and a mean age of 79 years. The majority (75%) had cardiovascular disease. There was a statistically significant difference regarding the existence of CV disease and regarding the mean AHI, when compared with the group of patients who did not die, with no significant difference regarding age.

Keywords: *SARS-CoV-2. Sleep apnea syndrome. Mortality.*

PC 095. IMPAIRMENT OF LUNG FUNCTION IN INDIVIDUALS WITH PREVIOUS SARS-COV-2 INFECTION

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Introduction: The clinical spectrum of SARS-CoV-2 infection is broad. Lungs are the most affected organ by SARS-CoV-2, however, the lung function consequences are still unknow and the studies have not included patients with less severe disease. The aim of this study is to assess the function impact and factors related with impaired lung function in a sample of patients with all clinical spectrum of SARS-CoV-2 infection.
Methods: We included individuals with previous SARS-CoV-2 infection assessed in Pulmonology appointment at Hospital da Luz Lisbon between 1st November 2020 and 31st May 2021 who performed spirometry, plethysmography or determination of carbon monoxide lung diffusion capacity. Demographic, medical history information, smoking habits, first evaluation symptoms, SARS-CoV-2 alteration on follow-up chest CT scan and lung function were recorded based on medical records. FEV1, FVC, TLC and DLCO were considered impaired if < 80% of predicted. We compared individuals with impaired and preserved FEV1, FVC, TLC and DLCO. Pearson's chi-squared, t-Student or Mann-Whitney test were used according to variables. A significance level of 0.05 was considered.
Results: We included 365 individuals, from which 184 (50.4%) were male, with an average ± standard deviation age of 52.5 ± 14.8 years. Regarding to comorbidities, 82 (22.5%) were obese, 60 (16.4%) had asthma, 25 (6.8%) cardiopathy, 11 (3.0%) COPD/emphysema and none interstitial lung disease. Smoking habits were documented in 148 individuals, 101 (27.7%) former smokers. Severe or critical SARS-CoV-2 disease occurred in 104 (28.5%) patients. Fatigue was the most frequent symptom (159;43.6%), followed by cough (98;26.8%) and then dyspnoea -mMRC ≥ 2 - (83;22.7%). Of the 297 individuals who performed CT scan, 115 (38.7%) had CT abnormalities and the most common was ground glass opacity (95;82.6%). Impairment of DLCO (77.9 ± 15.5%) occurred in 187 (52.4%), of FVC (98.9 ± 15.2%) in 22 (6.0%) and of the FEV1 (99.8 ± 14.7%) and TLC (103.1 ± 14.9%) in 20 (5.5%) patients. Fourteen patients had a obstructive pattern, 19 a restrictive pattern and one a mixed pattern. Patients with reduced FEV1 had more frequently severe/critical disease (p = 0.007), were obese (p = 0.014), had cardiopathy (p = 0.017), COPD/emphysema (p = 0.001), chest CT scan alterations (p = 0.010) and were older (p = 0.002). Decrease of FVC was associated to severity of disease (p = 0.000), obesity (p = 0.035), dyspnoea (p = 0.035), CT scan abnormalities (p = 0.002) and age (p = 0.00). Impairment of TLC was related to gender (p = 0.007), disease severity (p = 0.000), CT scan abnormalities (p = 0.005) and age (p = 0.031). Reduced DLCO was associated to gender (p = 0.022), disease severity (p = 0.000), COPD/emphysema (p = 0.001), smoking habits (p = 0.030), dyspnoea (p = 0.011), CT scan abnormalities (p = 0.000) and age (p = 0.000). Cough and fatigue were not associated to impairment of lung function.
Conclusions: In this patient sample with all clinical spectrum of SARS-CoV-2 infection, impairment of DLCO was the most common lung function alteration. SARS-CoV-2 disease severity and follow-up CT scan abnormalities were associated with impairment of all evaluated lung function parameters. Cough and fatigue were not associated to lung function alterations. Dyspnea was associated only with decreased FVC and DLCO.

Keywords: *SARS-CoV-2 infection. COVID-19. Lung function.*

PC 096. COVID-19 WITH ORGANIZING PNEUMONIA FEATURES IN CHEST COMPUTED TOMOGRAPHY

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Introduction: COVID-19 chest computed tomography (CT) reviews indicate that many of these patients have radiologic changes resembling organizing pneumonia (OP). Corticosteroid therapy is the first-line therapy in OP, however, in the first months of the pandemic, its use was not recommended in COVID-19 patients.
Objectives: To evaluate functional and imaging data from patients presenting SARS-CoV-2 infection with OP features at chest CT.
Methods: Retrospective study conducted at a central, tertiary and university hospital, including adult patients admitted to the hospital with one positive result by RT-PCR nucleic acid assay for SARS-CoV-2 in nasopharyngeal swab and imaging findings suggestive of OP, between 1st March and 15th May 2020.
Results: A total of 125 patients presenting OP-like CT findings (median age = 72 years, 48.8% male), in median, 10 days after symptom onset, were admitted to the hospital. Overall, 91.2% (n = 114) of the patients were hospitalized due to respiratory failure and 10.4% (n = 13) went directly to an intensive care unit. None of the patients received corticosteroid therapy and 40.8% (n = 51) had concurrent non-viral respiratory infection. The in-hospital mortality was 8% (n = 10). Follow-up studies were done in 39.1% (n = 45) of the cases. First chest CT revaluation exams were performed, in median, 150 days following diagnosis and 35.6 % (n = 16) showed sequelae, which correlated with a longer period on invasive mechanical ventilation (p = 0.026). At 1-year follow-up, 56.3% (n = 9) of the patients still showed OP-like findings. Lung functional tests were normal in 94.6% (n = 35) of the patients.
Conclusions: In a cohort of patients with COVID-19 and OP-like findings at imaging not treated with corticosteroids, about one-third of patients had residual changes at follow-up CT and these were associated with severe disease at presentation.

Keywords: *Organizing pneumonia. COVID-19. Chest CT. Corticosteroids.*

PC 097. IMPACT OF COVID-19 ON LUNG FUNCTION IN PATIENTS WITH PNEUMONIA

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Introduction: About 20% of patients infected with SARS-CoV-2 will require hospitalization. There is currently a demand for studies that evaluate sequelae of COVID-19, including functional abnormalities. This study aimed to evaluate lung function in patients hospitalized with SARS-CoV-2 pneumonia, approximately 6 months after discharge.
Methods: We carried out a prospective study in which we evaluated the pulmonary function of 58 patients, admitted to Centro Hospitalar de Trás-os-Montes e Alto Douro with SARS-CoV-2 pneumonia between October 2020 and March 2021. Functional assessment was

performed approximately 6 months after hospital discharge (172 ± 74 days) in the lung function laboratory of this hospital. Statistical analysis was performed using SPSS Statistics® version 28. The study protocol was approved by our Ethical Board.

Results: We evaluated 58 patients, which characterization is summarized in table 1. The mean age was 64.9 ± 11.5 years. 59% patients had risk factors for progression to severe disease, the most common being diabetes mellitus (n = 20), followed by heart failure (n = 5) and COPD (n = 4). Most patients had severe disease criteria (64%, n = 37), as defined by Portuguese Direção Geral da Saúde. Two patients (3.4%) needed invasive mechanical ventilation, 5 (8.6%) high-flow nasal cannula (HFNC) (8.6%) and 4 (6.9%) non invasive mechanical ventilation. All patients underwent dynamic lung volumes assessment, of which 51 with evaluation of static lung volumes and 54 perfomed diffusing capacity for carbon monoxide (DLCO). Six months after discharge, 55% (n = 32) of patients had normal lung function. Descriptive analysis is summarized in the table. The most frequent change was decreased DLCO (18.5%, n = 10), followed by decreased FVC (17.2%, n = 10). The FEV1/FVC ratio was reduced in 15.5% (n = 9) of the patients and the FEV1 in 13.8% (n = 8). There was an association between disease severity and DLCO (p = 0.023). Severe disease criteria was associated with lower DLCO but within the normal range (87.8 ± 17.5, p = 0.028). There was also a significant association between FVC and disease severity (p = 0.009), with critical illness being associated with a decrease in FVC (72.4 ± 4.1). Regarding respiratory failure, patients requiring NIMV during hospitalization had a significantly lower FVC (72 ± 9.8, p = 0.04) when compared to patients who did not need supplemental oxygen therapy. There was a positive correlation between the minimum PaO2/FiO2 ratio and DLCO (r = 0.36, p = 0.008) and a weak negative correlation between the value of platelets and LDH at admission and DLCO (r = -0.287, p = 0.035 and r = -0.35 and p = 0.017 respectively).

Demographic and Clinical Characteristic of Participants		Lung function 6 months after discharge	
Masculine	39 (67%)	FVC	96 ± 15,5
Age (years)	64,9 ± 11,5	FEV1/FVC	80 [12]
BMI	31,5 ± 5,7	Total lung capacity	100 [32]
Smoking habits		Residual volume	100 [52]
Non smoker	26 (45%)	Airway resistance	96 [32]
Ex-smoker	31 (53%)	DLCO	93±19,5
Smoker	1 (2%)		
Risk factors for severe disease	59%	Total lung capacity	
Diabetes	20 (58,8%)	Normal	45 (88,2%)
Heart failure	5 (14,7%)	Decreased	6 (11,8%)
COPD	4 (11,9%)	Residual volume	
Asthma	2 (5,9%)	Normal	47 (92,2%)
Hepatic cirrhosis	1 (2,9%)	Increased	4 (7,8%)
Chronic kidney disease	1 (2,9%)	Airway resistance	
Immunosuppression	1 (2,9%)	Normal	42 (82,4%)
Disease severity		Increased	9 (17,6%)
Moderate	18 (31%)		
Severe	37 (64%)		
Critical	3 (5%)		
Admission PaO_2/FiO_2 ratio	286 [55]		
Minimal PaO_2/FiO_2 ratio	230 [74]		
Supplemental oxigen theraphy			
Not necessary	6 (10,3%)		
Nasal cannula/Venturi Mask	41 (70,7%)		
High flow nasal cannula	5 (8,6%)		
Non invasive mechanical ventilation	4 (6,9%)		
Invasive mechanical ventilation	2 (3,4%)		
Treatment during hospitalization			
Remdesivir	43 (74%)		
Dexamethasone	42 (72%)		

Table 1: Descriptive analysis of patients included in the study. Data presented as n (%), mean ± standard deviation, median [interquartile range]

Conclusions: Six months after COVID-19 infection, most patients had normal lung function. The most frequent alteration was decreased DLCO, which was related to the severity of the disease. Patients requiring NIMV had significantly lower FVC. There was a positive correlation between the minimum PaO2/FiO2 ratio and DLCO. Despite the small number of patients evaluated, the data found may prove to be important in the future approach to these patients. However, the fact that we do not know the baseline respiratory functional study of each patient is a limitation of this study.

Keywords: *COVID-19. Respiratory function tests.*

PC 098. ASSESSMENT OF THE IMPACT OF THE TYPE OF VENTILATORY SUPPORT ON POST-COVID SEQUELAE

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Introduction and objectives: SARS-CoV2 infection in its most severe forms can lead to respiratory failure and the need for ventilatory support. Initially, the recommended treatment for respiratory failure consisted of early intubation and invasive mechanical ventilation, however with the increase in number of cases and the evolution of the pandemic, non-invasive ventilation (NIV) and high-flow oxygen therapy (HFNC) emerged as other therapies that could be used in the treatment of these patients, reducing the need for invasive ventilation. However, several questions have arisen about the long-term consequences of the different types of ventilation. This study aims to characterize the population followed in the Post-COVID Consultation of a district hospital and to evaluate the possible association between the different types of ventilatory support used and post-COVID sequelae.

Methods: Retrospective study based on the sample of patients referred to the Post-COVID consultation between March and June 2021. Information collected through consultation of the clinical file and analyzed using SPSS® (variables: sociodemographic, disease severity and ventilatory support used, clinical, functional and imaging alterations during the consultation).

Results: 103 patients, 57.3% men and 42.7% women, with a mean age of 67.0 years (± 15.9). 90.3% were hospitalized, with an average hospital stay of 15.6 days (± 13.9). 79.6% of patients had severe disease, 10.7% moderate and 9.7% mild. Of the total number of patients evaluated, 11 (10.7%) did not need oxygen therapy/ventilatory support, 67 (65.0%) required oxygen therapy, 4 (3.9%) only needed NIV, 7 required NIV alternating with HFNC and 14 (13.6%) of invasive ventilation. The consultation took place an average of 96.5 days after discharge. From a clinical point of view, the dyspnea scale (mMRC) was evaluated before and after SARS-CoV-2 infection. A respiratory functional study was performed, which was normal in 75.7% of patients and showed obstructive ventilatory syndrome in 3.9% and restrictive in 10.7%. The diffusing capacity of carbon monoxide (DLCO) is reduced in 19.4% of patients. No statistically significant association was found between the type of ventilatory support used and worsening dyspnoea after COVID infection, functional changes or decreased DLCO. The imaging study was normal in 50.5% of patients and showed changes in 42.7% (16.5% with fibrotic changes and 15.5% with ground glass). Considering patients who needed some type of ventilatory support (only NIV, NIV alternating with HFNC and invasive ventilation), there was a significant association between the need for ventilatory support and the presence of pulmonary fibrosis (p = 0.002). However, when evaluating this relationship according to the type of ventilatory support used, although there seems to be a likely relationship with the existence of imaging changes, more specifically, with the presence of fibrosis, it was found that this association was not statistically significant.

Conclusions: There does not appear to be a significant association between the different types of ventilatory support and the clinical, functional and imaging consequences of SARS-CoV2 infection. More

studies with greater population representation are needed to identify potential predictors of post-COVID sequelae.

Keywords: *SARS-CoV-2. Post-COVID. Ventilation. Pulmonary fibrosis.*

PC 099. FACTORS ASSOCIATED WITH NON-INVASIVE POSITIVE PRESSURE VENTILATION FAILURE IN A COVID-19 INTERMEDIATE CARE UNIT

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Introduction: At the end of 2019, COVID-19 emerged as a new contagious disease, associated with variable degrees of acute respiratory failure. The use of non-invasive positive pressure ventilation (NIPPV) in COVID-19 patients with hypoxaemia refractory to conventional oxygen therapy is still under debate.
Objectives: The aim of this study is to evaluate the efficacy of NIPPV (CPAP, HELMET-CPAP or NIV) in COVID-19 patients treated in the dedicated COVID-19 Intermediate Care unit of Coimbra Hospital and University Centre (CHUC), Portugal, and to assess factors associated with NIPPV failure.
Methods: In this retrospective observational study, patients admitted to the Intermediate Care Unit of CHUC, from December 1st 2020 to February 28th 2021, treated with NIPPV due to confirmed COVID-19 were included. Data were collected on: demographic information, radiological and laboratory information, NIPPV parameters and medical treatment. The primary outcome was NIPPV failure defined as the occurrence of either orotracheal intubation (OTI) or death during hospital stay. Factors associated with NIPPV failure were included in an univariate binary logistic regression analysis. Factors with a univariate significance level of $p < 0.001$ were selected to enter a multivariate binary logistic regression model and odds ratios (OR) with 95% confidence intervals (CI) were calculated for each factor.
Results: A total of 163 patients were included, 64.4% were males (n = 105) and the median age was 66 years (IQR 56-75). Overall, ninety-seven patients (59.5%) were successfully treated with NIPPV, while failure was observed in 66 (40.5%) patients, of which 26 (39.4%) were intubated and 40 (60.6%) died during hospital stay. Highest CRP during hospital stay (OR 1.164; 95%CI 1.036-1.308) and morphine use for the management of respiratory distress or sedation (OR 3.974; 95%CI 0.539-29.302) were identified as independent predictors of OTI or in-hospital death after applying the multivariate logistic regression model. Adherence to prone positioning (OR 1.109; 95%CI 0.017-0.700) and a higher value of the lowest platelet count during hospital stay (OR 0.977; 95%CI 0.960-0.994) were associated with a favourable outcome.
Conclusions: In this sample of patients, highest CRP during hospital stay and morphine use were identified as independent predictors of OTI or death. Adherence to prone positioning and a higher value of the lowest platelet count during hospital stay were associated with a favourable outcome.

Keywords: *Non-invasive positive pressure ventilation. COVID-19. Acute respiratory failure. Critically ill patients.*

PC 100. CASES OF SARS-COV-2 INFECTION IN VACCINATED INDIVIDUALS - A RETROSPECTIVE REVIEW

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Introduction: COVID-19 is an infection caused by the SARS-CoV-2 virus, which started in December 2019 in Wuhan (China). Since then, this virus has spread exponentially throughout the world, being responsible for millions of deaths. Given the seriousness of the pandemic context in which we live, there was a need to produce vaccines that could prevent severe acute respiratory infection caused by SARS-CoV-2.
Vaccines are currently considered very promising, believed to be the "key" to controlling the pandemic. There are several vaccines to prevent SARS-CoV-2 infection, however, the main antigenic target for COVID-19 vaccines is the surface protein that binds to the angiotensin converting enzyme 2 (ACE2) receptor on host cells, inducing membrane fusion. COVID-19 vaccination is advised for all individuals eligible for vaccination (Grade 1B).
Objectives: To determine the number of COVID-19 positive cases in individuals with a complete vaccination schedule and assess the severity of the disease.
Methods: Retrospective analysis of epidemiological surveys carried out on all positive cases of SARS-CoV-2 infection in a specific ACES in Lisbon and Vale do Tejo region, during the month of July 2021.
Results: In July 2021 4507 cases of SARS-CoV-2 infection were diagnosed, and only 50 patients had a complete vaccination schedule, which corresponds to about 1.109% of positive cases. Of these 50 patients, 26 were female and 24 were male, most of these patients had completed the vaccination schedule for more than 3 months and in most cases the disease was mild.
Conclusions: The results obtained, despite the limitations of the study, seem very promising, and are in agreement with the scientific literature. With the analysis of these results, it appears that, on the one hand, the percentage of cases of infection in vaccinated people is low and, on the other hand, it appears that most positive cases have mild disease. Although SARS-CoV-2 infection can occur in vaccinated individuals, the risk is substantially lower, so vaccination of eligible individuals is highly recommended.

Keywords: *SARS-CoV-2. Vaccination.*

PC 101. EPIPERICARDIAL FAT NECROSIS: AN UNKNOWN DIAGNOSIS

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Introduction: Epipericardial fat necrosis is a benign and self-limited condition of unknown cause with a good prognosis, which is more frequent in previously healthy patients. Clinically, it presents as an acute left pleuritic chest pain, which often leads the patient to the Emergency Department.
Case report: The authors present the case of a 23-year-old male, smoker (5 pack-year), previously healthy. He went to the Emergency Department with a left pleuritic chest pain for 5 days, worsening with deep breathing and Valsalva maneuver. It was not associated with trauma and did not present any other related symptoms. The patient had no relevant epidemiological contacts. Clinically, he was apyretic, eupnoeic breathing room air, with a peripheral oxygen saturation of 96%, blood pressure 102/54 mmHg, heart rate 77/min. Cardiac and pulmonary auscultation was normal. The arterial blood gases, breathing room air, were normal. Laboratory tests: Hb 16.4 g/dL; leucocytes 7,400/uL; neutrophils 4,630/uL; platelets 151,000; INR 1.17; D-dimers 0.79 ug/mL; Troponin T < 3 ng/L; CK 94 U/L; c-reactive protein 0.470 mg/dL. The chest X-ray presented no pulmonary consolidation, pneumothorax or pleural effusion. Electrocardiogram: sinus rhythm, heart rate 65/min, QTc 376 ms, with no signs of acute myocardial ischemia. A CT angiography of the chest was performed, with no signs of pulmonary embolism, presenting necrosis of the epicardial fat of the left cardiophrenic angle, which was confirmed by MRI. The patient was medicated with ibuprofen and pantoprazole, with a progressive symptomatic improvement in four weeks. He was asymptomatic in the follow-up appointment at a two months period.
Discussion: This case aims to highlight the diagnosis of epipericardial fat necrosis as a rare and frequently unknown clinical condi-

tion, which should be taken into account in the differential diagnosis of chest pain, mainly in previously healthy patients. It can mimic emergent conditions such as as pulmonary embolism, acute coronary syndrome or acute pericarditis. The diagnosis is confirmed by CT of the thorax or MRI. The treatment is supportive and usually includes non-steroidal anti-inflammatory drugs.

Keywords: *Epipericardial fat necrosis. Chest pain.*

PC 102. A RARE CASE OF HEMOPTYSIS

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Introduction: Hemoptysis is a clinically significant and frequent symptom in Pulmonology whose diagnostic march is particularly challenging due to its numerous etiologies and underlying geographic variation. Its etiology is often associated with an unfavorable prognosis and therefore the exhaustive search for an accurate diagnosis is essential. However, a significant number of cases (5-40%) remain as idiopathic hemoptysis.
Case report: The authors present the case of a 60 year old male patient, autonomous, ex-smoker of 20 pack-year, with a personal history of arterial hypertension, type 2 diabetes, chronic sinusitis and bipolar disease, who was submitted to cholecystectomy by gallstones at 58 years of age. A computed tomography scan of the thorax and abdomen revealed a pleural effusion of small volume on the right, with atelectasis of the posterior basal segments of the right lower lobe of the lung, and densification of the juxta-capsular plane posterior to the right lobe of the liver, with inflammatory densification of adjacent structures, thickening of the right gerota band and of the locoregional muscular planes, findings compatible with a subphrenic abscess. He underwent bronchoscopy, without alterations, and observation by an otorhinolaryngologist, without evidence of hemorrhagic points. After several hospitalizations and antibiotic therapy cycles, and because the subphrenic abscess was still present, with coughing and hemoptysis, he underwent an initial eco-guided drainage of the subphrenic collection and, subsequently, laparoscopic drainage of the abscess, with initial improvement of the complaints. However, there was a new recurrence of the infection and hemoptysis, with recurrence of the subphrenic abscess on radiological control, so the abscess was drained by laparotomy, with complete resolution of the subphrenic abscess and without new episodes of hemoptysis.
Discussion: This case reports a rare etiology of hemoptysis in a patient with pulmonary complications from a subphrenic abscess. Despite the favorable outcome, this case highlights the importance of persisting in the search for the origin of this symptom.

Keywords: *Hemoptysis. Subphrenic abscess.*

PC 103. SHRINKING LUNG SYNDROME

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Introduction: Shrinking lung syndrome is a very rare pulmonary complication of autoimmune diseases, seen in about 1% of patients with systemic lupus erythematosus (SLE).
Case report: 29-year-old woman, smoker (5UMA), history of SLE and recent hospitalisation for SARS-CoV-2 pneumonia. Usual medication included prednisolone 7.5 mg id, azathioprine 50 mg id, hydroxychloroquine 400 mg id and esomeprazole 20id. The patient was referred to the emergency department for chest pain, dyspnoea at rest (mMRC4) and cough with mucous expectoration. Hemodynamically stable, satO2 95% on room air. Pulmonary auscultation with decreased vesicular murmur at the right base. Arterial blood gas analysis was normal. Analytically only C-reactive protein was increased (134 mg/L). Chest X-ray revealed hypotransparency at the right base with apparent homolateral deviation of the trachea. Chest CT showed not only consolidation of the middle lobe but also of the basal and external segments of the right lower lobe, with air bronchogram, conditioning the rise of the homolateral hemidiaphragm, findings suggestive of atelectasis. Amoxicillin/clavulanic acid and azithromycin were started, the immunosuppressive medication was suspended, given the probable infectious context, and the patient was admitted to the Pneumology ward with a diagnosis of right lower lobe pneumonia. Flexible bronchoscopy was performed over the following 72 hours, and only inflammatory signs were found at the entrance level of the middle lobar bronchus and the segmental levels of the right lower lobar bronchus. Bronchial secretions were sent for cytology, bacteriology, BK, SARS-CoV-2 and TAAN for *Mycobacterium tuberculosis*. All investigations were negative. After 10 days of antibiotherapy, the same hypotransparency of the right lung base persisted, corresponding to atelectasis. A chest ultrasound revealed decreased mobility of the diaphragm. Given the lack of radiological response to treatment, it was suspected that, in addition to bacterial infection, atelectasis of the middle and lower right lobes was associated with SLE itself, a rare entity called shrinking lung syndrome. The patient underwent respiratory function tests that revealed a severe restrictive ventilatory disorder (FVC: 23%, FEV1: 25.4%, FEV1/FVC: 96.25%, TLC: 53.8%, ITGV: 74.3%, RV: 127.3%, PIM: 42.6%, PEM: 48%) and chest X-ray showed an increase of both hemidiaphragms, suggesting bilateral diaphragmatic paresis. Following this worsening, it was decided to increase immunosuppression, starting azathioprine 150id, and the patient was referred to the Ventilotherapy and Rheumatology appointments. Non-invasive ventilatory support (EPAP 4 cmH2O; IPAP 12 cmH2O; RR 12 cpm) and biological therapy (belimumab ev) were started. After 3 months, another chest CT was performed, showing a reduction of the atelectatic component of the right lung and a clear improvement in respiratory symptoms.
Discussion: Shrinking lung syndrome should be considered as a diagnostic possibility especially in patients with dyspnoea and/or pleuritic pain not explained by other causes, with a history of autoimmune disease, diaphragmatic elevation, progressive decrease in lung volumes and restrictive pattern in respiratory function tests. Given its rarity, there is a lack of literature regarding the therapeutic approach. In this case, the patient was already under corticotherapy, so our intervention (besides supportive treatment) consisted in the therapeutic optimisation of the underlying disease.

Keywords: *Shrinking lung syndrome. Diaphragmatic paresis. Systemic lupus erythematosus.*

PC 104. IMMUNOGLOBULIN G4-RELATED DISEASE: NOT ALL LUNG MASSES ARE CANCER

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Introduction: Immunoglobulin G4-related disease (IgG4-RD) is an immune-mediated fibroinflammatory disease that most commonly affects the salivary glands, pancreas and gallbladder, but can affect several organs, including the lung. The current clinical case describes an IgG4-RD with pulmonary involvement at diagnosis.
Case report: A 37-year-old male was referred to the Pulmonology consultation, by his general practitioner, due to right anterosuperior chest pain and sporadic dry cough for 2 months. The patient also had right shoulder pain during this period, interpreted as tendinitis and was treated with non-steroidal anti-inflammatory drugs, steroids and local hot massage. There were no changes in shoulder radiography and computed tomography (CT). The chest pain progressively worsened and, after one month, a chest X-ray was requested, which detected an hypotransparency in the right upper

lobe, described on the subsequent chest CT scan as an anterior paramediastinal subsegmental consolidation of the right upper lobe of 3.5 × 2 × 3.3 cm. The patient worked as a warehouse coordinator and had previously been a baker, went to the gym regularly and lived in a rural area with contact with dogs, chickens and rabbits. He was an ex-smoker for two years (five packs per year), had no other medical history and was not on chronic medication. The physical examination did not show any alterations. FDG positron emission tomography showed a voluminous hypermetabolic lesion, with ill-defined limits, centered on the right anterior chest wall/mediastinum, with involvement of the anterior extremity of the first rib/costocostal joint, the inferior and medial extremities of the right clavicle and the anterior segment of the right upper lobe, suggestive of a high-grade malignant neoplastic lesion. He did a transthoracic biopsy. The histology revealed fragments of fibroadipose tissue with dense plasmocytic infiltrate with IgG4 expression in more than 50 plasma cells/high magnification field. Serum IgG4 was normal and total IgG, IgA and C3 were slightly increased. The autoimmune study was only positive for p-ANCA (1/80), but with negative MPO and PR3. Pain was controlled with tapentadol 100 mg 12/12h and there was a spontaneous total remission of the pulmonary component of the lesion after five months. The patient was referred to the Internal Medicine consultation and is in the disease stratification stage without directed treatment.
Discussion: IgG4-RD is a group of rare diseases that often present with tumor masses and/or painless enlargement of multiple organs. The serum IgG4 level is typically high, but not always. Symptoms depend on the affected organ but are insidious and not associated with fever. Pulmonary involvement specifically can be asymptomatic or cause dyspnea, cough or chest pain with pleuritic characteristics. Diagnosis usually requires biopsy, exclusion of neoplastic etiologies and treatment with corticosteroids or rituximab seeks to reduce inflammation, induce remission and preserve affected organ function.

Keywords: *Autoimmune diseases. Immunoglobulin G4-related disease. Lung mass.*

PC 105. AN UNCOMMON PLEURAL EFFUSION

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Introduction: Pleuropancreatic fistula (PPF) is a rare complication of chronic pancreatitis. Right pleural effusions secondary to PPF are atypical (up to 76% of the cases present with only left hemithorax involvement.
Case report: A middle-age men with history of chronic alcoholic pancreatitis presented in the emergency department with pleuritic right chest pain, dyspnea and anorexia. Blood analysis documented leukocytosis and elevated levels of pancreatic lipase (149 U/L), pancreatic amylase (157 U/L) and reactive C protein (182 mg/L). Chest radiograph showed a right pleural effusion and a thoracocentesis was performed. Pleural fluid analysis documented an exudate with elevated amylase levels (2,480 U/L). Computed tomography (CT) of the chest and abdomen with intravenous contrast showed a right loculated effusion and a fistulous tract with fluid and gas extending from the pancreatic head into the right pleural space, transposing the right hemidiaphragm. The patient was hospitalized and empiric antibiotherapy and fasting were implemented. Three days later, endoscopic retrograde cholangio-pancreatography (ERCP) documented a stenosis of the proximal portion of the main pancreatic duct and a fistula connecting this duct and right pleural cavity. A pig-tail drain was placed in the cephalopancreatic portion of the pancreatic duct. The patient completed three weeks of antibiotherapy with piperacillin-tazobactam. He showed symptomatic improvement and was discharged. In the follow-up after 6 months, the patient remained asymptomatic and CT revealed a small right pleural effusion, but no evidence of residual fistula.
Discussion: Since PPF is uncommon, the management remains controversial. ERCP has emerged both as a diagnostic and therapeutic modality in selected patients. Surgical treatment usually is the last therapy strategy, after medical and endoscopic treatment.

Keywords: *Pleuropancreatic fistula. Pleural effusion.*

PC 106. AGREEMENT BETWEEN THE PHYSICAL ACTIVITY INTENSITY LEVEL OBTAINED BY DIFFERENT OUTCOME MEASURES IN PEOPLE WITH COPD

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Introduction: Intensity of physical activity (PA) must be measured to confirm that people with chronic obstructive pulmonary disease (COPD) meet PA recommendations and ensure participants' safety. Quantifying the oxygen consumption (VO2) is the gold standard outcome measure to assess single free-living PA intensity. Nevertheless, several other outcome measures that are more economic, simpler and user-friendly than VO2 have also been used to assess a single-free living PA-related intensity, namely heart rate (HR) or dyspnoea Borg score. Different methodologies will probably yield different PA intensity levels, but this is yet unknown. This systematic review aimed to explore the agreement between the intensity level obtained by different outcome measures assessing the same single free-living PA.
Methods: A systematic search was conducted in May 2020 on PubMed, Scopus, Web of Science, Cochrane Library and EBSCO. We included original studies on COPD, assessing single free-living PAs-related intensity (individual types of PAs, which were performed by participants at their own pace within a restricted period of time, and pertained to leisure, occupation, home or transport PAs) and reporting on at least two of the following outcome measures: %VO2peak, %VO2reserve, %HRpeak, %HRreserve, metabolic equivalent task [METs], dyspnoea, perceived exertion or fatigue scores on the Borg 0-10 or 6-20 scales, or walking speed. Each single free-living PA had its intensity categorised as light, moderate or vigorous, following the cut-offs proposed by the American College of Sports Medicine and World Health Organization (table). Agreement was calculated as: number of agreements between two measures [same intensity level]/number of comparisons using both measures*100. In case of no agreement, we determined which outcome measure yielded the highest intensity using this formula: number of comparisons where the outcome measure had the highest intensity/number of comparisons where there was no agreement*100.
Results: Nineteen studies, enrolling 574 people with COPD (65 years, 61% men, 53% FEV1pp) were included. Percentages of agreement varied between 0 to 100% (table). %VO2 peak and %VO2 reserve consistently yielded the highest intensity level. Therefore, we can infer that PA-related intensity assessed with Borg scores, %HR reserve and METs was underestimated. Nevertheless, these results should be interpreted with caution, as 8 of the 18 comparisons were performed using only one study.
Conclusions: There is inconsistency among the PA intensity levels elicited by different outcome measures. Cut-offs points regularly used in healthy people to categorise PA intensity may not be suitable for people with COPD, hence, future studies developing specific cut-offs for COPD and formal guidelines on how to accurately measure single free-living PAs-related intensity in people with COPD are urgently required.

Keywords: *Chronic obstructive pulmonary disease. Physical activity. Intensity. Outcome measures. Free-living.*

Table 1: Percentage of agreement between the different outcome measures (n=19).

Outcome measures compared (number of studies used)		% of agreement	Outcome measure assigning the highest intensity
$\%VO_{2peak}$	$\%HR_{peak}$ (n=4)	76	50% VO_{2peak} / 50%HR_{peak}
	METs (n=1)	0	100% VO_{2peak}
	Dyspnoea Borg (n=7)	17.4	
	Fatigue Borg (n=4)	13.3	
	RPE Borg (n=1)	40	
$\%VO_{2reserve}$	$\%HR_{reserve}$ (n=1)	25	100% $VO_{2reserve}$
	Dyspnoea Borg (n=1)	25	
$\%HR_{peak}$	Dyspnoea Borg (n=3)	30	100% HR_{peak}
	Fatigue Borg (n=1)	0	
	RPE Borg (n=2)	36.4	
$\%HR_{reserve}$	Dyspnoea Borg (n=2)	100	NA
METs	Dyspnoea Borg (n=2)	60	50% dyspnoea Borg / 50% METs
	Walking speed (n=1)	0	100% METs
Dyspnoea Borg	Fatigue Borg (n=9)	88.5	100% dyspnoea Borg
	Walking speed (n=3)	66.7	
Fatigue Borg	METs (n=1)	75	100% fatigue Borg
	Walking speed (n=2)	100	NA
RPE Borg	Walking speed (n=1)	100%	NA

Note: Cut-offs used to categorise physical activities intensity – light: %VO2peak≤45; %VO2reserve≤39; %HRpeak≤63; %HRreserve≤39; METs≤2.9; dyspnoea/exertion/fatigue Borg 0-10 scores≤3 or Borg 6-20 scores≤11; and walking speed≤4.7km/h; moderate: 46<%VO2peak<63; 40<%VO2reserve<59; 64<%HRpeak<76; 40<%HRreserve<59; 3<METs<5.9; 4<dyspnoea/exertion/fatigue Borg 0-10 scores<6 or 12<Borg 6-20 scores<13; and 4.8km/h<walking speed<7.2km/h; and vigorous: %VO2peak≥64; %VO2reserve≥60, %HRpeak≥77; %HRreserve≥60; METs≥6; dyspnoea/exertion/fatigue Borg 0-10 scores≥7 or Borg 6-20 scores≥14; and walking speed≥7.3km/h. The Borg 0-10 and 6-20 scores were analysed together.
Legend: HR –heart rate; NA – not applicable; METs – Metabolic equivalent tasks; RPE – rate of perceived exertion; VO_2 –oxygen consumption.

Figure PC 106

PC 107. WHAT'S THE IMPORTANCE OF THE "SAW-TOOTH SIGN" IN PREDICTING OBSTRUCTIVE SLEEP APNEA?

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Introduction: The "saw-tooth sign" in spirometry is associated with redundant upper airway tissue and snoring, but its predictive value for identifying obstructive sleep apnea (OSA) is disputed.
Objectives: To assess the prevalence of OSA in patients with the "saw-tooth sign". To compare patients with "saw-tooth sign", with and without OSA, regarding demographic characteristics, clinical presentation and pulmonary functional tests.
Methods: Retrospective study of patients with the "saw-tooth sign" followed at our outpatient clinic for sleep disorders between January/2018 and June/2021. The "saw-tooth sign" was elected after observation by a cardiopulmonologist and confirmation by a pulmonologist.
Results: 54 patients were included, 42 (77.8%) had OSA and 12 (22.2%) didn't. The results are sumarized in the table.
Conclusions: In our study there was a high prevalence of OSA in patients with the "saw-tooth sign" (77.8%); the majority of patients were male, with higher values of BMI and cervical perimeters, and lower values on epworth sleepiness scale. The evaluation of pulmonary functional tests can be an useful ally in the earlier suspicion of OSA. Continuing this study will help to understand the clinical impact of these findings.

Keywords: *Obstructive sleep apnea. Epworth sleepiness scale. Saw-tooth sign.*

PC 108. PULMONARY FUNCTION TEST AFTER SARS-COV-2 PNEUMONIA REQUIRING HOSPITALIZATION: THE EXPERIENCE OF A TERTIARY HOSPITAL

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Introduction: The lung is one of the main organs affected by COVID-19. As already described for SARS-CoV-1 and MERS-CoV infections, there are several international studies suggesting that patients recovered from COVID-19 may have respiratory functional abnormalities, even after acute illness.
Objectives: To characterize the functional abnormalities present in the lung function test (LFT) performed in the first months after hospital discharge due to SARS-CoV-2 pneumonia and, also, to assess the existence of risk factors, both for the patient and for the clinical course of the disease, which may be related to the functional abnormalities.

Tabel 1 – Caracteristics of "saw-tooth sign" patients.

	With OSA 42,0 (77,8)	Without OSA 12,0 (22,2)	*p*-value
Sex, male	28,0 (66,7)	2,0 (16,7)	**0,003***
Age, years	55,9 ± 10,6	52,2 ± 15,6	0,336
Smoking habits, no smoker	22,0 (52,4)	7,0 (58,3)	0,715
BMI	33,7 ± 7,2	28,4 ± 3,8	**0,013***
Stop Bang questionair	4,0 ± 1,5	3,0 ±1,5	0,065
Epworth spleepiness scale	10,2 ± 6,5	13,2 ± 4,2	0,078
Cervical perimeter	41,1 ± 4,1	36,9 ± 4,0	**0,026***
Mallampati	2,7 ± 0,8	2,5 ± 1,4	0,735
Clinical evaluation			
Snoring	30,0 (71,4)	9,0 (75,0)	1,000
Apneas witnessed	17,0 (40,5)	6,0 (50,0)	0,722
Excessive daytime sleepiness	21,0 (50,0)	9,0 (75,0)	0,070
Functional evaluation			
FVC (% of predicted)	95,8 ± 16,8	104,2 ± 15,5	0,125
FEV_1 (% of predicted)	97,1 ± 18,6	100,7 ± 15,7	0,535
FEV_1/FVC (% of predicted)	80,8 ± 6,1	79,1 ± 7,0	0,411
Sleep study			
AHI (events/ hour)	22,2 [11,7 – 37,5]	1,6 [0,9 – 3,4]	**<0,001***
AI (events/ hour)	9,1 [4,6 – 20,0]	0,2 [0,0 – 1,1]	**<0,001***
$SatO_2 < 90\%$	19,0 [2,8 – 77,0]	0,4 [0,0 – 12,6]	**<0,001***
$SatO_2$ minimum	79,0 [73,0 – 83,0]	87,0 [81,8 – 91,0]	**<0,001***
OSA severity		n/a	n/a
Mild	12,0 (28,6)	n/a	n/a
Moderate	17,0 (40,5)	n/a	n/a
Severe	13,0 (31,0)	n/a	n/a

Data are present as n (%), mean ± standard deviation or median [range];. n/a – not applicable; $^*p < 0,05$;

Figure PC 107

Methods: Retrospective observational study including adults hospitalized for SARS-CoV-2 pneumonia and who, after discharge, were followed up in an outpatient clinic. Data were collected from the consultation of hospital clinical files and were analyzed using Excel and SPSS.

Results: 108 patients hospitalized between March 3, 2020 and March 14, 2021 were included, 65% of them men and 35% women, with a mean age of 61 years. Sixty-two percent were non-smokers, 34% ex-smokers and 4% active smokers. Most patients had some comorbidity: 64% had hypertension, 44% obesity, 25% type 2 diabetes mellitus, 6% chronic obstructive pulmonary disease and 4% asthma. Regarding the presentation of COVID-19, the most common symptoms were fever (77%), cough (65%), dyspnea (46%) and myalgia (42%). Regarding the functional respiratory assessment, 14%, 13% and 12% of patients had TLC, FEV1 and FVC, respectively, below 80% of predicted value. Six percent, 13% and 6% had FEV1, TLC and FVC values, respectively, below the lower limit of normal. The most prevalent functional abnormality was the decrease in DLCO, documented in 48% of patients, 52% of them men. This decrease correlates negatively and with statistical significance with the value of d-dimers (R -0.171, p-value 0.014) and c-reactive protein (R -0.167, p-value 0.014) at hospital admission; but there is no statistically significant correlation with the admission ferritin value (p-value 0.634), with the days of invasive mechanical ventilation (p-value 0.771) or with the days of high-flow cannula (p-value 0.319). Fifteen patients (14%) had obstructive ventilatory disorder (10 of these patients were smokers or ex-smokers) and 14% had restrictive ventilatory disorder.

Conclusions: Our study reveals, as has also been suggested by other international studies, that after hospital discharge due to SARS-CoV-2 pneumonia, there is persistence of respiratory functional abnormalities, with the reduction in DLCO being the most common one. This reduction correlates negatively and with statistical significance with the value of d-dimers (as evidenced in other studies and in patients without documented pulmonary embolism) and c-reactive protein on admission. Thus, more studies and larger samples are needed to better characterize these changes and so that biomarkers of patients who will need functional surveillance can be safely identified.

Keywords: *Spirometry. Plethysmography. COVID-19.*

PC 109. ANTI-KU POSITIVE CONNECTIVE TISSUE DISEASE AND ITS ASSOCIATION WITH PULMONARY VASCULAR DISEASE

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Introduction: Antibodies formed against the Ku protein (a DNA-binding protein) are found in association with a variety of connec-

tive tissue diseases, as systemic sclerosis, systemic lupus erythematosus, as well as multiple inflammatory myopathies. Cohorts of patients with this antibody positivity have been found to exhibit a higher prevalence of certain symptoms, such as dysphagia and sicca syndrome. Anti-Ku positivity has also been hailed as a possible explicative cause for a fraction of idiopathic pulmonary artery hypertension, in likely association with inflammatory myopathies or connective tissue diseases.
Case report: A 72-year-old female patient presented to the Pulmonology consult for exertional dyspnoea lasting for 4 months, as well as nocturnal paroxysmal dyspnoea, peripheral oedema, and paradoxical dysphagia. There were no complaints of cough, sputum, wheezing, photophobia, photosensitivity, aphtous ulcers or Raynaud's phenomenon. The physical examination showed absence of digital clubbing as well as a normal cardiopulmonary auscultation. A transthoracic ultrasound obtained by the patient's general practitioner showed a pulmonary artery systolic pressure (PSAP) of 40 mmHg, a mild mitral insufficiency, left atrial dilation, and a light pericardial effusion (8 mm). Blood work-up showed an erythrocyte sedimentation rate of 42 mm/h, an AKIN 1 acute kidney injury, normal creatine phosphokinase, and an active urinary sediment with exuberant erythrocyturia. Positivity was found for anti-nuclear antibodies, namely anti-Ku, in a titre of > 1:1,280. Anti-double stranded DNA (anti-dsDNA) was negative, as were the remainder specific antinuclear antibodies, infectious serologies, and Schistosoma spp. testing. Lupus anticoagulant was positive, but anti-beta-2-microglobulin and anti-cardiolipin were negative. Lung function testing was unremarkable, as was the ambient air arterial blood gas sample. The 6-minute walk test was stopped at 210 m for dyspnoea, but showed no significative desaturation. The chest radiograph showed ectasis of the right pulmonary artery and cephalization of the bronchovascular markings bilaterally. A ventilation/perfusion scintigraphy was obtained, which showed segmental bilateral multifocal pulmonary thromboembolism, with a reduced compromise of the overall lung perfusion (11%). The patient was hypocoagulated with rivaroxaban 20 mg id and remains in follow-up for the suspicion of systemic sclerosis, at moment without criteria for diagnosis.
Discussion: The presence of paradoxical dysphagia led to the widening of the blood work-up to include auto-immunity directed at testing for connective tissue diseases and to the performing of ventilation/perfusion lung scintigraphy to survey pulmonary embolism or its sequelae. The findings of an elevated PSAP, perfusion defects, an active urinary sediment, acute kidney injury, paradoxical dysphagia, anti-dsDNA negativity and anti-Ku positivity strongly suggest a connective tissue disease, namely systemic sclerosis. Anti-Ku positivity has been studies as a possible explicative cause for a fraction of idiopathic pulmonary artery hypertension, possibly associated with inflammatory myopathies or connective tissue diseases. The patient's hypocoagulation with rivaroxaban may need to be revised in accordance to the confirmation or exclusion of anti-phospholipid syndrome.

Keywords: *Anti-Ku. Connective tissue disease. Pulmonary hypertension. Pulmonary thromboembolism.*

PC 110. PROSTANOIDS IN PULMONARY HYPERTENSION GROUP 2: THREE CASE REPORTS

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Introduction: Pulmonary hypertension (PH) is a common complication in advanced chronic lung disease. There are no therapies approved to date for group 3 patients. The treatment of hypoxia and underlying disease is crucial and those with criteria should be referred for lung transplantation as early as possible. Prostanoids are potent pulmonary vasodilators. Due to the possible increases in ventilation/perfusion mismatch, there is a fear of worsening hypoxemia in its use. We report three cases of severe group 3 PH medicated with prostanoids.
Case reports: Case 1. A 59-years-old woman with scleroderma and interstitial pulmonary involvement (NSIP pattern), presenting pulmonary restriction (FVC 73%, TLC 66%, DLCO 28%). Functional class II, 220m (with 5 L/min of oxygen) in the 6-minute March Test (PM6). Right heart catheterization (CAT) presented precapillary PH with PmAP 46 mmHg and CI 2.0 L/min/m^2. He started sildenafil. Subsequent follow-up was irregular, reassessment was delayed, revealing marked worsening. Bosentan and iloprost were associated with slight improvement, without worsening hypoxemia, however the patient died. Case 2. 82-years-old man with extensive pulmonary emphysema, DLCO of 40%. Functional class III and walked 120 m in PM6. Right CAT showed precapillary PH with PmAP 44 mmHg, RVP 10.7 uWood and CI 1.9 L/min/m^2. He started sildenafil and bosentan. In the reassessment maintained functional class III, the distance in PM6 was 140m (with O2 at 10L/m), the PmAP was 53 mmHg but with a reduction of PVR to 6.1 uWood and an increase in CI to 3.1 L/min/m^2. Due to the improvement of some hemodynamic parameters, iloprost was associated with echocardiogram stabilization. The patient died due to pneumonia few months after therapeutic adjustment. Case 3. 61-years-old woman with COPD and emphysema (FEV1/FVC 63%, FEV1 71%, DLCO 27.5%). Functional class III and walked 254m in PM6. In the right CAT, precapillary PH with PmAP 46 mmHg, RVP 26.4 uWood and CI 1.2 L/min/m^2. He started sildenafil and bosentan with maintenance of functional class, but improved distance in PM6 (286m) and hemodynamics (PmAP 38 mmHg, RVP 28.4 uWood and CI 2.6). Selexipag was associated with benefit, however progression of right cardiac dysfunction and death occurred despite intravenous epoprostenol trial. The three patients had hypoxemic respiratory failure with indication for oxygen therapy. There were no significant adverse effects of prostanoids in any patient, including worsening hypoxemia.
Discussion: in Case 1 (scleroderma) there may be significant vascular component (group 1), despite interstitial disease. The difficulty in properly classifying these patients may delay the progression of therapy. In Cases 2 and 3, hemodynamic changes with severe PH were not justified by respiratory disease, with evidence of improvement in PM6 and hemodynamics with prostanoid therapy. Current recommendations suggest an individualized approach in reference centers of patients with severe group 3 PH and, ideally, their inclusion in clinical trials. In a small number of patients, where vascular disease is a dominant component, vasodilator therapy, and specifically prostanoids, may take place. Research is needed so that we can increasingly guide this group's approach on robust scientific evidence.

Keywords: *Pulmonary hypertension. Group 3. Chronic pulmonary disease. Prostanoids.*

PC 111. A PHASE 3, RANDOMIZED, DOUBLE-BLIND, ACTIVE COMPARATOR CONTROLLED, LOT-TO-LOT CONSISTENCY STUDY TO EVALUATE THE SAFETY AND IMMUNOGENICITY OF V114 IN HEALTHY ADULTS ≥ 50 YEARS OF AGE (PNEU-TRUE)

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Introduction: Pneumococcal disease (PD) remains a public health priority despite significant reduction in burden of disease associated with widespread use of pneumococcal conjugate vaccines (PCVs). An increase in PD caused by non-vaccine serotypes has been

Table: OPA Geometric Mean Titer Ratios at Day 30 following Vaccination (Per-Protocol Population)

	V114 Lot 1 vs. V114 Lot 2	V114 Lot 1 vs. V114 Lot 3	V114 Lot 2 vs. V114 Lot 3
	V114 Lot 1 n= (686-693) V114 Lot 2 n= (690-693)	V114 Lot 1 n= (686-693) V114 Lot 3 n= (684-688)	V114 Lot 2 n= (690-693) V114 Lot 3 n= (684-688)
Serotype	GMT Ratio (95% CI)	GMT Ratio (95% CI)	GMT Ratio (95% CI)
1	0.99 (0.83, 1.18)	1.04 (0.87, 1.24)	1.05 (0.88, 1.25)
3	0.85 (0.75, 0.97)	0.92 (0.81, 1.05)	1.08 (0.95, 1.23)
4	0.82 (0.70, 0.97)	1.00 (0.85, 1.18)	1.21 (1.03, 1.43)
5	0.84 (0.70, 1.02)	1.00 (0.83, 1.20)	1.18 (0.98, 1.42)
6A	0.96 (0.82, 1.12)	0.95 (0.82, 1.12)	0.99 (0.85, 1.16)
6B	0.96 (0.82, 1.12)	1.01 (0.86, 1.18)	1.05 (0.90, 1.23)
7F	0.82 (0.72, 0.93)	0.89 (0.79, 1.01)	1.09 (0.96, 1.24)
9V	1.01 (0.88, 1.16)	0.98 (0.85, 1.12)	0.97 (0.84, 1.11)
14	0.94 (0.81, 1.10)	1.15 (0.99, 1.34)	1.22 (1.05, 1.43)
18C	1.10 (0.96, 1.26)	1.15 (1.00, 1.31)	1.04 (0.91, 1.19)
19A	0.90 (0.79, 1.02)	0.97 (0.85,1.10)	1.08 (0.95, 1.22)
19F	0.92 (0.81, 1.05)	0.94 (0.82, 1.07)	1.01 (0.89, 1.15)
23F	0.92 (0.77, 1.10)	1.04 (0.87, 1.24)	1.13 (0.95, 1.35)
22F	0.95 (0.81, 1.11)	0.98 (0.84, 1.14)	1.03 (0.88, 1.21)
33F	1.00 (0.86, 1.16)	1.05 (0.91, 1.22)	1.05 (0.90, 1.22)

Footnotes: GMT ratio and 95% confidence interval (CI) are estimated from a constrained longitudinal data analysis (cLDA) model. vs.=versus, n=number of participants contributing to the analysis from across all 15 serotypes.

Figure PC 111

observed in many countries worldwide. V114 is a 15-valent, adjuvanted investigational PCV for the prevention of PD containing the serotypes in licensed PCV13 plus 2 additional serotypes (22F and 33F) that significantly contribute to PD burden. This phase 3 study evaluated the safety, tolerability, and immunogenicity of 3 lots of V114 in healthy adults.

Methods: Adults ≥ 50 years of age in generally good health and/or with stable chronic medical conditions (n = 2,340) were randomized 3:3:3:1 to receive V114 Lot 1, V114 Lot 2, V114 Lot 3 or PCV13. Randomization was stratified by age (50–64 years, 65–74 years and ≥ 75 years). Safety was evaluated as the proportion of participants with adverse events (AEs). Pneumococcal serotype-specific opsonophagocytic activity (OPA) and IgG were measured prior to vaccination and 30 days postvaccination (Day 30). Equivalency of serotype-specific vaccine-induced OPA responses at Day 30 was evaluated across 3 lots of V114.

Results: The overall proportions of participants with solicited injection site and systemic AEs were comparable across the 3 lots of V114 and no vaccine-related SAEs were reported. All 3 lots of V114 met equivalence criteria, as measured by the serotype-specific OPA GMTs for the 15 serotypes in V114 at 30 days postvaccination. For each pairwise lot-to-lot comparison, the lower and upper limits of the 95%CI of the GMT ratios were within 0.5 to 2.0 for all 15 serotypes (table). Serotype-specific IgG GMC and OPA GMT responses at 30 days after vaccination were comparable in the V114 (combined lots) and PCV13 groups for the 13 shared serotypes, and higher in the V114 group for the 2 unique serotypes.

Conclusions: V114 is generally well tolerated with an overall safety profile that is consistent across manufacturing lots and generally comparable to PCV13. Further, the immunogenicity profile of V114 is consistent across manufacturing lots. This study is in support of licensure and use of V114 for the prevention of PD in adults.

Keywords: *Pneumococcal disease.*

PC 112. SHOULD SARS-COV-2 TAKE THE BLAME

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Case report: Female, 39 years old, beautician, ex-smoker with a history of lupus, obstetric antiphospholipid antibody syndrome, Hashimoto's thyroiditis and depression. Medicated with rituximab, leflunomide, hydroxychloroquine, levothyroxine, fluoxetine, buspirone and ASA. Diagnosed with COVID-19 20 days before admission to the emergency department due to worsening dyspnea. A CT scan of the chest was performed, showing consolidations and diffuse ground glass opacities. The patient was hospitalized and started dexamethasone, cotrimoxazole, prophylactic enoxaparin and leflunomide was suspended. The patient had a prolonged hospitalization with persistent dyspnea associated with respiratory failure and with multiple infectious complications: D10 of admission, D30 of symptoms: negative microbiological and immunological study, anigo-CT showing worsening of the lung opacities- started empirical piperacillin/tazobactam; D24: a bronchoscopy was performed, BAL with 34% lymphocytes and HSV1 positive - started acyclovir; D45, D21 of acyclovir - negative immunological and microbiological study, CT-scan of the chest with ground-glass opacities, reticulation and bronchiolectasis - performed bronchoscopy, BAL with 75% lymphocytes, with negative microbiological study; D67: again with fever and worsening of respiratory failure with superimposed chest CT scan - collected septic screening and started empirical imipenem. Isolation of pseudomonas aeruginosa in sputum - already under antibiotic therapy; Access to D22 BAL cytology result with fungal structures compatible with *Aspergillus* - started voriconazole. During the entire hospitalization the patient had a positive SARS-CoV-2 PCR, with specific IgG and IgM negative. A cultural study of SARS-CoV-2 was carried out, which was positive. Treatment with convalescent

plasma was performed on the 80th day with a gradual favorable evolution. The patient was discharged 94 days later and is currently in a pulmonology appointment. Immunocompromised patients with infectious lung involvement are always a clinical challenge. The presence of SARS-CoV-2, a virus whose complex behaviour and pathophisiology isn't yet fully understood, increases the difficulty of their clinical management. This case leads us to consider the role of this infection in immunosuppressed patients and reinforces the importance of not refusing the possibility of the presence of concomitant pathogens.

Keywords: *SARS-CoV-2. Immunosuppression.*

PC 113. WHEN COVID19 DOES NOT COME ALONE – A CASE OF INVASIVE PULMONARY ASPERGILLOSIS AFTER SARS-COV-2 PNEUMONIA

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Introduction: Pulmonary aspergillosis can have multiple manifestations depending on the basal immune status of the patient in question. The invasive forms of Aspergillus' infection (invasive pulmonary aspergillosis – IPA) can be highly lethal and generally occur in immunocompromised patients. Viral pneumonias can create susceptibility to fungal superinfections and SARS-CoV-2 infection does not seem to be an exception.
Case report: We present the case of a 63-year-old male, with past medical history of Behçet disease and auto-immune hemolytic anemia for which he was chronically medicated with corticosteroids, as well as ischemic cardiopathy. In February 2021, he was admitted because of SARS-CoV-2 pneumonia, without the need of invasive mechanical ventilation (IMV). Four months after, he presented to our ER with complaints of easy tiredness, dyspnea, and lower limb edema with progressive worsening. He was afebrile, with coarse crackles audible on the left base, and his lab work revealed anemia and elevated inflammatory parameters. A chest CT was performed revealing an extensive consolidation of the left upper lobe with a small eccentric cavitation, a thick walled cavitation on the right upper lobe, and multiple small bilateral parenchymal nodules. Sputum's direct mycobacteriological exam was negative. MRSA was isolated on the sputum for which he had a cycle of antibiotics. In the radiological re-evaluation, an improvement of the consolidations observed in the previous exam was noted, but there was a worsening of the pulmonary nodules, now presenting with an aspect of "cannonball metastases" with necrosis and central cavitation, reflecting aspects of multifocal vasculitis and pulmonary infarctions. Flexible bronchoscopy was performed to collect bronchial secretions, and isolation of *Aspergillus fumigatus* was made. Because of complaints of altered visual acuity, the patient was also observed by Ophthalmology, and a diagnosis of infectious retinitis of probable fungal etiology was made. Treatment with voriconazole was initiated. On the ophthalmologic re-evaluation after voriconazole initiation, there was a noticeable improvement, and the diagnosis of *Aspergillus'* retinitis was assumed. At the present moment, the patient is under treatment with voriconazole and is presenting progressive improvement of the pulmonary lesions. Treatment duration is not defined and can prolong for more than 50 weeks.
Discussion: Invasive aspergillosis usually occurs in immunocompromised patients, like the ones under long-term corticosteroid therapy. The clinical manifestations are nonspecific, with fever, cough, and dyspnea. IPA can also present angio-invasion with potential dissemination to other organs. Diagnosis is challenging and is based on clinical, radiologic, and mycologic criteria. It is known that viral pneumonias increase susceptibility to fungal and bacterial superinfections. In this sense, several reports of COVID19-associated pulmonary aspergillosis have been emerging, generally in patients admitted to intensive care units and submitted to IMV, with a very high mortality rate. In this case, we present a patient that was not submitted to IMV but that was chronically immunosuppressed. Although the relation between SARS-CoV-2 infection and the subsequent invasive aspergillosis cannot be categorically proven, the temporal relation exists and this case must put us on alert for this risk, especially in patients with risk factors for immunosuppression.

Keywords: Aspergillus *spp. Invasive pulmonary aspergillosis. COVID-19. SARS-CoV-2. Immunosuppression.*

PC 114. ADHERENCE TO THE SMOKING CESSATION APPOINTMENT

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Introduction: Smoking is responsible for 6 million deaths a year worldwide, and is the leading cause of preventable death. Smoking Cessation is the most cost-effective measure to control it. Numerous factors influence adherence to smoking cessation, namely sociodemographic factors such as age, gender, education level, race, or comorbidities and personality characteristics. The lack of attendance to appointments and the lack of consistency in cessation attempts compromise the success of the interventions performed.
Objectives: Analyze smoking habits, missed appointments, previous attempts and perspectives of users regarding smoking cessation.
Methods: A descriptive and retrospective study was based on the responses of 218 patients to questionnaires applied in the first appointment and nonattendance to the smoking cessation appointments between 2017 and 2018. The questionnaire characterizes the user's smoking habits, previous quitting attempts and their expectations about smoking cessation. For statistical analysis, the authors used IBM SPSS Statistics version 26® program.
Results: The authors analyzed 218 questionnaires, with a mean age of 52.91 ± 11.43, with a minimum age of 20 and a maximum of 82 years, 147 were men. The majority had an active working life (66.1%), 18.3% were unemployed and 15.6% were retired. On average, users started smoking at 15.84 ± 4.38 years, daily from 18.17 ± 4.20 years, with a negative correlation between the age of the first cigarette and the smoking load (rho = - 0.173). Coming by own decision, physician's insistence, or family pressure does not correlate with the number of visits or with the success of the cessation success. Those who imagine themselves capable of quitting smoking within a month, did not miss the second appointment and was not found any correlation between those who tried to quit smoking in the last year and the ability to quit smoking. Users who did not miss until the fourth appointment (21.6% of users) had more success in smoking cessation (rho = 0.293).
Conclusions: The authors found that a high percentage of patients, 31.7%, missed the second appointment. The focus of the professionals involved should be in cognitive-behavioral strategies to maintain high levels of motivation, essential in smoking cessation.

Keywords: *Smoking cessation. Adherence. Absences.*