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CO 001

COPD EXACERBATIONS IN AN INTERNAL MEDICINE WARD

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Key-words: COPD, Hospital admissions, Follow-up, Management, Indicators

Introduction: Chronic obstructive pulmonary disease (COPD) is a major cause of morbidity and mortality. The occurrence of acute exacerbations (AE) contributes to the gravity of the disease. Many of these cases are admitted in an Internal Medicine ward (IMW).
Objectives: To characterize the admissions in an IMW motivated by AE of COPD and to verify if there are any differences between the general characteristics, the approach and the follow up of the patients observed in Pulmonology appointments and those followed in General Medicine/Internal Medicine appointments.
Methods: We conducted a retrospective, transversal and descriptive study. Data were collect from the clinical records of COPD AE patients admitted to an IMW from january 2014 to december 2015. We evaluated the demographic variables, number of admissions, personal history, home and in-hospital medication prescribed, intra-hospital mortality and follow up in appointments. We used IBM SPSS 19 for statistical analysis. We applied the $p < 0.05$ cut-off for statistical relevance.
Results: From a total of 133 subjects, 52 were followed in Pulmonology Appointments (PA group), and the other 81 were followed in Internal Medicine/General Medicine Appointments (MA group). The mean of the ages was similar in both groups (76.8 years). In the PA group, 57.7% of the patients were men, vs. 51.9% in the MA group. The MA group had bigger numbers of comorbidities: mean 2.28 vs 1.92. In the PA group, we found a higher number of smokers: 53.8% vs 37.0%, more patients under long-term oxygen therapy (LTO): 55.8% vs 35.8% and under noninvasive ventilation (NIV) at home: 23.1% vs 9.9%. During the hospital stay, there were more patients in the PA group needing NIV (50.0% vs 40.9%) but there was similar need of Invasive Mechanical Ventilation in both groups: 9.9% and 9.6%, respectively. More respiratory function tests (RFT) were performed to the PA group: 73.0% vs 19.8%; more alpha-1-antitrypsin (A1AT) measurements: 13.5% vs 2.5% and more documented emphysema in a Computerized Tomography (CT) scan: 25.0% vs 4.9%. In the PA group, there were more patients under bronchodilation (BD): 92.3% vs 75.0% and under therapy with corticosteroids: 75.0% vs 59.3%. In the PA group, 65.6% of the patients were under vaccinations against seasonal flu and 19.2% against *Streptococcus pneumoniae* vs. 59.3% and 9.9% of the MA group, respectively. The in-hospital mortality rates were 17.3% in the PA group and 8.6% in the CM group.
Discussion: Differences concerning the proportion of smokers, patients under LTO and NIV at home, with emphysema in the CT scan, with RFT, dosing of A1AT and under BD were found between the groups. Although the Pulmonology follow-up was more compliant with COPD management recommendations, it was far from optimum.

CO 002

MORTALITY AFTER ACUTE EXACERBATION OF COPD REQUIRING NONINVASIVE VENTILATION

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Key-words: AECOPD, NIV, Mortality

Introduction: Acute COPD exacerbations (AECOPD) are serious episodes in the natural history of the disease and are associated with significant mortality. Noninvasive ventilation (NIV) is a well-established therapy in hypercapnic AECOPD.
Objective: To analyze the clinical characteristics of patients submitted to NIV in the context of hypercapnic AECOPD in a pulmonology ward, hospital mortality and survival after discharge.
Methods: We reviewed the clinical files of patients admitted to the pulmonology ward during the years 2013 and 2014 with the main diagnosis of EADPOC and submitted to NIV. Statistical analysis was performed using SPSS v24.
Results: Fifty-five patients were included, 43 (78.2%) males, mean age 70 years (SD 9). Forty (76.9%) were GOLD D, with the remaining being GOLD B. Median predicted FEV_1 was 34% (P_{25}=26%; P_{75}=45%). The majority (89.1%, n=49) had a history of smoking, 37 (67.3%) hypertension, 22 (40%) dyslipidemia, 16 (29.1%) heart failure, 13 (23.6%) diabetes mellitus, 12 (21.8%) atrial fibrillation and 9 (16.4%) obstructive sleep apnea syndrome. The mean Charlson index was 4.4 (SD 2). Most of the patients came from the Emergency Department (ED) (49.1%, n=27), Internal Medicine wards (20%, n=11) and from the Pulmonology Outpatient Clinic (18.2%, n=10). NIV was instituted mainly in the ED (54.6%, n=30), followed by the pulmonology ward (PW) (29.1%, n = 16). The mean pH prior to NIV initiation was 7.3 (SD 0.08), highest in patients who started NIV in the PW/Internal Medicine wards compared to the others (7.34 (SD 0.07) *vs* 7.28 (SD 0.07); p=0.008). The mean duration of hospitalization was 15.1 (SD 8.5) days, and it was shorter in patients who started NIV in the pulmonology department (10.2 (SD 5.6) *vs* 17.1 (SD 8.7) days; *p*=0.005). Most of the patients were discharged home, 3.6% (n=2) were transferred to the intensive care unit and 3.6% (n=2) died in the PW.
During follow-up, there were 32 deaths (58.2%), with respiratory cause in 81.3% (n=26) of the cases. The mortality rate at 3 months, 6 months, 1 year and 2 years was 10.9%, 12.7%, 25.4% and 40%, respectively.
Comparing surviving individuals with deceased ones at the end of one-year, the deceased had lower BMI (24.4 (SD 8.8) vs 27.6 (SD 7.4); p=0.07) and lower IC/TLC ratio (0.18 (SD 0.07) *vs* 0.25 (SD 0.10); p=0.04); they were older (74 (SD 8.3) *vs* 68.7 (SD 9.6) years; p=0.06) than the survivors.
Conclusions: In this sample, there was low hospital mortality in patients with COPD who underwent NIV in the pulmonology ward. The decreased IC/TLC ratio was associated with higher mortality at 12 months. The prognosis of these patients remains poor with mortality of 25% at one year and of 40% at 2 years.

CO 003

THE IMPACT OF THE THREE GOLD SEVERITY CLASSIFICATIONS OF COPD (2001, 2011 AND 2017) IN THE SAME POPULATION OF PATIENTS

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Key-words: COPD, severity, GOLD

Introduction: When the first GOLD report was released, the recommendation for severity assessment relied in a spirometric grading system alone. In 2011, a major revision was made and the ABCD assessment tool was introduced. The ABCD assessment tool was again modified in the most recent review of the GOLD document (2017). In the current version, unlike the previous classifications, the spirometric grades are separated from the ABCD groups and are only to be used for prognostication and treatment with non-pharmacologic therapies.
The aim of this study was to compare the three severity classifications in the same population of patients.
Methods: We analyzed 758 spirometries from smokers/former smokers with a ratio FVC/FEV1 pos-bronchodilator < 0,7 in addition to the mMRC scale and the reported exacerbations in the previous year. We classified the patients according with the 2001, 2011 and 2017 classifications.
Results: 35%of the patients were smokers and 71% male. Using the 2001 classification 49.9% were class 1 (mild disease); 41.9% class 2 (moderade disease); 7,4% class 3 (severe) and 0,8% class 4 (very severe). With the GOLD 2011 classification 77,4% of the patients were in the group A, 5% in group B, 13,2% in group C and 4,4% in group D. Using the gold 2017 classification, 82,7% of the patients were in group A, 6,5% in group B, 7,9% in group C and 2,9% n group D.
Discussion: The major difference emerging from the comparison of the three classifications is that in the most recent the same patients are fall into a less severe category, a trend that is more significant in the 2017 grades. The major consequence is that more patients are using less pharmacological therapies.

CO 004

SEVERE COPD EXACERBATIONS: PREDICTIVE FACTORS FOR READMISSION

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Key-words: COPD; exacerbation; hospitalization; readmission

Introduction: Chronic Obstructive Pulmonary Disease (COPD) is a complex and heterogeneous disease. The "frequent exacerbator" is recognized as an important phenotype. Acute COPD exacerbations (AECOPD) comprise a major source of morbidity and are a leading cause of emergency department (ED) visits, hospitalization and readmission. Factors contributing to readmission remain elusive.
Objectives: To identify risk factors for recurrent severe COPD exacerbations.
Methods: This retrospective study analysed all patients admitted for AECOPD (n=113) during the year of 2016 in a central university hospital. A comparison was performed between those readmitted for AECOPD within 90 days of index admission (n=32, 28%) and those who were not. Demographics, patient characteristics, hospitalization data and severity/prognosis scores were collected from medical records.
Categorical data were reported as percentages and compared using chi-squared test or Fisher's exact test. Continuous data were reported as means+-standard deviations and compared using an independent samples t-test or ANOVA test.
Results: The study included 113 patients, 68% (n=77) males, with a mean age of 76+-11 years-old, mostly smokers or former smokers (83,7%). More than half (56%) were independent in activities of daily living (ADL) and 10% lived in nursing homes or had day-care support. With a mean FEV1 of 44+-20% (median 42%, P25-P75 32-56%), approximately three quarters of patients were staged as GOLD D and 57% were medicated with triple inhaled therapy. Chronic respiratory insufficiency requiring ambulatory oxygen therapy or non-invasive ventilation was present in 46%. 26 patients had also a bronchiectasis diagnosis.
Almost half of these patients (n=52, 46%) had a previous admission in the previous year and more than half (n=68, 60%) stated at least 1 AECOPD in the previous year.
Mean length of stay was 11+-8 days (median 8 days, P25-P75 6-12 days). A 7% (n=8) in-hospital and 10% (n=11) 90-day mortality rate were calculated.
There was a 28% 90-day readmission rate (n=32). Regarding predictive factors for 90-day readmission, there was a statistically significant association with the following variables: index of independence in ADL (p=0,039), admission in previous year (p=0,002), 2 or more AECOPD in previous year (p=0,014), PEARL-score (p=0,08) and LACE-score (p=0,03).
Discussion: Patients readmitted after a hospitalization for AECOPD need help for ADL, already had previous admissions and have frequent AECOPD. Moreover, PEARL-score (Previous admissions, eMRCD score, Age, Right-sided heart failure and Left-sided heart failure) and LACE-score (Length of Stay, Acuity of Admission, Comorbidities, ED visits) are simple tools that predict 90-day readmission after hospitalization for AECOPD.
It is important to identify these COPD patients with high readmission risk in order to improve quality of care and reduce health care costs.

CO 005

ASSESSMENT OF CLINICAL ASPECTS LINKED TO DIFFERENTIAL DIAGNOSIS BETWEEN ACO AND COPD

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Key-words: DPOC, ACO, differential diagnosis, comparative analysis

Introduction: Given the absence of clear guidelines for the diagnosis of the clinical entity of Asthma/Chronic Obstructive pulmonary disease overlap (ACO), recent works recognise that the distinction between ACO and Chronic Obstructive Pulmonary Disease (COPD) relies mostly on clinical judgement. However, the two groups of patients differ in symptoms and prognosis, and the differential diagnosis should lead the treatment strategy.
Aim: To outline the characteristics of the patients diagnosed with COPD and ACO undergoing outpatient follow-up in a Pneumology specialty consultation at a Central Hospital, and to carry out comparative analyses of some clinical and imaging aspects in order to identify clinically distinctive factors between these two entities. Additionally, to evaluate clinical aspects related to adverse events.
Methods: A retrospective descriptive study was performed. Sequential sampling of patients with a previous diagnosis of ACO or COPD (diagnosis assumed by the attending Pulmonologist) undergoing outpatient management at the General Pneumology Consultation in the first half of 2017, with a chest Computerized Tomography (CT) within the previous 2 years. We collected clinical data (gender, age, BMI, previous history of smoking, mMRC score, current treatment and hospitalizations in the last year, the end point considered as an adverse event), laboratorial data (peripheral eosinophilia, response to β2 agonists in spirometry, diffusion of CO) and imaging data (pulmonary artery and aorta diameters and presence of emphysema on chest CT, echocardiogram with suggestive signs of pulmonary hypertension). Statistical treatment was performed using *IBM® SPSS® statistics* v19 software, and the appropriate statistical tests were applied.
Results: A group of 72 patients (nDPOC=50, nACO=22), mean age 69 (±10.3) years was analysed. Among the subgroup of patients with COPD, a higher frequency of male gender was observed (82% vs 32%,χ=17.31,p<0.01,df1), as well as a higher frequency of smoking history (84% vs 45%, χ=11.33,p<0.01,df1). Overweight (mean BMI of 27.7vs25.01;t=-2.58,p<0.05,df22.5) and inhaled bronchodilator response criteria (75% vs 30%,χ=8.87,p<0.05;df1) were more frequent in the ACO group. Peripheral eosinophilia, mMRC score or changes in CO diffusion did not significantly differ between groups. Emphysema was more common in patients with COPD (61%,χ=11.38,p<0.01,df1). The AP/Ao diameters ratio tended to be higher in the ACO group, but there were no statistically significant differences.
Inhaled corticosteroid therapy was almost ubiquitous within the ACO diagnosis (95% vs 58%, χ=23.66,p<0.01;df1).
Among the considered variables, the absence of a personal history of smoking, higher BMI, response to β agonist and absence of emphysema in chest CT showed correlation with the diagnosis of ACO. Adverse outcome frequency did not differ between ACO and COPD patients and the variables analysed showed no significant association with the occurrence of adverse events.
Discussion: In addition to a greater frequency of bronchodilator response, the ACO patient profile seems to be characterized by a higher BMI and absence of a personal history of smoking or evidence of emphysema in chest CT. A larger sample size could allow the recognition of predictive factors of the clinical diagnosis of ACO, and possibly help in the definition of objective criteria for differential diagnosis between the two entities.

CO 006

IS THE "SIT-TO-STAND TEST" A GOOD TOOL FOR EVALUATING OXYGEN DESATURATION IN THE COPD PATIENT?

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Key-words: COPD, Six-minute walking test, Sit-to-stand Test

Introduction: Chronic obstructive pulmonary disease (COPD) is frequently associated with exertional desaturation and, consequently, reduced exercise tolerance. These parameters are routinely evaluated using the six-minutes walking test (6MWT). However, it is a time-consuming test. The 1-minute sit-to-stand test (STST) is a simpler exercise capacity test, already used to evaluate the impact of pulmonary rehabilitation and functional status in COPD.
Objective: To compare the 6MWT to the STST in the evaluation of exertional desaturation in COPD patients.
Methods: Exploratory study that included 15 stable COPD patients (GOLD criteria) that performed the 6MWT and STST on the same day, with a 30 minutes resting period between the tests. Six minutes walking distance (6MWD), number of repetitions, cardiorespiratory parameters (blood pressure (BP) and heart rate (HR)), dyspnea and lower limb fatigue Borg scale were recorded. Peripheral arterial saturation (SpO2) was continuously measured during the tests.
Results: We included 11 males and 4 females with a mean age of 70,1±7,7 years (51-81 years), mean BMI of 25,67±5,98 kg/m2, mean FEV1 of 1,23±0,43 L, mean FVC of2,20±0,58 L, mean RV of 4,36 ±1,64 L, mean TLC of 6,64 ±1,94 and mean DLCO of 46,38±24,6%. The mean BODE index was 3,13 ±1,9.
During the 6MWT and STST, the rise in systolic BP, HR, the decline in SpO2 and the severity of dyspnea and lower limb fatigue were statistically significant compared to baseline (p < 0,05).
The 6MWT distance was 385,00±91,56 meters and the number of STST repetitions was 16,73 ± 3,67. No correlation was found between the 6MWT distance and the number of STST repetitions (p= 0,329). The mean oxygen desaturation in the 6MWT was 9,53±1,30 % and in the STST was 6,13± 0,98 %. The oxygen desaturation in the 6MWT and STST showed a strong and statistically significant correlation (r =0,769; p< 0,001). The oxygen saturation time inferior to 90% (T90) during the 6MWT and the STST also revealed a strong and significant correlation (r= 0,874; p<0,001).
The rise in BP and HR in 6MWT did not correlated with those in STST. The mean increase in BP and HR was superior in the 6MWT.
Conclusion: There are few studies in the literature that compare the degrees of desaturation obtained with the 6MWT and the STST in COPD patients. Despite being an exploratory study and with a small sample, in this group we observed a positive, strong and statistically significant correlation between the oxygen desaturation and the T90 between the 6MWT and the STST.

CO 007

CORRELATION BETWEEN MMRC AND EACH CAT SUB-DOMAIN IN A MULTICENTRIC COPD SAMPLE CLASSIFIED ACCORDING TO GOLD 2017

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Key-words: COPD, assessment, symptoms, CAT, mMRC, correlation, subdomains

Introduction: GOLD 2017 recommends a classification in COPD that emphasizes the role of symptoms and exacerbations especially for pharmacologic treatment purposes. Either mMRC scale or CAT questionnaire continue to be recommended for symptomatic assessment. mMRC is a 5-level one-dimensional dyspnea scale while CAT integrates 8 different subdomains with equal weight in final score.
Agreement between both tools may be influenced by mMRC individual correlation to each CAT subdomain.
Objectives: Analyze CAT subdomains and ascertain their correlation with mMRC scale in a sample of COPD patients classified according to GOLD 2017.
Methods: Observational study including 200 COPD stable patients from two reference hospitals. Completion of mMRC scale and CAT questionnaire in the same appointment. Determination of mMRC/CAT agreement by Cohen's Kappa coefficient. Analysis of CAT subdomains and determination of their correlation with mMRC using Spearman correlation coefficient (ρ).
Results: Of the 200 patients included, 88% (n=176) were male; mean age was 69 ± 10 years and mean FEV1 was 2,08±0,85 L (51±19%); 59 patients (29.5%) were frequent exacerbators.
mMRC/CAT global agreement was moderate (K=0,462).
Regarding CAT questionnaire, sub-domains "dyspnea", "energy" and "limitation of home activities" obtained, on average, higher scores (3.39±1.40, 2.89±1.20 and 2.16±1.61, respectively).
There was a great variability in the association between mMRC scale and each one of CAT subdomains (table 1), with a "strong" correlation (defined by a ρ value between 0,60-0,79) with dyspnea (ρ=0,672) and limitation in home activities (ρ=0,675) subdomains and a "very weak" correlation (defined by a ρ value between 0,00-0,19) with cough (ρ=0,153) and sputum (ρ=0,161) subdomains.
Conclusion: In our sample, CAT subdomains did not correlate equally with mMRC dyspnea scale. mMRC showed a strong correlation with the subdomains dyspnea and limitation in home activities and a very weak correlation with the subdomains cough and sputum. A modification of CAT subdomains' relative weight in final score could increase the homogeneity between both tools, contributing to uniformize symptomatic assessment methods in COPD.

		mMRC	
		Spearman's ρ	P value
CAT subdomains	Cough	**0,153**	<0,005
	Sputum	**0,161**	<0,005
	Chest tightness	0,304	<0,005
	Dyspnea	**0,672**	<0,005
	Limtation in home activities	**0,675**	<0,005
	Confidence	0,578	<0,005
	Sleep	0,347	<0,005
	Energy level	0,596	<0,005

Table 1: Correlation between mMRC scale and each CAT subdomain.

CO 008

EXERCISE CAPACITY IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE: CARDIOPULMONARY EXERCISE TESTING *VERSUS* 6-MINUTE WALK TEST

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Key-words: Chronic obstructive pulmonary disease; cardiopulmonary exercise testing; 6-minute walk test; exacerbations

Introduction: In chronic obstructive pulmonary disease (COPD), assessment of lung function has limited utility in determining exercise capacity, since the severity of the obstruction, measured by maximal expiratory volume in the first second (FEV1), does not directly reflect the degree of hyperinflation, either static or dynamic. The cardiopulmonary exercise testing (CPET) is a complete tool in the evaluation of exercise capacity but requires specialized resources. The 6-minute walk test (6MWT) is less complicated and available in most centers.
Objectives: To compare CPET in cycle ergometer and 6MWT in the evaluation of exercise capacity of patients with COPD and to correlate it with the number of exacerbations in the previous year.
Material and Methods: Retrospective study based on the analysis of the clinical files of patients with COPD undergoing CPET in the Serviço Pneumologia B of the Centro Hospitalar e Universitário de Coimbra between January 2014 and July 2017. Demographic and clinical data were analyzed using SPSS ®.
Results: Sample comprised of 37 individuals, 73.0% male, mean age 64.9 years. Of the total, 67.6% were class B, 21.6% class D and 10.8% class A. The mean FEV1 was 56.1% and 8.1% of the patients were GOLD 1, 51.4% GOLD 2, 37.8% GOLD 3 and 2.7% GOLD 4. The most frequent comorbidities were hypertension (43.2%), dyslipidemia (21.6%) and heart failure (10.8%). The mean of exacerbations in the previous year was 0.78. In CPET, mean oxygen consumption (VO2) was 16.2 ml / kg / min, mean exercise duration was 5:59 minutes, with 86.5% of patients showing ventilatory limitation and 86.5% with gas exchange limitation. Dynamic hyperinflation was observed in 67.7%. The average distance (Dt) traveled on the 6MWT was 423.2 meters. When comparing the two exams, there was a moderate positive correlation between VO2 and Dt ($p = 0.009$) and also a moderate positive correlation between FEV1 and VO2 ($p = 0.005$), but not between FEV1 and Dt. Both ventilatory and gas exchange limitation correlated with the number of exacerbations ($p = 0.048$). FEV1 also had a moderate negative correlation with the number of exacerbations ($p = 0.01$). There was no significant difference between either the presence of dynamic hyperinflation or exercise capacity (VO2 or Dt) and the class of COPD or the number of exacerbations.
Conclusion: From the analysis we conclude that for this sample, although there is a correlation between VO2 and Dt, there is no correlation between these and the number of exacerbations. However, when ventilatory limitation and / or gas exchange limitation are present, they correlate with the number of exacerbations. VO2 is also related to the severity of the obstruction and the latter with the number of exacerbations. 6MWT does not distinguish patients with different severity of obstruction. CPET, by identifying the nature of exercise limitation, plays a useful role in evaluating patients with COPD.

CO 009

PULMONARY AND EXTRAPULMONARY TUBERCULOSIS – LAST 10 YEARS EVOLUTION

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Key-words: Pulmonary tuberculosis, Extrapulmonary tuberculosis, HIV, Immigration

Introduction: According to Sandgren *et al*[1], total tuberculosis (TB) notification rates have decreased in the last years in European Union, due to a decrease in pulmonary TB. However, notifications rates of extrapulmonary TB remained stable (3,4:100000 in 2002 and 3,2:100.000 in 2011) and consequently, the proportion of extrapulmonary TB increased from 16,4% in 2002 to 22,4% in 2011.
Objectives: To analyze extrapulmonary and pulmonary TB notification rates at Venda Nova Lung Diseases outpatient unit (CDPVN) and compare it with national numbers. The second endpoint was to evaluate the proportion of high risk patients in this influence area.
Methods: Observational, descriptive and transversal study of pulmonary and extrapulmonary notification rates TB, followed in CDPVN, from January 2007 to December 2016.
Results: TB incidence in CDPVN was 36.2:100.000 in 2007 and 31.5:100.000 in 2016, having peaked at 49.1:100.000 in 2012, thereby not corresponding to a constant variation over the time (figure 1). When crossing this data with the proportion of high risk groups, there seems to be a relationship between the TB notification rates and the immigration and HIV / AIDS patients (figure 2).

Figure 1. Tuberculosis notification rates in CDPVN

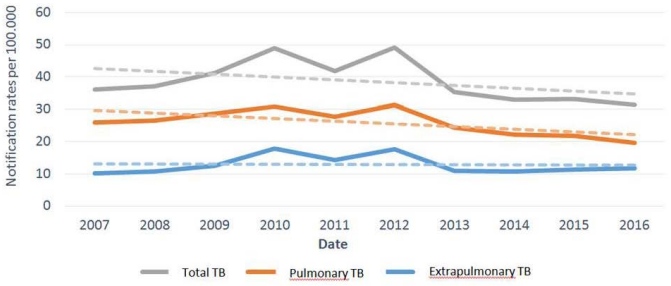
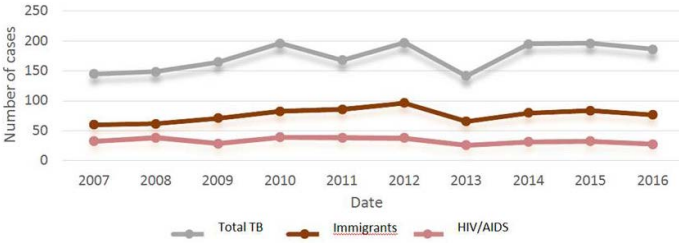
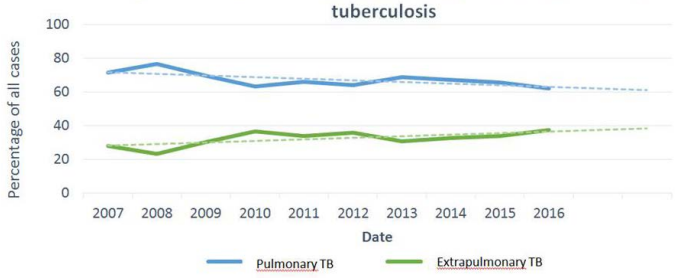


Figure 2. Tuberculosis, immigrants and HIV/AIDS



Data analysis reveals, for the period in question, a higher percentage of immigrants (mean: 44.4%) and HIV / AIDS patients (mean: 18.6%) in CPDVN when compared to national data (mean: 14.5% and 11.8%, respectively).
Regarding pulmonary versus extrapulmonary TB, data indicates an increasing trend in the relative number of extrapulmonary TB for the past 4 years (in 2013 extrapulmanary TB accounted for 31% of total TB cases, compared to 37.6% in 2016; figure 3).

Figure 3. Notification rates of pulmonary and extrapulmonary tuberculosis



Comparatively, in Portugal, TB cases decreased consistently for the last 10 years (29.2: 100.000 in 2007 to 17.8:100.000 in 2016), both extrapulmonary and pulmonary TB. Therefore the proportion of each tuberculosis type has remained relatively constant (70-73% pulmonary TB, and 27-29% extrapulmonary).
Conclusions: There seems to be a decrease, although not consistent, of TB notification rates over the last 10 years in CDPVN. There has been a relative increase of extrapulmonary TB in the last 4 years and a proportional decrease of pulmonary TB. Data also suggests that the migratory component and HIV / AIDS patients appears to have an impact on maintaining high tuberculosis notification rates in the CDPVN, when comparing to the national and European trends.

References:
[1] Sandgren A, Hollo V, van der Werf MJ. Extrapulmonary tuberculosis in the European Union and European Economic Area, 2002 to 2011. Euro Surveill. 2013;18(12):pii=20431.

CO 010

COMMUNITY-ACQUIRED PNEUMONIA AT OPORTO HOSPITAL CENTER – A THREE-YEAR-OLD PICTURE

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Key-words: Community-acquired pneumonia; Incidence; Mortality rate; Etiological diagnosis

Introduction: According to the 2016 National Observatory of Respiratory Diseases, pneumonia was the main cause of respiratory hospitalization, with an increasing number of cases in the last 10 years, especially in the elderly.
Despite the easy access to diagnostic tools and effective drugs, pneumonia maintains high mortality rates that require study and reflection.
Methods: Retrospective analysis of community acquired pneumonia (CAP) among adults hospitalized at the Oporto Hospital Center, between January 2013 and December 2015.
Results: 55% of the 1901 registered CAP cases occurred in male patients. The mean age was 72 ± 16 years-old and only in 5% of the cases the patients were under 40 years old.
The most common co-morbidities included smoking history in 34.2% of cases, diabetes mellitus in 22%, 21% of heart disease, 18.8% of chronic obstructive pulmonary disease, 11% of chronic kidney disease, dementia in 10.5% of the patients and cancer in 7.6%. HIV infection was identified in 6.4% of the cases and 4.2% of our sample was under immunosuppressive therapy.
Coincidentally with the national data, 2014 was the year with the most CAP diagnoses, accounting for 40% of all cases. In all years, January was the month with the highest incidence.
The mean time of hospitalization was 8 ± 10 days and only in 37% of the cases the hospital admission took more than 10 days.
Etiological diagnosis was obtained in 22% of the cases, 10% with pneumococcus isolation, the agent most frequently found.
Although frequently collected - blood cultures in 74% of cases, urinary antigens and tracheobronchial secretions in 56% - their profitability was low with rates of positivity at approximately 8, 16 and 17%, respectively.
The overall mortality rate was 12%, reaching 15% in the older group (>79 years old), contrasting with the mortality of only 4% of the younger group (under 40 years old).
Discussion: As shown in the National Observatory of Respiratory Diseases, the numbers of CAP in the Oporto Hospital Center also illustrates the local impact of this disease.
The elderly are the most affected and those with worse prognosis, which has a special importance considering that the Portuguese population is aging.
The low percentage of etiological diagnosis shows the low profitability of the noninvasive procedures usually performed during the etiological study.
The high numbers of 2014 may be related to the higher activity of the influenza virus during that year. There were 20 registered cases of influenza CAP, in 2014 at the Oporto Hospital Center, representing 49% of all cases of CAP by this agent registered from January 2013 to December 2015.
A more efficient etiological diagnosis and knowledge of the antibiotic sensivity profiles of the most commonly identified agents is urgently needed. Prevention with influenza and pneumococcal vaccination should also be encouraged, especially in the most affected groups.

CO 011

CHARACTERIZATION OF PATIENTS COLONIZED BY CARBAPENEM RESISTANT ENTEROBACTERIACEAE (CRE) ADMITTED TO A PNEUMOLOGY DEPARTMENT OF A CENTRAL HOSPITAL

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Key-words: Carbapenem resistant enterobacteriaceae, colonization, infection

Introduction: CRE are a real and immediate concern for hospital infection control policies, taking into account the rapid spread of these bacteria, their person-to-person transmission, the ease of occurrence of outbreaks, the high rate of asymptomatic carriers, the high mortality rate in case of infection and its difficult therapeutic approach. On August 7, 2015, it was verified the first isolation of CRE in our Central Hospital. Since then, several cases have been identified. The Local Coordinating Group of the Program for Prevention and Control of Infection and Antimicrobial Resistance (GCL-PPCIRA) defined a set of measures that include the isolation of colonized patients and the adoption of an active system of screening through a rectal swab at the time of admission. Hospitalized patients with initial negative screening are re-screened every 7 days.

Material and methods: The clinical records of all patients admitted to the Pneumology Department with CRE positive screening or with CRE infection were consulted, in order to characterize this group of patients.

Results: The following table describes the main characteristics of these patients.

The results presented correspond to the absolute or average number, depending on the category. The data presented are related to the hospitalization in which the first positive result was obtained in the screening or the first isolation of CRE in another biological product was obtained.

Categories	
Patients *N*	104
Age (years)	68.7
Male	66(63.5%)
State of autonomy at admission	
Total autonomy	70(67.3%)
Partial dependency	25(24.0%)
Total dependency	9(8.7%)
Place of provenance	
Home	97(93.3%)
Nursing home	4(3.8%)
Home, but also integrates a day care center	2(1.9%)
Another hospital	1(1%)
Admission through the emergency service	100(96.2%)
Cause of hospitalization	
Acute tracheobronchitis	35(33.7%)
Pneumonia	26(25.0%)
Related to lung cancer	14(13.5%)
Infected bronchiectasis	13(12.5%)
Pulmonary embolism	4(3.8%)
Lung abscess	2(1.9%)
Tuberculosis	2(1.9%)
Exacerbation of pulmonary intersticial disease	1(1.0%)
Another	7(6.7%)
Positive screening (rectal swab)	93(89.4%)
Infection	11(10.6%)
Sputum	4
Bronchial or bronchoalveolar lavage	3
Urine	2
Blood	1
Pleural effusion	1
Central venous cateter tip	1
CRE isolation timing	
At admission	24(23.1%)
During hospitalization	80(76.9%)
Number of days until isolation	9.9
Lenght of hospital stay (days)	21,8
Cycles of antibiotic therapy during hospitalization	1,3
Past resource to the emergency service	
Total	15.3
In the previous year	4.7
Previous hospitalizations	
Total	4.8
In the previous year	1.3
Duration(days)	7.6
Hospitalizations in the following year	1.0
Previous cycles of antibiotic therapy	6.4
Overall mortality during hospitalization	14(13.5%)
Mortality among infected patients during hospitalization	2(18.2%)
Effective decolonization	18(18.0%)
Time until the first negative screening (months)	5.4

Conclusion: Since the implementation of the active screening program of CRE in 2015, 93 asymptomatic carriers and 11 patients with infection were identified in the Pneumology Department. In infected patients there was a mortality rate of 18.2%. These data should alert to the importance of infection control measures and should be a source of concern and awareness for the real magnitude of this problem.

CO 012

MICROBIOLOGICAL CHARACTERIZATION IN A PULMONOLOGY SERVICE - FROM THE LABORATORY TO CLINICAL PRACTICE

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Key-words: Microbiology; Infection; Pneumonia; Antibiotics

Introduction: Infections are one of the main causes of mortality and morbidity worldwide, being responsible for a high number of hospitalizations with significant economic and social impact.
The initial treatment approach involves the selection of the most appropriate antibiotic when the microorganism involved is not yet known. This process should take into account both the patient's individual characteristics and the epidemiological aspects of the micro-organisms most prevalent in a given location, at a given time, in a patient with a particular pathology.
Methodology: Retrospective study, which included all patients hospitalized at the Department of Pulmonology of Hospital Geral form Centro Hospitalar e Universitário de Coimbra (CHUC-HG), in the year 2016.
This study aims to characterize the microbial population of referred population, by identifying the most prevalent agents, their relation with characteristics of patients (age, sex, comorbidities, degree of dependency and provenance), Its distribution according to admission diagnoses and its impact on length of hospitalization, duration and type of antibiotic therapy and outcome (mortality and rehospitalization).
The characterization and statistical analysis was performed using IBM SPSS and Microsoft Excel.
Results / Discussion: The study included a total of 78 patients, with a mean age of 74.6 years (±14.9), 64% of the male gender, distributed in 90 hospitalizations, resulting in 199 samples with an isolated microorganism, 150 considered valid for the study.
The most common admission diagnostic was Health care associated pneumonia (29.6%) followed by acute exacerbation of COPD (13.2%). The most commonly isolated microorganisms where *Staphylococcus aureus* (25.8%), followed by *Pseudomonas aeruginosa* (21.4%). Both of them appear in individuals with a high average age (mean of 73.5 years in both), with a greater degree of dependence and with greater number of comorbidities (average of 4.27 in the group with *Staphylococcus aureus* and 3.76 in *Pseudomonas aeruginosa* group). *Pseudomonas aeruginosa* was the most frequently isolated microorganism in individuals with COPD (24.6%).
The highest number of days of antibiotic therapy occurred in patients with isolates of *Aspergilus spp* (mean of 15.7 ±11.3 days) and *Acinetobacter baumanii complex* (mean of 13.3 ±12.3 days). Also, the highest number of hospitalization days is associated with the same agents, with a mean of 38.6 (±19.6) and 37.6 (±19.1) days, respectively. Regarding outcome, isolation of *Staphylococcus aureus* occurred in 28% of patients with fatal outcome. *Klebsiella pneumoniae* and *Staphylococcus aureus* both appear in 22.7% of cases of early rehospitalization and *Staphylococcus aureus* isolation occurred in 45.5% of patients with late rehospitalization.
Conclusion: With this work, the authors hope to have contributed to a greater awareness of the importance of knowledge of epidemiology referring to the place where clinical practice is practiced, allowing more rational and adequate empirical prescriptions to the most commonly identified agents as a function of a set of previously determined characteristics.

CO 013

PNEUMOCOCCAL PNEUMONIA – ANALYSIS OF A 10 YEAR EXPERIENCE IN A PULMONOLOGY DEPARTMENT

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Key-words: Infection; Pneumococcal pneumonia; Co-morbidities; Vacination

Background: Pneumonia constitutes an important manifestation of pneumococcal disease. For a pulmonologist it is crucial to understand the reality of the disease in its community as it allows better management in the future.
Objectives: Characterization of patients admitted with pneumococcal pneumonia.
Methods: Retrospective study of 10 years clinical records (2007-2016) with posterior descriptive analysis.
Results: Included 76 patients (64% male), mean age 68±16 years, 43% with tobacco smoke exposure, 51% with previous respiratory disease (COPD in 59%). Cardiovascular disease was also prevalent (55%). Only 2 patients had confirmed positive pneumococcal vaccination status. The most referred symptoms were cough (84%) with mucopurulent sputum (38%), dyspnea (78%) and fever (57%). Mean PaO2/FiO2 ratio at arrival was 248±65. Involvement of more than one lobe and bilateral involvement was verified in 39% and 22% of patients, respectively. *Streptococcus pneumoniae* was isolated in respiratory secretions (38%), hemocultures (37%) and antigen urine test (36%). The most used antibiotics were azithromycin (46%), levofloxacin (36%), ceftriaxone (25%) and amoxicillin with clavulanic acid (24%). 14% needed ICU admission. Only 3 patients died. Length hospital stay was 17 days.
Conclusions: As verified in case series already published, in our group there were important comorbidities, but very few patients had positive pneumococcal vaccination status. Symptoms were mostly related to the respiratory tract. The mean PaO2/FiO2 ratio shows a relevant affection of gas exchange with the need for admission in the ICU in an important percentage of patients. Nevertheless the outcomes were positive, since the mortality rate was only 4%.

CO 014

PNEUMOCYSTIS CARINII PNEUMONIA IN NON-HIV IMMUNOCOMPROMISED PATIENTS

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Key-words: pneumocystis jirovecii pneumonia, HIV, imunossupression

Introduction: An increase in cases of pneumocystis carinii pneumonia (PCP) has been reported in patients without HIV infection, particularly in immunosuppressed patients due to hemato-oncological, autoimmune / inflammatory diseases and solid organ transplants. The indication for primary prophylaxis in these groups is limited compared to the HIV population, so in this papper we intend to characterize them about to the occurrence of PPC.
Objective: to characterize the population of HIV - negative patients who develop PPC about their demography, disease and / or immunosuppressive therapy.
Methods: Retrospective analysis of the clinical processes of patients without HIV infection diagnosed with Pneumocystosis (136.3 of ICD-9) hospitalized in *CHLC* from 2012 to 2017.
Results: In 5 years, 60 eligible patients were identified for this study. 2015 was the year with the highest number of patients (37%, n = 22). They had a median age of 60 years (min: 6 months, max: 82 years) and 63.3% (n = 38) were males. The median length of hospitalization was 23.5 days (min: 4 days, max: 106 days), noticing that the 39 patients (65%) who required hospitalization in the ICU had a median stay in this unit of 14 days (min: 1 day, max: 106 days). The clinical conditions mostly associated with PCP were hematological diseases (46.7%, n = 28), solid organ transplantation (23.3%, n = 14) and neoplasms (13.3%, n = 8), where 3 cases were lung tumors. Less frequent were autoimmune diseases (6.7%, n = 4) and other illnesses (5.7%, n = 3). Also note 1 patient (1.7%) with lung interstitial disease (extrinsic allergic alveolitis). Only in 2 patients (3.3%) it wasn't possible to confirm the etiology of immunosuppression, one of them a 6-month-old child hospitalized for disseminated tuberculosis and PCP, with no immunodeficiency to date. Regarding immunosuppressive therapy, 85.6% of the patients (n = 54) were treated with chemotherapy, oral corticosteroids, other immunosuppressive drugs or a combination of these. The majority, 38 patients (63.3%), were undergoing corticotherapy alone or in combination. It was possible to determine the corticosteroid dose in only 26 patients (70.2%), and the mean dose of prednisolone was 65.8 mg / day (min: 1.3 mg / day, max: 250 mg / day). The median duration of immunosuppressive therapy was 2.8 months (min: 2 days, max: 26 years) before the development of PCP. Only 3 patients had been on prophylaxis with sulfamethoxazole / trimethoprim (SMX / TMP) at the time of the diagnosis of PPC. Seven patients (11.7%) did not undergo any immunosuppressive therapy, including 2 patients with lung neoplasia, 2 patients whose immunosuppression were of undetermined etiology and 3 patients with severe malnutrition, autoimmune and haematological disease respectively, were described.
Conclusion: It is clear that PCP occurs mainly in immunosuppressed patients, either by its clinical condition, highlighting hematological diseases and transplants of solid organ, or by therapy, such as chemotherapy and corticosteroids. However, its occurrence is low if we consider the high number of immunosuppressed patients followed in our center in this period. Prophylaxis with SMX / TMP may be underestimated due to lack of records and the diversity of protocols in the various services.

CO 015

SECONDARY ORGANIZING PNEUMONIA: A CLINICAL CASE REPORT

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Key-words: Organizing pneumonia, infection, coxiella burnetti

Introduction: Organizing pneumonia (OP) is characterized by the filling of the terminal bronchioles and alveoli by granulation tissue with chronic inflammation. Imaging presents with subpleural and/or peribroncovascular consolidations, nodules or bilateral ground-glass opacities. OP may be primary, or secondary to infections, drugs, connective tissue diseases or neoplasms. A case of OP secondary to an infection is presented.
Case Report: Female, 54 years-old. History of hypertension, dyslipidemia and ischemic heart disease. Medicated with aspirin, atorvastatin, alprazolam, carvedilol and olmesartan+hydrochlorothiazide. Observed in a private hospital, for dry cough, right back pain, weight loss (5kg), without fever, and progressive fatigue for a month. She was treated with levofloxacin (500mg) twice for community-acquired pneumonia (total of 19 days). She maintained progressive worsening of the condition and was admitted in the Emergency Department (ED) of our hospital. She revealed no alterations in physical examination, no respiratory insufficiency, leukocytosis and PCR 12mg/dL and chest X-ray with right multilobar alveolar opacities, aggravated in relation to the previous ones. The patient was then admitted to the Internal Medicine department. Health care-associated pneumonia, with prior antibiotic failure, was assumed. Serology for *Coxiella burnetti* (title 1:640) was positive. *Coxiella burnetti* associated pneumonia was diagnosed. Treated with doxycycline (3 weeks) and prednisolone (10mg/day) 8 days. She was discharged, clinically and radiologically improved. Serologies revealed positive antigens for Phase II IgG≥200, with negative IgM, confirming the diagnosis of Q fever. She remained clinically stable for 1 month, then started dry cough and progressive worsening fatigue. Returned to the ED, leukocytosis with discreetly elevated CRP, VS 56mm/h and radiological aggravation in the same location was observed. She was admitted to the Pulmonology Department. Performed thoracic-CT that showed consolidation of the apical and anterior segments of the right upper lobe and middle lobe of probable inflammatory nature. Bronchofibroscopy with BAL revealed lymphocytic alveolitis (70%) with CD4/CD8 0.5 ratio, negative microbiology and cytology with macrophages and inflammatory cells, without neoplastic cells. Sputum microbiology, blood cultures, serology for atypical and viral pathogens and autoimmune study were negative. Clinical and radiological presentation suggested the diagnosis of *Coxiella burnetti* associated organizing pneumonia. The patient started systemic corticosteroid therapy and 7 days of doxycycline, with clinical improvement and radiological resolution of alveolar opacities. She was discharged with prednisolone 45mg/day (0,75mg/kg/day) and referred for Pulmonology consultation. The patient then decided to stop corticosteroid therapy, restarting 2 days after dry cough and fatigue and a right alveolar opacity was observed again on the chest X-ray. Functional respiratory tests had small airway obstruction and low diffusion. Clinical improvement was observed with the onset of systemic corticosteroid therapy. The patient is awaiting thoracic-CT reevaluation and the results for new Q-fever serology.

Discussion: The clinical case described has an interest in its evolution, since clinical and radiological worsening occurred with no signs of infection, which led to consider the hypothesis of organizing pneumonia, supported by the result of BAL and rapid improvement with corticosteroid therapy. It should also be noted that few cases of OP have been reported in association with *Coxiella burnetti* infection.

CO 016

WHEN THE TUMOR IS NOT

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Key-words: Lung cancer, Tuberculoma, Hydatidosis, Pulmonary sequestration

Introduction: Several benign pulmonary diseases may mimic a lung cancer in its clinical and radiological presentation with a strong emotional impact on the patient and, thus, implying the need of a rapid diagnosis, not always possible.
Case reports: The authors describe several cases with different presentation and final diagnosis. The first case refers to a 59-year-old man, COPD stage C, active smoker, with a history of adenocarcinoma of the prostate. A chest CT was performed for quantification of emphysema and revealed irregular and spiculated pulmonary nodules. A PET-CT raised suspicion of pulmonary neoplasia of high metabolic degree with bilateral lung metastasis. In addition, a transthoracic aspiration biopsy was performed, whose anatomopathological results revealed cells suspected of malignancy. The patient was submitted to a surgical excision of the pulmonary nodule and the histopathologic findings were compatible with the diagnosis of tuberculoma. The second case is a 65-year-old woman, non-smoker, with a history of pulmonary tuberculosis exibiting a right sub-maxillary nodule. Therefore, a chest radiograph was performed and revealed a pulmonary nodule in the right base, confirmed by chest CT that also shows liver lesions. The review of old radiographs (1984) suggests the existence of the pulmonary nodule at that time. A pulmonary nodule biopsy (not fixating in PET) was made and suggested an epidermoid carcinoma, but the sample was poor representative. Hepatic lesions were shown to be hyperfixant in PET with MRI suggesting necrotic liver nodules and serial liver biopsies showing necrosis. The patient underwent 3 hepatic subsegmentectomies, whose anatomopathological result revealed hydatid cysts. The third case refers to a 36-year-old, non-smoking, ceramic factory worker with a history of recurrent pneumonia on the left. In the context of preoperative routines, the patient underwent thoracic radiography that revealed fibrotic stria in the left costophrenic recess region of residual aspect. Thoracic CT revealed a hypodense mass with heterogeneous enhancement with areas of cavitation, hydro-aerial level and irregular contours, measuring about 8x9.3cm. The transthoracic biopsy was compatible with benign lesion, but the possibility of lymphoma was not excluded. The patient underwent left inferior lobectomy that allowed the diagnosis of pulmonary sequestration.
Discussion: The three clinical cases presented are well demonstrative of pulmonary pathologies that can mimic a malignant lesion. Although lung nodules and masses are common imaging findings of lung cancer, there is a wide range of pathologies that a differential diagnosis is necessary, and it is sometimes a great challenge to establish a fast definitive diagnosis.

CO 017

ROLE OF PET-CT IN SOLITARY PULMONARY NODULE

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Key-words: solitary pulmonary nodule, PET-CT, accuracy

Introdution: Solitary pulmonary nodule (SPN) is a frequent radiological finding. The research algorithm of this entity remains complex since there are characteristics common to benign and malignant processes. PET integration with computerized tomography (PET-CT) is widely used to characterize NSP, allows the early diagnosis of changes suggestive of malignancy and avoids potential exposure to invasive methods in benign alterations.
Objectives: To evaluate the role of PET-CT in the approach of the patient with solitary pulmonary nodule (SPN)
Methods: We included 68 consecutive patients between January 2015 and July 2017 with SPN, staged by PET-CT, without previous histological diagnosis and who underwent surgical resection. PET-CT results were compared with histopathological findings. The attribution of a process suggestive of malignancy, according to the metabolism, was defined by the radiologist who reported the examination. Sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV) and PET-CT accuracy were determined.
Results: PET-CT was suggestive of malignancy in 54 cases, correctly identifying 39 of the 49 patients with malignant disease (79.5%). Fifteen patients (22%) had PET-CT suggestive of malignancy that was not confirmed. According to the histological results, 49 patients presented malignant disease, with lung adenocarcinoma being the most common (61.2%, n = 30), followed by distant neoplasm lung metastasis (11.8%, n = 8); Carcinoid tumor (9.8%, n = 4) and lung-cell carcinoma of the lung at the same frequency (9.8%, n = 4). Among the benign nodules, tuberculoma was the most common etiology, present in six cases (31.6%) corresponding to 8.8% of the sample. PET-CT did not detect 10 cases of malignant disease (16.6%). Overall the PET-CT sensitivity was 79.6%, the specificity was 21.1%, the PPV was 72.2%, the NPV was 28.6% and its accuracy was 64.7% %.
Conclusion: PET is an important tool in the evaluation of SPN identifying malignant disease in most cases. In this sample, PET-CT showed a lower specificity than the international series. The high incidence of pulmonary tuberculosis may contribute to the results found.

CO 018

MESOTHELIOM - A DEATH SENTENCE?

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Key-words: mesothelioma, cancer, lung

Introduction: Malignant pleural mesothelioma (MPM) is a type of uncomun cancer, with insidious onset and poor prognosis. Usually diagnosed in advanced stage, the therapeutic approach to the disease varies greatly. With the advent of new therapies with promising results, it is important to review the profile of the diagnoses, but also the result of the therapeutic strategies that have been used in recent years.
Objectives: Evaluation of the demographic profile of the patients, clinical presentation of the disease, diagnostic assessment, therapeutic approach and survival of MPM patients.
Methods: Retrospective analysis of MPM patients treated at the Oncology Pulmonology Unit of Pulido Valente Hospital between January 2013 and June 2017.
Results: In this period, 25 patients with MPM were evaluated, mostly men (64%) and had a mean age of 71 years. Only 36% had previous or current history of smoking. Nine patients had documented exposure to asbestos (predominantly occupational) but among those who were unaware of multiple exposure they had potentially hazardous work activities. One patient had a history of thoracic irradiation and five pulmonary diseases - 4 tuberculosis and 1 COPD. In the analyzed period we found 23 cases of epithelioid mesotheliomas and 2 mixed ones. The majority of the diagnoses were obtained through biopsies by surgical thoracoscopy. The most common presenting symptom was dyspnea, with unilateral pleural effusion and advanced stage (IV) at the time of diagnosis in most cases. For this reason, the most frequent therapeutic approach was palliative chemotherapy. Preferably patients completed the doublet of platinum and pemetrexed in the first line, with rare cases of monotherapy due to poor performance status. A partial therapeutic response was found in 33% of patients, with the disease-free interval ranging from 170 to 352 days. There were five patients proposed for surgery, two submitted to extrapleural pneumectomy, two to pleurectomy with descortication and another with intraoperative evidence of unresectable disease. Three patients underwent supportive therapy alone and 12 patients underwent pleurodesis. There were 8 cases of prophylactic radiotherapy and 4 with palliative intent. The median survival since diagnosis was 11 months.
Conclusion: In agreement with the data in the literature, our sample, although small, confirms the variability of presentation and therapeutic plan in patients with MPM, also reinforcing the importance of a fast approach given the associated gravity and bad prognosis. Often diagnosed at an advanced stage, it is essential to investigate new markers to expedite the diagnosis, but also new therapies that represent effective alternatives for these patients.

CO 019

MALPIGHIAN THYMUS CARCINOMA - CLINICAL CASE

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Key-words: Thymus, Carcinoma

Introduction: Thymus carcinomas, also known as thymic neuroendocrine tumors, are extremely rare. Its incidence is higher in men and the more frequent clinical presentation is related to the local tumor effect. Surgery remains the primary recommended treatment, yet in widespread metastatic tumors with chemotherapy (cisplatin, 5-fluorouracil, streptozocin α- and interferon) are considered options.
The prognosis is bleak and survival is low due to aggressiveness and rapid metastasis.
Clinical case: The presented clinical case corresponds to a female patient, 79 years old, non-smoking, textile employee without relief history, with a clinical picture in about 2 months of evolution characterized in productive cough mucous sputum, asthenia, anorexia, unquantified weight loss and very marked dysphonia. It was observed by otolaryngology that identified paresis of the left vocal cord. For worsening symptoms conducted CT neck and chest which showed several nodule formation at the level of the oropharynx and lung parenchyma and mediastinal-hilar lymphadenopathy, celiac and back-door. Analytically, there was only a slight increase in the inflammatory parameters. Bronchoscopy showed enlargement of the anterior tracheal spur by adenopathic extrinsic compression and indirect neoplasia signals with partial occlusion of the left bronchus lobe where biopsies were performed, whose pathologic study showed chronic inflammation and cytology aspirated and bronchial lavage was negative for Neoplastic cells.
The diagnosis was obtained by the transthoracic lung biopsy that revealed to be Malpighian carcinoma of the thymus.
The patient initiated first-line chemotherapy with Paclitaxel and Carboplatin and awaited response assessment.
Conclusions: The authors present the clinical case due to the rarity of this pathological entity.

CO 020

LUNG CARCINOID TUMOR: ANALYSIS OF 6-YEAR EXPERIENCE AT A TERTIARY HOSPITAL

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Key-words: Carcinoid, tumor, lung, treatment, endoscopy, surgery

Introduction: Lung carcinoid tumors are well-differentiated neuroendocrine neoplasms responsible for about 2% of primary lung tumors. The subclassification in typical and atypical carcinoid is definitively performed after the anatomopathological study of surgical specimen. Surgery is the treatment of choice in localized disease. Endoscopic treatment plays a role in the excision of localized tumors with endoluminal growth, in bronchial repermeabilization prior to surgery and in unresectable disease.
Objectives: Review of lung carcinoid tumors diagnosed over 6 years in a tertiary hospital.
Methods: Retrospective analysis of patients diagnosed with pulmonary carcinoid tumor between 2011 and 2016 in a tertiary hospital. Sample characterization according to demographic and clinical data. Analysis of data related to diagnosis, treatment and evolution.
Results: Sixty-seven patients were included, 56,7% (n=38) female, with a mean age at diagnosis of 61 years (min: 23, max: 89, ∂=13,94).The majority (n=48, 71,6%) were asymptomatic at diagnosis; Hemoptoic sputum was the most frequent symptom (n=8, 11,9%). There were 3 cases of carcinoid syndrome, all with a favorable response to treatment with Octreotide, and one case of Cushing's syndrome.
Bronchofibroscopy was performed in 62 cases (92,5%), revealing endobronchial involvement by the tumor in 17 (27,4%). The majority of patients (n=63, 94,0%) had an operable disease at diagnosis, however, four (6,3%) had no respiratory functional parameters compatible to surgery and one (1,6%) refused to be operated.
Two patients (3,0%) had stage 4 disease at diagnosis, with hepatic metastization. In two cases (3,0%) the diagnosis was made in hospitalizations for other causes, and the patients died in these episodes.
Fifty-eight surgeries were performed: 1 atypical resection, 1 segmentectomy, 45 lobectomies (4 with bronchoplastic resection), 5 bilobectomies and 6 pneumectomies. Postoperative hospital mortality was 1,7% (n= 1, death associated with nosocomial pneumonia). There were 3 cases of prolonged alveolar-pleural leakage, 1 hemothorax and 1 empyema. After analysis of the surgical specimen, 39 (67,2%) cases of typical carcinoid and 19 (32,8%) of atypical carcinoid were confirmed. Pathological staging allowed to classify 47 (81,0%) patients in stage I, 6 (10,3%) in stage II and 5 (8,6%) in stage IIIA. Among patients with lymph node involvement (n= 8, 13,8%, 5N1, 3N2), only 1 (12,5%) performed adjuvant chemoradiotherapy (N2). One of the patients with stage 4 at diagnosis performed palliative chemoradiotherapy and the other was proposed for best supportive care.
Endoscopic treatment with laser photocoagulation and mechanical debulking with forceps was performed in 8 (11,9%) cases, most of them (n=7, 87,5%) prior to surgery and in one case (12,5%) for bronchial debulking of palliative disease.
In operated patients (n = 58, 86,6%) there were no relapses after surgery in a mean follow-up period of 29 months.
In the analyzed period there were 7 deaths (10,4%), 2 (28,6%) related to the carcinoid tumor, due to disease progression. Both had disease in stage 4 at diagnosis.

Conclusion: Compared to other lung neoplasms, carcinoid tumors have a favorable overall prognosis.
Surgery is the treatment with curative potential and is usually associated with low relapse rates. Endoscopic techniques are useful in the diagnosis, preoperative and palliation of inoperable disease.

CO 021

INTERSTITIAL LUNG DISEASES IN HOSPITAL BEATRIZ ÂNGELO

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Key-words: ILD, epidemiology

Introduction: Interstitial lung diseases (ILD) epidemiology in Portugal is unknown. Internationally published studies reveal idiopathic pulmonary fibrosis and sarcoidosis as the most common ILD but our clinical practice points towards a different reality.
Objectives: Characterize ILD patients followed as outpatients in Hospital Beatriz Ângelo's ILD clinic.
Methods: Patients observed in Hospital Beatriz Ângelo's ILD clinic between February 2012 and December 2016 were reviewed. Those with ILD were characterized with regard to demographics, smoking history, environmental exposure, functional evaluation, comorbidities and specific ILD diagnosed.
Results: Among 285 patients observed, 200 (70%) were diagnosed with an ILD. Mean age was 67.8 ± 13.6 years, 50.5% were male and 54% were non-smokers. 39% had history of bird exposure, 4% of fungal exposure, 3.5% of asbestos exposure and 6% of other types of environmental exposure. The most frequent ILD were: sarcoidosis (18.5%), chronic hypersensitivity pneumonia (17%), unclassifiable interstitial pneumonia (11%), nonspecific interstitial pneumonia (10.5%), interstitial pneumonia with autoimmune features (8%), cryptogenic organizing pneumonia (5%) and ILD associated with connective tissue diseases (5%). 51.9% had a normal functional evaluation, 35.8% had a restrictive pattern, 11.1% an obstructive pattern and 1.2% a mixed pattern. The most common respiratory comorbidities were: obstructive sleep apnea (7.5%), chronic obstructive pulmonary disease (3.5%) and lung cancer (2.5%). Among nonrespiratory comorbidities, we underline cardiovascular diseases (54.5%), type 2 diabetes (25%), pulmonary hypertension (19%), osteoporosis (12.5%), connective tissue diseases (11.5%) and gastroesophageal reflux disease (10.5%).
Conclusion: ILD distribution in our population is different from the one described in published studies. Even though sarcoidosis is still one of the most prevalent, a much greater proportion of chronic hypersensitivity pneumonia patients was observed. Epidemiological studies are necessary to better characterize ILD in Portugal.

CO 022

AZATHIOPRINE IN THE TREATMENT OF CHRONIC HYPERSENSITIVITY PNEUMONITIS

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Key-words: azathioprine; hypersensitivity pneumonitis

Introduction: Chronic hypersensitivity pneumonitis (cHP) results from a low-level continuous exposure to an antigen and is typically associated with an insidious clinical presentation. This type of HP can evolve to pulmonary fibrosis (1) usually progressive and irreversible in spite of antigen avoidance and systemic corticotherapy (CT) (2). The side effects associated with CT and the unfavourable prognosis associated with cHP led to the need for other therapeutic options, for instance, azathioprine (AZA). Even so, the data available about the immunosuppressing therapy in cHP is scarce.
Aim: To evaluate the results of the treatment with AZA in the lung function of patients with cHP.
Materials and methods: Retrospective study of patients with cHP, from the diffuse lung disease outpatient clinic treated with AZA. Diagnosis was based on compatible exposure, clinical presentation and radiologic findings together with high lymphocytosis in the bronchoalveolar lavage and/or lung biopsy with pathologic findings characteristic of HP. Lung function parameters were evaluated at 6 and 12 months of treatment. Data was inserted and statistical analysis performed in SPSS software.
Results: We selected a total of 63 patients, 41 of the female sex. Mean age was 59,9±11 years. The majority were non-smokers (n=51). Exposure to birds was the most identified antigen (n=41). No agent was identified in 13 patients.
CT was used prior to AZA in 35 patients. Twenty-one patients stopped AZA before 12 months of treatment were reached, mostly because of toxicity (n=11).
Considering the patients that completed 12 months of treatment with AZA, a statistically significant increase was observed when comparing mean percentage of predicted FVC prior to the treatment to the mean percentage of predicted FVC after 6 and 12 months of therapy - 71,6±20,6 vs 76,3±23,5 (p=0,024); 70,8±20,7 vs 75,8±26,2; (p=0,017) respectively. A statistically significant increase was also observed in mean percentage of predicted TLC prior to AZA comparatively to mean percentage of predicted TLC after 6 months of treatment (74,5±19,5 vs 80,1±19,2, p=0,005).
We observed no statistically significant differences in mean percentage of predicted DL_{CO} before and after 6 and 12 months of treatment.
Conclusions: In this sample of patients with cHP, AZA seems to have encouraging results regarding lung function decline in cHP, considering the evolution of FVC and TLC. Nevertheless, similar data are needed from other series in order to sustain an indication of an immunosuppressive treatment with AZA in cHP.

References:
(1) Spagnolo P, Rossi G, Cavazza A, Bonifazi M, Paladini I, Bonella F, et al. Hypersensitivity Pneumonitis: A Comprehensive Review. J Investig Allergol Clin Immunol. 2015;25(4):237–50;
(2) Fink JN, Ortega HG, Reynolds HY, Cormier YF, Fan LL, Franks TJ, et al. Needs and opportunities for research in hypersensitivity pneumonitis. Am J Respir Crit Care Med. 2005;171(7):792–8.

CO 023

SARCOIDOSIS - FARO HOSPITAL EXPERIENCE

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Key-words: Sarcoidosis, noncaseating granulomas, symptoms, oral glucocorticoid

Introduction: Sarcoidosis is a multisystem granulomatous disorder of unknown etiology. Its incidence varies worldwide and its clinical presentation can be quite variable, typically affecting lungs and skin.
Objectives: Characterize the population with sarcoidosis followed at Interstitial Lung Disease appointment at Faro Hospital.
Method: Analytical, cross-sectional, retrospective study of patients diagnosed with sarcoidosis followed at Interstitial Lung Disease appointment at Faro Hospital since january of 2014 till august of 2017. We analyzed the following variables: gender, race, age at time of diagnosis, smoking habits, organ involvement, main symptoms and stage at diagnosis, their progression or spontaneous remission, calcium and angiotensin-converting enzyme (ACE) concentration in blood, pulmonary function tests (PFTs), pulmonary hypertension, which biopsies were made for diagnosis and treatment.
Results: From the 154 patients followed at Interstitial Lung Disease appointment since 2014, 22 patients have sarcoidosis (14%), 55% were women, 77% were caucasian and the average age at time of diagnosis was 39.2 years old. Smoking habits were found in 32% of patients, with a mean of 8 pack per year, and 5% are current smokers. At time of diagnosis, the main symptoms were dyspnea (64%) and cough (59%). 5% were asymptomatic and started the investigation because of radiological findings. Stage II was the commonest at time of diagnosis (46%), followed by stage III (36%) and I (18%). There was disease progression in 14% of the cases (9% to stage II and 5% to III). The detection of noncaseating granulomas for the histopathological diagnosis was made by endobronchial (50%), lymph nodes (36%) and skin (14%) biopsies. All of the patients had pulmonary sarcoidosis, and 50% had multiple organ involvement (27% having 2 organs involved and 23% with 3 organs). Extrapulmonary involvement were: skin, lymph nodes, joints, eye, spleen, heart, bladder and ureter. 14% of the patients had pulmonary hypertension identified by echocardiogram. At time of diagnosis, the mean calcium concentration in blood was 9.3mg/dL and ACE was 109UI/L. 64 % have normal PFTs, 18% had restriction and 18% had obstruction, with a mean DLCO of 80% and DLCO/VA of 96%. None of the patients had spontaneous remission and all of them started oral glucocorticoid at some point. 18% needed another immunosuppressive treatment. At this moment, 46% of the patients don't need any therapy and 41% have maintenance therapy.
Conclusions: There was a prevalence of female gender and caucasian race, having just few of them smoking habits history, with a low pack per year average. At time of diagnosis, the main symptoms were dyspnea and cough, being stage II the most common. There was a progression to superior stages in 14% of the cases. Beside the lung, in half of the cases there was involvement of more than 1 or 2 organs. No spontaneous remission were observed and all of the patients needed oral glucocorticoids.

CO 024

ASSESSING QUALITY OF LIFE IN PORTUGUESE WOMEN WITH LYMPHANGIOLEIOMYOMATOSIS

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Key-words: Lymphamgioleiomyomatosis, Quality of life, EQ-5D

Background: Lymphamgioleiomyomatosis (LAM) is a multisystem disease that affect predominantly young women of child-bearing age, characterized by cystic lung destruction and presenting with dyspnea and recurrent pneumothoraxes. As a progressive lung disease it stands for an impermanent of quality of life.
Aim: To access the quality of live in LAM patients.
Methods: The EQ-5D health questionnaire was applied to women followed in Santa Maria Hospital with LAM. Social data, lung function tests evolution, number of pneumothoraxes and it complications and treatments used were registered. The data was analyzed using SPSS-IBM 21.
Results: Twelve women were enrolled. The mean age at diagnosis was 34 years-old. Only one had tuberous sclerosis and one has been submitted to lung transplant. Seven patients report any degree of dyspnea. Five patients never had pneumothorax. Ten of the patients performed any kind of directed treatment to LAM. The mean health index was 0,654 [0,446;1] with emphasis on anxiety/depression dimension, which was moderate in nine patients. The mean EQ-visual analogue scale was 67,25 [45;99].
Conclusion: In this sample the mean heath index is lower than the Portuguese heath index (0.758±0.006) but there wasn't a statistical difference between this groups (p=0.09). This may result from the small size sample, but further studies with bigger samples are needed to know the real impact of LAM in patient's quality of life and in health care systems.

CO 025

DIFFUSE PARENCHYMAL LUNG DISEASE EXACERBATIONS: RETROSPECTIVE STUDY

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Key-words: exacerbations, intersticial lung disease, hospitalizations

Introduction: Diffuse parenchymal lung diseases (DPLD) are an occasional cause of hospitalization, associated with relevant morbidity and mortality. Although exacerbations are better known in idiopathic pulmonary fibrosis (IPF), they also appear to occur in other clinical entities, although not so well described. This study aims to characterize a population of patients hospitalized in a pulmonology department with a previous diagnosis of DPLD.
Methods: Retrospective analysis of patients with chronic DPLD with an acute episode, admitted in a university department of pulmonology during the year 2016. The data were obtained through the consultation of electronic reports and include clinical, laboratory, imaging and prognostic variables.
Results: We identified 51 admissions, corresponding to 38 patients. Of those, 21 were male (55%) and 17 female (45%), with a mean age of 72,7 ± 10,9 years. The most frequent interstitial disease was pulmonary fibrosis (19 cases, 50%) - 5 patients (13%) had a diagnosis of idiopathic pulmonary fibrosis, and 14 (37%) had secondary or under study pulmonary fibrosis. Of the remaining patients, 7 (18%) had chronic hypersensitivity pneumonitis, 5 (13%) sarcoidosis, 2 subacute hypersensitivity pneumonitis, 1 cryptogenic organizing pneumonia and 1 had interstitial disease under study. Concerning comorbidities, 11 (29%) were former smokers and 27 (71%) were non-smokers. The mean smoking exposure of ex-smokers was 28,7 ± 12,7 pack-years. Thirteen patients (34%) had heart disease (failure or arrhythmia), 19 (50%) had arterial hypertension and 2 (5%) had a history of COPD. Moreover, 2 (5%) patients had pulmonary hypertension with or without *cor pulmonale*. Dyslipidemia was the most frequent comorbidity, present in 23 patients (61%). Regarding hospitalizations (n = 51), the mean duration in days was 12,4 (1 to 66). The main cause of admition was suspected infection (70,6%), of which 42% had pneumonia and 58% had other respiratory infections. 46 cases underwent antibiotic therapy (90%). In 78% of these (n = 36) was used a single antibiotic, most frequently amoxicillin and clavulanic acid (26% of the admissions receiving antibiotics). Of the 21 cases (41%) that had collected blood cultures, only 1 had a positive result (*Klebsiella pneumoniae*). Sputum culture was engaged in 51%, with 19% of them being positive (n=5). Multidrug resistent bacteria were identified in 3 cases of these. 44 patients (86%) underwent corticosteroid therapy, with methylprednisolone (or equivalent) average dose of 94mg per day, and a maximum of 250mg. Mechanical ventilation was established in five patients, noninvasive in three and invasive in two. The mortality rate was 8% (n = 4), being higher in patients with pulmonary fibrosis under study or secondary (17.6%).
Discussion and conclusions: Diffuse parenchymal lung diseases seem to be associated with a significant risk of acute events, usually interpreted as infection and treated with antibiotics and corticosteroids. The authors emphasize the high proportion of patients with hypersensitivity pneumonitis, which is not observed in the international series. There is also a lower proportion of patients with IPF, which may explain the low mortality rate.

CO 026

MACROLIDES AS A POTENTIAL THERAPY IN ORGANIZING PNEUMONIA

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Key-words: organizing pneumonia, macrolides, azithromycin, systemic corticosteroid

Introduction: Corticosteroids are the first line of therapy recommended in organizing pneumonia (OP), being usually effective and leading to good prognosis. However, cases of response to the macrolide immunomodulatory properties prescribed after intolerance or steroids inefficacy have been reported.
Aims: To identify and to characterize patients with diagnosis of OP treated with macrolide and to analyse the potential of macrolide therapy as an alternative or adjuvant treatment in this context.
Methods: Retrospective study of patients diagnosed with OP (cryptogenic and secondary) followed in a tertiary hospital who were treated with macrolides. Diagnosis was made according to the ERS/ATS guidelines on idiopathic interstitial pneumonia. The macrolide prescription protocol included a dose of azithromycin 500 mg 3x per week for 2 years, prescribed after relapse, contraindication or intolerance to systemic corticosteroid (SC). Statistical analysis was performed using IBM SPSS Statistics® v.21 software.
Results: We included thirteen patients (n=13) with a mean age of 64.1 ± 11.7 years, predominantly female (n = 9) and non-smokers (n = 9). In half of the patients a cause for OP was identified (drugs n = 4; immunodeficiency n = 2; connectivitis n = 1). As 1st line therapy, 11 patients were prescribed with SC and 2 azithromycin because of relative contraindications to SC. In patients under SC, azithromycin was prescribed in 10 after relapse of the disease and in 1 after intolerance. In 69% of patients (n = 9), azithromycin was associated with resolution of disease, whereas in 15% (n = 2) it was ineffective and in 15% (n = 2) relapsed was confirmed. 3 patients had self-limiting digestive symptoms that didn´t lead to discontinuation of therapy.
Conclusion: In this group of patients, macrolide prescription has been shown to be an effective therapy with low associated toxicity. Therefore, this data reinforce the potential use of this drug in patients with OP.

CO 027

CHRONIC HYPERSENSITIVITY PNEUMONITIS AND IDIOPATHIC PULMONARY FIBROSIS: DO THEY THE SAME EVOLUTION AFTER LUNG TRANSPLANTATION?

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Key-words: Outcome, Idiopathic pulmonary fibrosis, Chronic Hipersensivity Pneumonitis, Lung transplantation

Introduction: Pulmonary interstitial diseases, of chronic evolution, often occur for pulmonary fibrosis and lung transplantation may be an option in selected patients. Chronic Hypersensitivity Pneumonitis (PHC) and Idiopathic Pulmonary Fibrosis (IPF) are two of the interstitial pathologies most commonly referred for lung transplantation.
Objectives: To characterize and compare demographic and functional data of patients with PHC and IPF undergoing lung transplantation and to evaluate outcomes in terms of overall survival, acute rejection and chronic graft dysfunction in the first year after transplantation.
Methods: Retrospective analysis of patients transplanted between January 2009 and July 2016 by PHC and FPI. Patients with other etiologies of pulmonary fibrosis were excluded. Survival was calculated using the Kaplan-Meier method.
Results: Of the 53 patients transplanted by interstitial pathology in this period, 24 cases were for PHC and 11 for IPF. Eighteen (51.4%) were males, with a mean age of 51 years, surpassing the two groups (50.8 in PHC vs 51.7 in IPF). From the functional point of view, in the PHC, they had, on average, CVF 48.3% of predicted, FEV1 49.0% predicted and DLCO 30.5%, comparable with IPF, on average, CVF 42.3% of predicted, FEV1 49.3% of predicted and DLCO 31.1%. All patients had chronic respiratory failure and significant desaturation from the 6-minute Walk Test. The mean overall survival after lung transplantation in patients with PHC was 80.4 months vs 47.9 months in IPF (p = 0.04), with 95% survival in PHC vs 81.8% in IPF. In the first year, the incidence of acute rejection in patients with PHC was 58.3% (n = 14) vs 60% (n = 6) in IPF and chronic graft dysfunction was considered in four patients with PHC (16.7%) vs zero cases in IPF. There have been no documented cases of PHC recurrence in the graft.
Conclusion: Pulmonary transplantation is a therapeutic option for patients with chronic and advanced PHC, being the most common indication for transplantation due to interstitial disease in Portugal. Despite the higher incidence of chronic graft dysfunction in the first year, overall PHC survival was higher than that of IPF after lung transplantation with statistical significance.

CO 028

THE LEARNING CURVE FOR TRANSBRONCHIAL LUNG CRYOBIOPSY IN DIFFUSE LUNG DISEASE

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Key-words: Tranbronchial Lung Cryobiopsies, Diffuse Lung Diseases, Lung Histology, Learning Curve

Introduction: Transbronchial lung cryobiopsy (TBLC) is increasingly used in the diagnosis of diffuse lung disease (DLD), but no data have yet been published on the learning curve associated with this technique
Aim: To evaluate diagnostic yield, lung tissue sample length and area, and procedure-related complications in a cohort of TCBC procedures to define the learning curve and threshold for proficiency.
Methods: Retrospective analysis of the first 100 TBLCs performed in different segments of the same lobe in patients with suspected DLD. We compared diagnostic yield, sample length and area, and complications between consecutive groups of patients.
Results: The overall diagnostic yield for TBLC was 82%. Median sample length was 5.4 mm (IQR, 5-6) and median area was 19.5 mm^2 (IQR, 13.3-25). Pneumothorax was the most common complication (18%). On comparing the two groups of 50 consecutive patients, a significant difference was found for diagnostic yield (74% vs 90%; p=0.04), sample length (5.0 mm [2.5-16] vs 6.0 mm [4-12;] p<0.01) and area (17.5 mm^2 [6-42] vs 21.5 mm^2 [10-49]; p<0.01). Logarithm regression was applied to median diagnostic yield and sample length and area for 10 groups of 10 consecutive patients to define the learning curve, which plateaued after approximately 70 procedures.
Conclusions: Although this study is based on a single bronchoscopist and hospital, our findings suggest that proficiency in TBLC is achieved at approximately the 70th procedure. Our findings need to be validated in more series and cohorts to further define the precise learning curve.

CO 029

MANAGEMENT OF PLEURAL EFFUSION BY MEDICAL THORACOSCOPY: CASE SERIES OF 124 CASES FROM A PULMONOLOGY DEPARTMENT

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Key-words: pleural effusion; medical thoracoscopy

Introduction: A remarkable percentage of exudative pleural effusions remain as indeterminate after initial fluid analysis and imaging study. In the need to obtain pleural tissue, thoracoscopy remains the diagnostic gold-standard, frequently allowing simultaneous therapeutic intervention.
Nevertheless, the great diagnostic value of medical thoracoscopy (TM) lies in the positive diagnosis of malignant and tuberculous pleural effusion, with high mean sensitivities reported. TM presents, in most cases, a diagnostic acuity very similar to VATS and with the advantage of greater cost-effectiveness. It is performed outside the operative block, under local anesthesia and conscious sedation, spontaneous ventilation and oftenly uniportal entrance.
Methods: All cases of pleural effusion managed by semi-flexible thoracoscopy from 01/2011 to 06/2017 in the Pulmonology Department of Centro Hospitalar do Baixo Vouga were analysed. Several features were studied: patient demographics; frequency of free or septate effusions; thoracoscopic findings; pleural fluid cytopathological and microbiological results; histopathological and mycobacteriological results of pleural biopsies; accomplishment of pleurodesis by talc *poudrage* and intrapleural adhesiolysis; final clinical diagnosis after inclusion of all diagnostic elements; rate of complications.
Results: We analyzed 124 patients submitted to semi-flexible thoracoscopy, with 55.7% of men and overall mean age of 68.4 years (SD±14.1).
The final etiologic diagnosis consisted of: secondary malignant effusion in 34.7% (n=43), malignant mesothelioma in 6.4% (n = 8), tuberculous pleurisy in 10.5% (n=13), pleural infection in 7,3% (n=9), non-specific pleuritis in 21.8%, cardiogenic effusion in 4.8% (n=6), paramalignant effusion in 7.3% (n=9), hemothorax in 1.6% (n=2), hepatic hydrothorax in 1.6% (n=2), drug toxicity in 0.8% (n=1), chylothorax in 0.8% (n=1), pulmonary embolism in 1,6% (n=2) and secondary to relapsing polychondritis in 0.8% (n=1).
In the subgroup of malignant effusion the mean age at diagnosis was 69.6 years (SD±12.4) with a predominance of female gender (53.5%). Metastatic adenocarcinoma was the most common tumor (65.1%, n=28), with lung being the most common primary origin (n=24), followed by breast carcinoma.
Cases of tuberculous pleurisy predominated in men (76.9%) with a mean global age of 56.7 years (SD±21.7). The subgroup of cases of malignant mesothelioma was also associated with a male predominance (62.5%) but a higher mean age (72.3 years, SD±12.1).
Of the total number of patients, 36 underwent endoscopic treatment (29.03%), distributed between pleurodesis (88.9%) and/or adhesiolysis (11.1%).
The percentage of free and septate effusions and some pleural fluid biochemical parameters in certain subgroups were also presented. There were no deaths related to the procedure. Complications included two pneumomediastinum, four dysrhythmias, one case of cardiac ischemia, one ventilatory arrest secondary to sedation and one secondary pleural infection.

Conclusions: TM is a fundamental diagnostic tool for the etiological clarification of exudative pleural effusions of indeterminate cause after first approach. Again, it proved to be a simple, effective and safe procedure with a low complication rate. The percentage of non-specific pleuritis was within the range reported in the literature.

CO 030

EFFECTIVENESS AND SAFETY OF SEMI-RIGID THORACOSCOPY

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Key-words: Endoscopic procedures, Thoracoscopy, Pleural diseases

Introduction: Since its introduction in the early 2000s, the semi-rigid thoracoscope has been used by an increasing number of medical centers around the world and reports on its effectiveness are seemingly comparable to the classical rigid thoracoscope. Reports, however, are still scarce and refer to a relatively low number of patients. We thus believe that it is essential that further contributions are made by more centers in order to gather significant information pertaining this technique to clearly establish its yield in both diagnostic and therapeutic realms.
Methodology: Retrospective analysis of the clinical records of all patients that underwent semi-rigid thoracoscopy in our Pulmonology Department between February 2015 and July 2017. Data regarding demographics, comorbidities, clinical presentation, previous biochemical, cytological and histopathological analysis, procedure details and its findings, diagnostic and therapeutic results, complications and mortality was collected from all patients. Statistical analysis was performed using SPSS v23.
Results: A total of 29 patients underwent semi-rigid thoracoscopy in the defined period, mostly males (69%) with an mean age of 68 years. The procedure was mainly performed with a diagnostic purpose (86,2%) on extensive exudative pleural effusions (89,7%). The diagnostic yield of the procedures was 92.9%. Nineteen patients had malignant pleural disease (65,5%), the most common diagnostic being metastatic lung adenocarcinoma (41,4%), while the remaining had benign disease (34,5%), most commonly tuberculosis (13,8%). Pleurodesis was carried out in 51,7% of patients, mostly using pressurized talc powder (60%) with successful results in all patients. The procedure was generally well tolerated with limited subcutaneous emphysema occurring in 20,7% and pleural empiema in one patient. No mortality was associated with the procedure.
Conclusions: Our results are comparable to those previously published and add on the notion that semi-rigid thoracoscopy is a safe, well tolerated and highly valuable procedure for both diagnostic and therapeutic approach of pleural diseases.

CO 031

EBUS-RADIAL-PROBE BRONCHOSCOPY IN THE DIAGNOSIS OF PERIPHERAL PULMONARY LESIONS

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Key-words: Bronchofibroscopy; EBUS; EBUS-radial-probe

Introduction: Peripheral lung lesions are an increasingly common finding in daily clinical practice, namely in primary lung cancer.
Conventional flexible bronchoscopy has renown limitations on the ability to reach these lesions namely those with smaller dimension.
EBUS radial probe, electromagnetic navigation bronchoscopy and ultra-thin bronchoscopy are important technical breakthroughs on the location ability of these lesions, allowing for significant diagnostic yielding improvement.
EBUS radial probe allows for a better location and identification of the lesions using a plastic sheath catheter EBUS-guided through the path indicated by CT-Scan, expanding the range of accessible lung sites, allowing for multiple sampling and diagnostic yielding improvement.
Objective: To present an institutional experience with the use of EBUS radial probe bronchoscopy through a guide sheath and to evaluate its diagnostic yielding in peripheral pulmonary lesions approach.
Methods: Retrospective study of patients undergoing bronchoscopy with EBUS radial probe for peripheral pulmonary lesions investigation, from January 1, 2017 to July 15, 2017.
Bronchoscopy was performed under deep sedation in dorsal decubitus. A previous analysis of the thoracic CT was made to identify the lesion tributary bronchus, followed by its identification with C-arm type fluoroscopy. A radial probe was inserted in the plastic sheath and after EBUS identification of the lesion, bronchial biopsies and cytological brushing were performed under fluoroscopy vision.
Demographic information, lesion size and location, radial EBUS probe lesion identification, procedures performed and final diagnosis were analyzed.
Results: Forty patients were included, 32.5% (n = 13) female and 67.5% (n = 27) male. The mean age was 62.4 ± 13.8 years.
The mean lesion size was 23.8 ± 11.5 mm. Most of the lesions were located in RUL, 30.0% (n = 12), LUL, 25.0% (n = 10) and RLL, 10.0% (n = 8).
With EBUS radial probe, peripheral lesions were identified in 75.0% (n = 30) of the cases. The mean lesion size identified by EBUS was 25.9 ± 11.7 mm. In two of the cases the lesion identification was impaired by cough and abundant secretions, and in another two cases the examination was interrupted before performing diagnostic procedures due to poor patient oxygenation.
A definitive diagnosis was possible in 60.0% (n = 18) of the cases, and the following histological results were obtained: lung adenocarcinoma (n = 10); adenocarcinoma (n =2); carcinoid tumor (n = 2); lymphoma (n = 1); squamous cell carcinoma (n = 1); small cell lung cancer (n = 1); bronchioloalveolar carcinoma (n = 1).
The following complications were observed: a case of small-sized pneumothorax, treated conservatively; and a case of minor bleeding, controlled with tamponade balloon.

Conclusion: In this series EBUS radial probe bronchoscopy was a safe procedure allowing for a superior capacity on the identification of peripheral pulmonary lesions and a better diagnostic yielding, when compared with conventional bronchoscopy.
Peripheral lung lesions without identifiable tributary bronchus or those with great shifting angle at biforcation, demand the creation of a new steerable plastic probe for diagnostic yielding optimization.

CO 032

EBUS-TBNA IN PATIENTS WITH LUNG CANCER WITHOUT MEDIASTINAL OR HILAR LYMPHADENOPATHY BY COMPUTED TOMOGRAPHY CHEST SCAN

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Key-words: EBUS-TBNA, lung cancer, staging, mediastinal staging

Introdution: Accurate staging is a critical step in lung cancer approach once the therapeutic decision and prognosis is based in it[1]. In patients with chest localized disease, mediastinal staging determines the best curative strategy[2]. Computed tomography (CT) chest scan allows evaluation of the probability of lymph node invasion by cancer, defining its clinical staging[2], which is considered sufficiently reliable if shows no invasion of mediastinal or hilar lymph nodes[2], N0 disease. However, 5 to 15% of patients in this stage are found to have lymph nodes involvement in surgical staging[2]. EBUS-TBNA has been recommended as initial test of choice in mediastinal surgical staging, with lower morbidity and avoiding unnecessary thoracotomies[3].
The **aim** of this study was to evaluate the sensitivity, specificity and accuracy of EBUS-TBNA in mediastinal surgical staging of lung cancer patients without mediastinal or hilar lymphadenopathy in CT by current criteria of nodal diameter.
Methods: Prospective, cross-sectional, uncontrolled study of a group of patients with lung cancer histologically confirmed and no evidence of mediastinal lymphadenopathy in clinical staging by CT, submitted to EBUS-TBNA for surgical lymph nodes staging. We considered no evidence of mediastinal lymphadenopathy when lymph nodes present with short-axis diameter <10 mm by CT. To calculate sensitivity, specificity and accuracy, EBUS-TBNA staging was compared to surgical one in patients who underwent surgery (mediastinoscopy or pulmonar ressection with lymphadenectomy), or to 1-year follow-up CT in patients in non-surgical stage submitted to chemotherapy e/or radiotherapy.
Results: 62 patients were included, with mean age of 66 years (SD=9), 53.2% male and 93.5% with smoking history. Primary lesion presented a mean diameter of 4.2 cm (SD=2.1) and its histological diagnosis was established by transthoracic biopsy in the majority of patients (83.9%), with remaining lesions diagnosed by bronchoscopic techniques (endobronchial or transbronchial biopsy). Adenocarcinoma (69.4%) and squamous-cell carcinoma (27.4%) were the most frequent histological types. EBUS-TBNA staging resulted in N0 in 47 (75.8%) cases and in upstage for N1 in 2 (3.2%) and N2 in 9 (14.5%). 6.5% were inconclusive by EBUS-TBNA and after surgical staging resulted in N0. Of N0 cases by EBUS-TBNA, 12 (25.5%) were upstaged to N1 (n=6) or to N2 (n=6) after surgical staging. EBUS-TBNA showed a sensitivity of 76.9%, specificity of 97.1% and accuracy of 75.9% for staging these patients.
Conclusions: All patients included were in cN0 stage and, after EBUS-TBNA staging, 17.7% were upstaged, which is in line with literature and rise the awareness for the need of invasive staging also in these patients. EBUS-TBNA, a minimal technique, demonstrated good sensitivity, specificity and accuracy in staging these patients, proving it may be the test of choice for this purpose.

References:
[1] Ong P, Grosu H, Eapen GA, Rodriguez M, Lazarus D, Ost D, Jimenez CA, Morice R, Bandi V, Tamara L, Cornwell L, Green L, Zhu A, Casal RF. Endobronchial ultrasound-guided transbronchial needle aspiration for systematic nodal staging of lung cancer in patients with N0 disease by computed tomography and integrated positron emission tomography-computed tomography. Ann Am Thorac Soc. 2015 Mar;12(3):415-9.
[2] Silvestri GA, Gonzalez AV, Jantz MA, Margolis ML, Gould MK, Tanoue LT, Harris LJ, Detterbeck FC. Methods for staging non-small cell lung cancer: Diagnosis and management of lung cancer, 3rd ed: American College of Chest Physicians evidence-based clinical practice guidelines. Chest. 2013 May;143(5 Suppl):e211S-e250S.
[3] Vilmann P, Clementsen PF, Colella S, Siemsen M, De Leyn P, Dumonceau JM, Herth FJ, Larghi A, Vazquez-Sequeiros E, Hassan C, Crombag L, Korevaar DA, Konge L, Annema JT. Combined endobronchial and esophageal endosonography for the diagnosis and staging of lung cancer: European Society of Gastrointestinal Endoscopy (ESGE) Guideline, in cooperation with the European Respiratory Society (ERS) and the European Society of Thoracic Surgeons (ESTS). Endoscopy. 2015 Jun;47(6):545-59.

CO 033

RIGID BRONCHOSCOPY: INDICATIONS AND ANALYSIS OF SHORT-TERM RECURRENCE CONTRIBUTIVE FACTORS AND PROCEDURE RELATED COMPLICATIONS

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Key-words: bronchoscopy, rigid, neoplasm

Objetives: To evaluate main causes for the procedure, applied techniques, short-term recurrence and complications in a portuguese cohort of patients who underwent rigid bronchoscopy in a pulmonology department of a central hospital. To analyse contributive short-term recurrence and procedure related complication factors in patients with endobronchial tumours and in patients with tracheal stenosis.
Methods: A retrospective analysis of patients submitted to rigid bronchoscopy in Pulmonology A Department of Coimbra's University Hospital between July 2010 and June 2017 (133 male and 62 female, aged between 17 and 93 years old). Statistical data were processed using SPSS Statistics v23.
Results: 181 patients (133 male and 62 female), aged between 17 and 93 years old were identified. Endobronchial tumours (51.9%) were the main indication for rigid bronchoscopy in this study, followed by esophageal neoplasm (22.1%) and tracheal stenosis (18.8%). Other causes were foreign bodies (2.8%) and others (4.4%). 33.1% of the patients were referred from other hospitals, 29.8% from other departments in our hospital, 15.5% from emergency service, 13.8% from Pulmonology outpatient consultation and 7.7% from Pulmonary Oncology department.
In the group of endobronchial tumours (n=94), the three most frequently found histological types were epidermoid (30.9%), followed by adenocarcinoma (11.7%) and other tumours metastasis (9.6%), with other histological types in smaller percentages. In 6,4% of the cases histological type was not known. 84% of the cases underwent Nd-YAG laser therapy, in 10.6% an endobronchial prothesis was placed and in 3.2% topical mitomycin was used. 6.4% of the cases had procedure related complications and 7,4% relapsed at one month. There was no association between age, histological type, laser therapy, and topical mitomycin application and complications or short-term recurrence.
For tracheal stenosis (n=35), the majority of cases (85.3%) were upper third tracheal stenosis, followed by middle third stenosis and lower third tracheal stenosis with same proportion of cases (5.9%), and one case (2.9%) of two lower thirds tracheal stenosis. 88.2% of the cases underwent Nd-YAG laser therapy, 73.5% underwent mechanical dilatation, in 35.3% topical mitomycin was used and in 11.8% a tracheal prothesis was placed. 2.9% had procedure related complications and 26.5% relapsed at one month. In this group, there was no association between stenosis location, laser therapy, tracheal prothesis use and topical mitomycin application and short-term recurrence or complications (only one case had complications). Patients were significantly younger (p=0,004) in the one-month relapsed group.
Conclusions: Rigid bronchoscopy main indications in our study were endobronchial tumours, with also important proportion for easophagus neoplasm and tracheal stenosis. Age, in the tracheal stenosis group and use of prothesis in the endobronchial tumour group showed association with one month recurrence. It's generally a safe procedure (with only one peri-procedure death reported) with low number of complications (the most commonly found was respiratory failure).

CO 034

BRONCHIAL-PULMONARY CARCINOMA: HISTOLOGICAL CLASSIFICATION AND SURVIVAL AFTER TARGETED THERAPY

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Key-words: EGFR, ALK, KRAS, Tyrosine kinase inhibitors, Adenocarcinoma, Survival

Abstract: Bronchial-Pulmonary Carcinoma is the leading cause of death within malignant etiology. Clinical characterization, therapy and follow-up after histological typing, are essential to clarify survival factors. Molecular pathology may show correlation between morphology and prognosis outcome, and can also be important in order to personalize therapy. This correlation was the aim of the presented work.
Material and Methods: This retrospective study was based on information collected from Pathology data provided by Instituto de Anatomia Patológica e Patologia Molecular of Faculty of Medicine of Coimbra, concerning histological typing and molecular studies of EGFR, KRAS and ALK in 56 bronchial-pulmonary biopsies. Then the corresponding 56 patient files (36 men and 20 women) were accessed, variables selected and subsequent follow up was performed until April 2015, in order to characterize the sample.
Results: Adenocarcinoma was the most common histological type (37/56), followed by pleomorphic (5/56), epidermoid (4/56), adenosquamous (4/56), large cell (3/56), sarcomatoid (2/56) and mucoepidermoid (1/56) carcinomas. The most common histological type found was adenocarcinoma, (24/36) in men and (13/20) in women. The mean age at diagnosis was 66 years old. 35/56 patients had prior history of smoking. At the time of diagnosis, 36/56 patients presented stage IV, 8/56 stage IIIB, 4/56 stage IIIA and the remaining 8/56 were at stages I or II. Mutated EGFR genes were found in 29 patients (18 adenocarcinoma, 3 pleomorphic carcinoma, 3 large cell carcinoma, 2 epidermoid carcinoma, 1 adenosquamous, 1 sarcomatoid and 1 mucoepidermoid carcinoma) while 27 cases were EGFR wild type; 23 patients received tyrosine kinase inhibitors in first and second lines, and under maintenance treatment associated with radiotherapy, when indicated. Mean survival of patients with mutated tumours was 31.7 months (95% CI: 22.48-40.89 months) comparing with 18 months (95% CI: 11.16-24.79 months) in wild type.
Conclusions: The study showed higher prevalence of bronchial-pulmonary carcinoma in men. Adenocarcinoma was the most frequent histological type either in men and women and smoking habits were prevalent. The overall survival of patients carrying mutated EGFR tumours was higher, comparing with wild type; these results were presented using Kaplan Meier curves and had statistical significance (p=0.0324).

CO 035

NEW GENERATION SEQUENCING: MUTATIONAL PROFILE IN PATIENTS WITH NON-SMALL CELL LUNG CANCER

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Key-words: new generation sequencing, non-small cell lung cancer, Targeted therapy

Introduction: Targeted therapy has become increasingly important in the treatment of non-small cell lung cancer (NSCLC)
New generation sequencing (NGS) allows DNA sequencing and identification of mutations that allow the use of target molecules in the treatment of NSCLC.
This study aims to evaluate the mutational profile in patients with NSCLC, diagnosed in a central hospital.
Methods: It were included all patients with NSCLC diagnosed between October 2016 and May 2017, that performed NGS in their evaluation.
It was investigated mutations in the genes: EGFR, KRAS, NRAS, BRAF, MET, HER2, ERBB4, PI3KCA, PTEN, ALK, ROS1 e RET. It was investigated and included in this study pathological variants of genes and variants of uncertain clinical significance.
Results:

	Without mutations in the genes investigated	With mutations in the genes investigated
N patients	12 [27,3]	29 [70,7]
Age (mean;standard deviation)	63±14	64±10
Male (N [%])	11 [91,7]	18 [62,1]
Smoking habits (N [%])		
Non smoker	2 [16,7]	7 [24,1]
Smoker	6 [50]	11 [37,9]
Former smoker	4 [33,3]	11 [37,9]
Histological Type (N [%])		
Adenocarcinoma	10 [83,3]	24 [82,8]
Non small cells carcinoma	1 [8,3]	3 [10,4]
Squamous cell carcinoma	0	1 [3,4]
Large cell neuroendocrine carcinoma	1 [8,3]	1 [3,4]
Initial Staging (N [%])		
IA1	1 [8,3]	1 [3,4]
IA2	1 [8,3]	3 [10,3]
IB	0	2 [6,9]
IIA	0	1 [3,4]
IIIA	2 [16,7]	1 [3,4]
IIIB	2 [16,7]	1 [3,4]
IIIC	1 [8,3]	1 [3,4]
IVA	1 [8,3]	9 [31]
IVB	2 [16,7]	8 [27,6]
Incomplete staging	2 [16,7]	2 [6,9]
Performance Status (N [%])		
0	1 [8,3]	5 [17,2]
1	9 [75]	14 [48,3]
2	1 [8,3]	4 [13,8]
3	1 [8,3]	5 [17,2]
4	0	1 [3,4]

Mutated gene (N)		Pathological variants	Variants of uncertain clinical significance
KRAS		14	0
EGFR		4	5
HER2		1	5
MET		0	4
PI3KCA		1	2
Rearrangement EML4-ALK20		3	0
PTEN		1	1
ERBB4		0	1
ROS1		1	0
BRAF		1	0

In 8 patients there was more than one mutated gene.

KRAS(pv)-EGFR(uv)-MET(uv)-ERBB4(uv)	1
KRAS(pv)-EGFR(uv)-MET(uv)-PTEN(uv)	1
MET(uv)-HER2(uv)-PI3KCA(uv)	1
KRAS(pv)-HER2(uv)-HER2(uv)	1
EGFR(pv)-ROS1(uv)-EGFR(uv)	1
KRAS(pv)-PI3KCA(uv)	1
KRAS(pv)-MET(uv)	1
KRAS(pv)-EGFR(uv)	1
Abbreviations: pv- pathological variants; uv- variants of uncertain clinical significance	

Discussion: In this study the mutations more prevalent were in KRAS and EGFR, although it were described more rare mutations, such in PI3KCA, HER2 and BRAF.
Of the mutations identify, 59,1% were pathological variants, within these, 38,5% currently allow use of target therapy.
There were many mutations that are variants of uncertain clinical significance, but with this new technology probably it will become more often identified and in the future can become important in the treatment of NSCLC.
More than one mutated gene was described in 8 patients. This extends the therapeutic possibilities but make the day-to-day decisions even more complex and difficult.

CO 036

NEUTROPENIC FEVER IN LUNG CANCER: CLINICAL ASPECTS RELATED TO MORTALITY AND ANTIBIOTIC FAILURE

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Key-words: Lung cancer, neutropenic fever, mortality, antibiotic failure

Introduction: Lung cancer (LC) is the oncologic disease with the highest mortality rate in Portugal. Treatment frequently involves chemotherapy, and neutropenic fever (NF) is an adverse effect that occurs in 10-40% of the patients.
Objectives: To describe hospital admissions caused by NF in patients with LC in the respiratory ward of a central hospital, and to stablish associations between patient profiles, mortality and first line antibiotic failure (ATB).
Methods: Retrospective study based on the analysis of the medical records of patients diagnosed with lung cancer and under chemotherapy, between January 2009 and June 2017 and, concomitantly, neutropenic fever (defined as neutrophil count <500/mm^3 and single temperature measure of >38,3ºC or temperature >38ºC for over one hour), who needed hospitalization. Continuous variables were expressed as mean and standard deviation and categorical variables were expressed as frequencies and percentage. For the comparative analysis of categoric variables chi-square or Fisher's exact test was used; for qualitative variables T-student or Mann-Whitney U test was used. The threshold for statistical significance was set to p <0.05.
Results: We included 42 cases of NF, of which 86.11% were males (*n=31*), aged between 42 and 85 years (mean age: 66,7). Of all cases, 26.2% (*n=11*) were diagnosed with Small Cell Lung Carcinoma and 40,5% (*n=17*) had metastatic disease. The mean duration of hospitalization was 11,8 days (*±7,36*), the mean neutrophil count was 228/mm^3, and neutropenia lasted on average 3,6 days (*±1,81*). Respiratory tract infections accounted for 42,9% (*n=18*) of NF cases, and in 33,3% (*n=14*) no infectious cause was identified. Methicillin-resistant *staphylococcus aureus* was the most isolated agent, corresponding to 7,14% (n=3) of the cases. No microorganisms were isolated in 71,4% (*n=30*) of the cases. As for comorbidities, 31% (*n=13*) and 26,2% (*n=11*) of the cases had a history of cardiovascular and respiratory disease, respectively, and 19% (*n=8*) of Diabetes Mellitus. At the time of hospitalization, 14.3% (*n=6*) had severe anemia (Hb <8.0g/dL) and 23.8% (*n=10*) severe thrombocytopenia (platelets <50,000/mm3). The mortality rate was 16.7% (*n=7*), and FATB was 26.2% (*n=11*).
Statistically significant associations were found between mortality and the following variables: Performance Status (PS) greater than 1 (*p=0,011*), infection by a Gram-negative agent (*p=0,001*) and severe anemia (*p=0,048*). FATB was associated with younger age (*p=0,049*), longer hospitalizations (*p=0,020*), PS >1 (*p=0,049*), respiratory infections (*p=0,024*), infection by a Gram-negative agent (*p=0,003*) or multidrug-resistant agent (*p=0,014*) and greater use of antifungal agents (*p=0,031*).
Conclusion: As described in the literature, patients with worse PS and infections by Gram-negative agents seem to be associated with worse outcomes. Contrary to expected, younger ages were associated with higher FATB, probably due to other factors such as histological type, advanced stage or infections by multidrug-resistant organisms. Respiratory infections were also associated with higher FATB. We highlight the small sample size as the main limitation of this study.

CO 037

IATROGENIC NEUTROPENIA IN LUNG AND PLEURA CANCER TREATMENT WITH CHEMOTHERAPY

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Key-words: Neutropenia, Febrile Neutropenia, Lung and Pleura cancer

Introduction: Febrile neutropenia (FN) is one of the more dangerous complications secondary to chemotherapy. It is defined as an oral temperature of >38.3°C or two consecutive readings of >38.0°C for 2 hours with an absolute neutrophil count (ANC) of <0.5 × 10^3/uL, or expected to fall to that values. There are described conditions of higher risk of FN as older age, advanced disease, history of prior FN, mucositis, poor performance status (PS) and cardiovascular disease.
Objective: Compare the patients with febrile neutropenia to those with non-febrile neutropenia and explore the factors associated to longer hospital admissions of neutropenic patients.
Methods and Material: Retrospective analysis of the patients admitted to a Central Hospital Pneumology Department with neutropenia iatrogenic to chemotherapy in 5 years (n=63).
Results: We considered 63 cases with median age of 66.0+/-9.7 years and a male predominance (85,7%). Half of the patients (52.4%) presented the diagnose of lung adenocarcinoma, 25.4% lung squamous cell carcinoma, 17.5% Small Cell Lung cancer, 3.2% malign pleural mesotelioma and 1.6% Primitive neuroectodermal tumor (PNET) of the lung. 69.8% patients were in first line treatment of chemotherapy and more than two thirds were at first (33.3%) or second circle of chemotherapy. The neutropenia was mainly associated to three chemotherapies: Vinorelbine (39.7%), Pemetrexed (27%) e Etoposide (17.5%). In 63.5% patients, the treatment had Carboplatin in association.
The majority of patients presented at admission respiratory complaints (33.3%), generalized complaints (30.2%) or gastro-intestinal complaints (20.6%). The median initial value of neutrophils was 0.4 × 10^3/uL. 60.3% of cases presented simultaneously pancytopenia and 47.6% bicytopenia. 60.3% presented criteria to the diagnose of FN. The hospital admission of the non-febrile patients was motivated by Pneumonia (28.6%), food intolerance secondary to radiation-induced esophagitis (21.4%), mucositis (7.1%), vomits (7.1%), among other causes.
Every patient received granulocyte colony-stimulating treatment. Only 12.7% of cases weren't treated with antibiotics. The hospital admission mean duration was 9.0 days. 11.1% of patients died during the hospital admission.
FN patients were significantly older than the non-febrile patients (p=0.008) and were meanly treated with Vinorelbine and Pemetrexed (p=0.048). There were not statistical differences relatively to double treatment with Carboplatin (p=0.547), to gender (p=0.293), to lung/pleura cancer histology (p=0.081), to oncologic stage (p=0.345), to PS (p=0.323) or to initial count of neutrophils (p=0.910).
The only factor associated with longer hospital stays was the PS (p=0.027)
Conclusion: Older age and the chemotherapy used (vinorelbine and pemetrexed) were associated to FN. Worse PS prolonged hospital stays.
The mortality rate found in this work (11.1%) is similar to the value presented at the literature.

CO 038

PIERRE-MARIE-BAMBERGER SYNDROME: MANIFESTATION OF LUNG ADENOCARCINOMA

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Key-words: lung adenocarcinoma, paraneoplastic syndrome

Introduction: Pulmonary Hypertrophic Osteoarthropathy (Pierre-Marie-Bamberger syndrome) is a paraneoplastic syndrome manifested by joint pain showing a symmetrical distribution, resulting from hypertrophy of bone and its surrounding soft tissues, with periosteal reaction involving both the diaphysis and metaphysis of long, tubular bones. Tibial involvement is seen in most cases. It is present in about 5% of patients with lung cancer, most often linked to adenocarcinoma.
Case report: We present the case of a 61-year-old construction worker with no relevant personal background, except for marked drinking and smoking habits (smoking load - 100 pack years). The patient went to the hospital complaining of joint pain referred to the knees and ankles, productive cough with mucoid sputum, nocturnal sweating, asthenia, anorexia and unquantified weight loss for a period of four months. The joint pain motivated two previous trips to the hospital.
The patient was emaciated, showing poor general condition, febrile, eupneic and with an overall reduction of the vesicular breath sounds, more marked in the right hemitorax. He also had mild knee and tibiotarsal edema. Laboratorial exams showed Hb - 10.5 g/dL; Leukocytes - 13.11x10^3/µL, Neutrophils - 8.86x10^3/µL; Platelets - 626x10^3/µL; CRP - 12.10 mg/dL; SR - 101 mm/hr. Chest x-ray showed right paracardiac hypotransparency, with no air bronchogram sign. Chest CT: 3cm lung nodule in the ML, with irregular contour; five satellite nodules grouped at the base of the RLL, the largest measuring 18mm; peri-tracheal and right hilar adenopathies; thickening of the right oblique fissure, suspected lymphangitis; Right pleural effusion with irregular contour. Antigenuria, serologies for HIV and hepatitis showed negative. The patient was admitted for further study.
From the complementary study, we highlight negative results for sputum culture, direct and cultural mycobacteriological tests, and MTC DNA. Bronchofibroscopy: infiltration in the transtition to the internal wall of the RMLB conditioning obstruction with reduction of permeability and evident neovascularization by NBI. Bronchial aspirate: cytobacteriological with non-significant flora, negative results for direct and cultural mycobacteriological tests and MTC DNA. PFT without significant changes. The patient underwent teleradiography of the knees and was evaluated by Orthopedics, which did not identify the presence of bone lesions. Bronchial biopsy, cytologic examination of the bronchial aspirate and brushing concluded the diagnosis of primitive lung adenocarcinoma.
After hospital discharge, while awaiting staging, he went to the hospital complaining of right anterolateral pleuritic chest and hyperthermia since the day before, associated with worsening joint pain at the knees and elbows. Due to radiological aggravation, he was admitted to the ward with the diagnosis of obstructive pneumonia. The patient was again evaluated by Orthopedics. Bone scintigraphy was suggested, which showed a discrete hypercaptation in the long bones, more evident in the femurs and tibias, but also in the upper limbs, compatible with Pulmonary Hypertrophic Osteoarthropathy.
Conclusion: With this case we intend to describe a rare form of presentation of lung adenocarcinoma, which may precede in months the appearance of respiratory or constitutional signs and symptoms, causing delays in its diagnosis and treatment.

CO 039

SEVERE CUTANEOUS TOXICITY SECONDARY TO TKI - -ABOUT TWO CASE REPORTS

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Key-words: TKI, erlotinib, gefitinib, afatinib, lung cancer, adverse reaction, cutaneous

Lung cancer presents more frequently in its advanced stage and there are still no curative treatment options. However, a huge progress was achieved with molecular target treatment.
EGFR (epidermal growth factor receptor) mutation is the main molecular target of Gefitinib, Erlotinib and Afatinib, which are now approved as inhibitors of this tyrosine kinase (TKI).
These drugs have been proven to have better outcomes in terms of treatment response with significant delays in disease progression and improvement of quality of life in comparison with platin based chemotherapy.
Cutaneous toxicity is one of the more frequent adverse effects associated with TKI, which, although usually mild, still have implication in quality of life of patients. Erlotinib has been described as more frequently associated with severe cutaneous reactions in comparison with other TKI.
Case 1: a 47 year old female, non-smoker that during the study of haemoptysis, weight loss and anorexia, a stage IV lung adenocarcinoma with EGFR mutation was diagnosed. She started Gefitinib, presenting with an acne-type rash of the face and torso, needing support treatment. After 15 months the patient went to the ER because of sepsis with origin in skin infection, she presented with multiple skin abscess, needing a prolonged hospital stay, IV antibiotics, support treatment and suspending Gefitinib. Afterwards she was started on prophylactic treatment with minocycline and was started on Erlotinib, without skin lesions relapse.
Case 2: a 68 year old female, non-smoker, with previous history of arterial hypertension, which during the study of dyspnoea was diagnosed with stage IV lung adenocarcinoma with EGFR mutation. She started gefitinib and presented, afterwards, nail bed lesions. Because of worsening of these lesions she needed support treatment and Gefitinib had to be stopped at 6 months (with skin lesions improvement). She, then, started Erlotinib. After 3 months treatment, she presented a rash with pustular lesions and pruritus in the legs; she was treated with oral antibiotics and reduced Erlotinib dosage. There was clinical worsening of the skin lesions, with progression to multiple bilateral painful ulcers. Erlotinib was stopped, and she was admitted to the hospital to begin treatment with IV antibiotics and wound care, which she continued as an outpatient. She was proposed for treatment with Afatinib, without skin lesions relapse.
The factors that lead to severe cutaneous reactions are still unknown, with some theories pertaining to the individual drug pharmacokinetics, lymphocyte activation (Erlotinib associated) or disruption of the EGFR role in skin homeostasis.
Prophylaxis treatments with tetracyclines and, less frequently, with azithromycin were described in literature.
We would like to reinforce the importance of early skin lesion care and prophylaxis in some cases.
The authors would like to highlight de difficulty in identifying the candidates for prophylaxis or for stopping TKI treatment, when there is a multitude of clinical presentations and grade of severity of skin lesions, and the importance of counselling and educating patients early on about the adverse drug reactions and their potential impact in treating the oncologic disease.

CO 040

NIVOLUMAB RELATED ADVERSE EVENTS – DATA FROM A PULMONARY ONCOLOGY CLINIC

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Key-words: Nivolumab, adverse events, pulmonary oncology

Introduction: Nivolumab is an IgG4 monoclonal antibody against T-cell programmed death receptors (PD-1). PD-1 receptors bind to PD-L1 and PD-L2 on tumor cells, inhibiting T-cell proliferation. By blocking this receptor, Nivolumab enhances T-cell cytotoxic activity against tumor cells.
Nivolumab is approved for pretreated patients with either nonsquamous or squamous non-small cell lung cancer. While efficacy in clinical trials is encouraging, immune-related adverse events can occur at any time. Nearly all organs may be affected and in some cases treatment discontinuation is required.
Objectives: To evaluate the immune-related adverse events of patients treated with Nivolumab at a pulmonary oncology outpatient clinic of a central hospital.
Methods: Retrospective study conducted among patients treated with Nivolumab at a pulmonary oncology outpatient clinic of a central hospital, between February 2016 and June 2017. Medical records were reviewed to collect data on demographic characteristics, neoplastic disease history and treatment with Nivolumab. Statistical analysis using *SPSS statistics IBM v23*® and *Microsoft Excel 2013*® was conducted to describe the sample.
Results: Total sample of 21 patients, 71% males, mean age 64 years. The majority of patients had adenocarcinoma (90%, n=19) and the remaining squamous cell carcinoma. Mean duration of treatment with Nivolumab was 6 months. Immune-related adverse events were reported in 86% of patients (n=18).
81% (n=17) and 19% (n=4) of patients reported fatigue and decreased appetite, respectively. 28% (n=6) of patients developed dysimmune endocrinopathies, including hypothyroidism (14%, n=3), *Diabetes mellitus* (10%, n=2), adrenal failure (5%, n=1). One patient presented with diabetic ketoacidosis. Vomiting, cholestasis, asymptomatic proteinuria and skin reactions were reported in one patient each (5%, n=1 each). The majority of these adverse events were mild to moderate (grades 1 or 2 of *National Cancer Institute's Common Terminology Criteria for Adverse Events v4*) and did not require treatment discontinuation apart from temporary suspension in diabetic ketoacidosis until metabolic control was achieved.
22% (n=4) of patients developed severe immune-related adverse events (grades 3 or 4) which required immunotherapy permanent discontinuation: one patient developed pneumonitis, another one developed nephritic syndrome and two patients developed encephalitis.
Conclusions: These results suggest that immune-related adverse events occur frequently with Nivolumab. The majority of these events are mild to moderate and fatigue is the most common reported symptom. These results are consistent with literature.
The incidence of immune encephalitis in this sample was relatively high when compared to clinical trials' data (0.2%). This discrepancy may be explained by the recent recognition of this challenging to diagnose adverse event, as well as by the small size of our sample. Early identification and treatment of dysimmune adverse events are essential to limit their duration and severity. The management of these dysimmune toxicities is specific and can sometimes be urgent. Therefore pulmonary oncologists have to familiarize with these conditions.

CO 041

A CASE OF AUTOIMMUNE ENCEPHALITIS SECONDARY TO NIVOLUMAB TREATMENT IN METASTATIC PULMONARY ADENOCARCINOMA

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Key-words: autoimmune encephalitis; nivolumab; pulmonary adenocarcinoma

Immune checkpoint inhibitors are striving in the battle against advanced non–small-cell lung cancer, among other malignancies, by altering the tumor's microenvironment and blocking immune system evasion methods.
Nivolumab, an anti–PD-1 IgG4 antibody, aims to enhance an antitumor immune response by blocking the connection between PD-1 and its ligand (PD-L1), often present in tumor cells, and hence allowing activated T cells to produce an effective immune response.
Despite having substantially improved the prognosis for patients, in the course of time more rare side effects are being recognized. Autoimmune encephalitis is a rare but potentially serious toxicity secondary to Nivolumab treatment. Neurologic symptoms in patients receiving this type of treatment should therefore be thoroughly investigated in order to exclude this disorder.
A.C.M, a 63-year-old man, previously independent in his daily activities, with no previous history of mental health problems, was diagnosed with Pulmonary Adenocarcinoma located in the upper left lobe, in the year 2015, initially at a IIIa stage.
The patient first started treatment with 4 cycles of chemotherapy, with Premetexed. Still, he progressed with central nervous system metastasis, located in the right frontal lobe. In April 2016 he underwent holocranial radiotherapy and later on started treatment with Nivolumab, in June 2016. He went through 8 cycles with favorable response, plus 6 cycles, the last one taking place the day before being admitted to the Hospital.
On January 21st 2017 the patient was brought to the ER escorted by police officers, saying that he was a victim of an aggression act committed by his wife, having also expressed structured suicidal ideation. He was therefore admitted against his will to the Psychiatric ward and started treatment with antipsychotic medication.
The patient then started fluctuating between a state of delirium of persecutory nature and somnolence, with absolute dependency for every daily activity. Cranial CT-Scan and MRI showed no new lesions or alterations to the lesion in the frontal lobe when compared to the previous CT-Scan in January 18th.
Multiple Neurologists evaluated the patient and foretold a very poor prognosis, with minimal to none rehabilitation prospects, assuming a multifactorial encephalopathy due to a past history of moderate alcoholic habits.
The patient however remained in the hospital because of social issues, and meanwhile developed a Pneumonia, which was treated with antibiotics and hydrocortisone for bronchospasm. A clinical improvement was noted, including a noticeable state of increased awareness.
Lumbar Puncture showed oligoclonal bands with a type 4 pattern, mild pleocytosis (49 mg/dL) and no alterations in the immunologic profile. It is important to stress, however, the fact that this was performed after 12 days of corticotherapy.
With these alterations along with the prompt improvement following corticosteroids, the possibility of an autoimmune limbic encephalitis was acknowledged and treated accordingly with Prednisolone. From then on, a continuously remarkable response was noted, with restoration to a previous normal state, adequate behavior and humor and capacity to perform all daily activities.

CO 042

NEUTROPHIL-LYMPHOCYTE RATIO IN OBSTRUCTIVE SLEEP APNEA: EFFECTS OF POSITIVE AIRWAY PRESSURE THERAPY

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Key-words: Obstructive sleep apnea syndrome, neutrophil--lymphocyte ratio, positive airway pressure.

Introduction: Obstructive sleep apnea syndrome (OSAS) is characterized by repetitive episodes of limitation of airflow, which result in intermittent nocturnal hypoxia and it is associated with cardiovascular complications. The neutrophil-lymphocyte ratio (NLR) has been shown to be a marker of inflammation, being elevated in patients with cardiovascular disease. Several studies have demonstrated the protective effect of positive airway pressure regarding cardiovascular risk, however, there are few studies evaluating its effect on the reduction of NLR.
Objectives: The aim was to evaluate the effect of positive airway pressure (PAP) therapy on neutrophil-lymphocyte ratio after 6 months of PAP.
Methods: This prospective study included 47 male patients. Patients with other sleep disorders, neuromuscular pathology, renal disease, thyroid pathology, heart failure, neoplasms, chronic inflammatory disease or prior PAP use were excluded. Basal NLR and after 6 months of PAP therapy (S9 Resmed®, Australia) were assessed.
Results: Patients had a mean age of 47.2 years. Twenty-two patients presented mild / moderate OSAS and 25 severe OSAS. The mean NLR was higher in the severe group (severe OSAS mean NLR 1.99; mild / moderate OSAS mean NLR 1,53 p <0.05). After 6 months of PAP there was a significant reduction of NLR from 1.77 to 1.73 (p <0.05), which was higher in the group of severe OSAS from 1.99 to 1.87 (p <0.001).
Conclusion: The present study demonstrated that neutrophil-lymphocyte ratio changed significantly after 6 months of PAP therapy in OSAS patients, being the reduction greater in severe OSAS, supporting its cardiovascular protective effect. Our study has reinforced the importance of analytical cardiovascular evaluation as complementary tool of diagnosis/treatment response in OSAS patients.

CO 043

THE ASSOCIATION OF NEUTROPHIL TO LYMPHOCYTE RATIO WITH OBSTRUCTIVE SLEEP APNEA

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Key-words: NLR, Neutrophil-Lymchocyte ratio, OSAS

Introduction: Obstructive sleep apnea syndrome (OSAS) is characterized by repetitive episodes of limitation of airflow which result in intermittent nocturnal hypoxia and sleep fragmentation. Repetitive hypoxia-reoxygenation cycles have been shown to be associated with activation of the proinflammatory factors IL6, C-reactive protein, and TNF-a. Recently, novel biomarkers such as neutrophil-to-lymphocyte ratio (NLR) have been proposed as indicators of systemic inflammation. It is an easily accessible and reliable marker of subclinical inflammation that can be easily obtained from the differential white blood cell count. However, there are still few studies that evaluate the association between NLR and the severity of OSAS.
Objectives: The aim of the current study was to evaluate the NLR as a new marker of the severity of OSA.
Methods: We conducted a prospective study that included 72 male patients with mild, moderate and severe OSA. Patients with other sleep disorders, neuromuscular pathology, renal disease, thyroid pathology, heart failure, neoplasms, chronic inflammatory disease or prior positive airway pressure use were excluded. Clinical, polysomnographic and laboratory parameters were analysed. NLR was obtained by calculating the ratio between absolute levels of neutrophils and lymphocytes. It was evaluated their association with the severity of OSAS, time with oxygen under 90% (T90) and minimum oxygen saturation (SpO_2).
Results: The study included 72 patients (mean age 46.4 years), of which 45 (62.5%) had mild /moderate OSAS and 27 (37.5%) had severe OSAS. The mean of neutrophil-lymphocite ratio (NLR) increased significantly with OSAS severity. Average NLR was 1.68± 0.5 in mild/moderate OSAS, compared to an average NLR of 2.39 ± 2.0 in severe OSAS (p = 0.027).
There was no significant difference between the NLR and the time with oxygen saturation below 90% (T90) or with the minimum oxygen saturation.
Conclusion: Neutrophil-lymphocite ratio is a quick, cheap, easily measurable novel inflammatory marker and could help to identify patients with severe OSAS.

CO 044

EFFECTS OF POSITIVE AIRWAY PRESSURE THERAPY ON HOMOCYSTEINE IN OBSTRUCTIVE SLEEP APNEA

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Key-words: Obstructive sleep apnea; OSAS; Homocysteine

Introduction: Obstructive sleep apnea syndrome (OSAS) is associated with cardiovascular complications. Studies reported homocysteine as an independent risk factor for atherosclerosis, cerebral and cardiovascular diseases (CVD). Homocysteine has been proposed as an OSAS biomarker regarding its relationship with CVD.
Aim: The aim was to analyse homocysteine levels in snorers and OSAS patients, its correlation with OSAS severity and response to positive airway pressure (PAP) therapy.
Methodology: One-hundred and three male patients were included and 73 were OSAS patients. In this prospective study we analysed polysomnographic and analytical data of patients admitted to sleep laboratory. Venous blood samples were collected for evaluation of blood homocysteine after polysomnography and after six months of PAP.
Results:OSAS patients were similar to snorers except for higher body mass index and dyslipidemia. Homocysteine was higher than normal range in snorers and OSAS patients, without differences between OSAS severity grades. Also, homocysteine was not correlated with sleep parameters. Forty-six OSAS patients were submitted to 6 months of PAP, with a mean compliance of 4.37hours/nightand they showed a significant decrease in mean values of homocysteine (15.3±2.8 vs. 13.2±2.6; p<0.05).
Conclusion: The present study demonstrated that homocysteine profile decreased significantly after 6 months of PAP therapy in OSAS patients, supporting its cardiovascular protective effect. Our study has reinforced the importance of analytical cardiovascular evaluation as complementary tool of diagnosis/treatment response in OSAS patients.

CO 045

EFFECTS OF POSITIVE AIRWAY PRESSURE THERAPY ON CARDIOVASCULAR AND METABOLIC MARKERS IN OBSTRUCTIVE SLEEP APNEA

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Key-words: Obstructive sleep apnea; OSAS; Cardiovascular and metabolic markers;

Introduction: Obstructive sleep apnea syndrome (OSAS) is associated with cardiovascular/metabolic complications. Some analytical parameters (glycemic and lipidic profiles) are recognized markers of these consequences. Limited data is available on the association of these markers and OSAS's severity/response to positive airway pressure(PAP) therapy.
Aim: The aim was to evaluate metabolic/cardiovascular markers in snorers and OSAS patients, to relate with sleep parameters and PAP response.
Methodology: One-hundred and three male patients were included and 73 were OSAS patients.In this prospective study we analysed polysomnographic and analytical data of patients admitted to sleep laboratory. Venous blood samples were collected, after polysomnography and after six months of PAP. Parameters of glycemic profile (glucose, hemoglobin A1c [HbA1c], insulin, insulin resistance, and lipidic profile (total cholesterol, low-density lipoprotein [LDL], high-density lipoprotein [HDL] and triglycerides) were analysed.
Results: OSAS patients were similar to snorers except for higher body mass index and dyslipidemia. Severe OSAS patients showed higher glycemia, HbA1c, insulin, insulin resistance, and lower HDL cholesterol in comparison to mild-moderate (p<0.05, p<0.05, p<0.001, p<0.001, p<0.05, respectively). Glycemia, HbA1c, and triglycerides were positively correlated with RDI (p<0.05). Glycemia and HbA1c were negatively correlated with lowest SpO_2 (p<0.05). Insulin and HOMA-IR were positively correlated with RDI, T90, and ODI (p<0.001) and negatively correlated with lowest SpO_2 (p<0.001).Forty-six OSAS patients were submitted to 6 months of PAP, with a significant decrease in mean values of glycemia, total and LDL cholesterol (p<0.05, p<0.05, p<0.05, respectively), and in glycemia and LDL cholesterol only in severe group (p<0.05, p<0.05, respectively).
Conclusion: This study demonstrated an association between glucose metabolism parameters and triglycerides with OSAS severity underlying the complexity of the process leading to cardiovascular/metabolic complications in this disorder. Moreover, glycemic and lipidic profiles changed significantly after 6 months of PAP therapy in OSAS, supporting its cardiovascular and metabolic protective effect. Our study has reinforced the importance of analytical cardiovascular/metabolic evaluation as complementary tool of diagnosis/treatment response in OSAS.

CO 046

VALIDATION OF A PORTUGUESE VERSION OF THE STOP-BANG QUESTIONNAIRE AS A SCREENING TOOL FOR OBSTRUCTIVE SLEEP APNEA (OSA) IN THE PRIMARY HEALTH CARE

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Key-words: obstructive sleep apnea; Screening tool; Primary health care; STOP-Bang questionnaire; Diagnosis; polysomnography

Introduction: The growing suspected patients with obstructive sleep apnea (OSA) referred for sleep consultation has increased exponentially in the last decade. Therefore, screening methods have become increasingly important, especially in primary health care (PHC).
Objective: Evaluate the performance of the STOP-Bang questionnaire for suspicion and diagnosis of obstructive sleep apnea.
Methods: 8-month prospective study; all patients referred from PHC to a respective sleep clinic for clinical evaluation with a completed and translated version of the STOP- Bang.
Results: 259 patients were observed and included in the study. Age was 55.14±12.07 years, 71.0.3% were male patients, neck circumference was 40.97± 3.07 cm and BMI was 31.1±5.14 kg/m2. OSA was present in 82.6% of the patients, of whom, 34.6% had moderate and 36.8% had severe OSA. A STOP-Bang score ≥3 had a sensitivity and positive predictive value (PPV) for OSA of 98.6% and 88.4%, respectively. Each increase in the STOP-Bang score was associated with an increase in the probability of OSA and severe OSA; reaching a 98% OSA probability, for a score of 6, and 80% severe OSA probability, for a 8. A score of 3 and 2 had a negative predictive value for moderate/severe OSA of 86.96% and 87.5%, respectively.
Conclusions: As much as we know, our study is the first that applied the STOP-Bang in Portuguese PHC. We demonstrate that this questionnaire is a powerful tool for stratifying patients in the suspicion and diagnosis of OSA, which showed high sensitivity and PPV for OSA with the probability of severe OSA steadily increasing, along with the scores.

CO 047

BENEFICIAL EFFECT AND TOLERANCE OF POSITIVE AIRWAY PRESSURE IN THE ELDERLY

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Key-words: Obstructive sleep apnea; Elderly; Neuropsycological evaluation

Obstructive Sleep Apnea(OSA) is a common disorder in elderly. OSA-related cognitive dysfunction has been shown and seems to increase with age.
Our aim was to evaluate impact of positive airway pressure (PAP) treatment on cognitive dysfunction in OSA patients over the age of 65 years and their acceptability of PAP.
Patients diagnosed with OSA (Polyssomnography or type II polygraphy) and characterized according to demographics, comorbidities, IAH and PAP use. Dementia Rating Scale (DRS) (attention, initiation/perseverance, construction, conceptualization and memory), Clock Drawing Test(CDT), Mini Mental State examination (MMSE) were used for neuropsychological evaluation (NE). All tests were repeated after at least 6 months of PAP therapy.
Seventeen patients were evaluated, 64,7% males, mean age 75,1+-5,1 years, body mass index-32,9+-6,0Kg/m2, 94,1% of patients had HTA, 35,3% had diabetes and 47% dyslipidemia. None had dementia, parkinson's disease, depression or significant vascular cerebral disease. Average AHI was 28,6/hr+-19. Initial NE showed a diffuse cognitive deficit in 12/17 patients. Average DRS was 123,3+-16,2 and average MMSE was 26 +-3,72. Nine out of 17 patients completed CDT correctly. All patients except one adapted well to PAP with an average use over 4 hrs of 86,6% and all had correction of respiratory events (residual IAH<5/hr). After 6 months of PAP, patients were re-evaluated. Average DRS was 123,5+-19,2 and average MMSE was 25,6 +-5,15. Ten out of 16 patients completed CDT correctly. There was a significant difference regarding only memory evaluation on DRS before and after PAP therapy (wilcoxon test p=0,023).
Most patients tolerated PAP with a good use and correction of respiratory events. This study suggests that PAP therapy can have positive effects on some of the elderly neurocognitive functions, such as memory.

CO 048

FOLLOW-UP OF OBSTRUCTIVE SLEEP APNEA TREATMENT: SIMILAR OUTCOMES IN PRIMARY CARE AND SLEEP UNITS?

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Key-words: Obstructive Sleep Apnea; Follow-up; Primary care; Sleep Units

Introduction: Obstructive sleep apnea (OSA) is a highly prevalent disease and due to the increasing demand for hospital sleep units, there has been growing interest in ambulatory models of care for patients with OSA. Since 2015, the Portuguese model determinate the reference to primary care units of OSA patients with CPAP compliance and efficacy and with no treatment complaints. We performed a study to evaluate whether follow-up of patients undergoing treatment in the primary care units still remained stable after 18 months from discharge.
The primary outcome was the comparison of CPAP compliance objectively measured using the number of hour of CPAP use per night. The secondary outcomes were the change in percentage of nights with CPAP use more than 4h, the apnea-hypopnea index (AHI), the body mass index (BMI) and Epworth Sleepiness Scale (ESS) score.
Materials and methods: Study participants were discharged from the hospital sleep unit from May to October 2015. We reviewed the hospital process and reassessed patients at the present time with clinical features and CPAP data.
Results: We included 111 patients with a mean apnea-hypopnea index 38.2 ± 23.1/h, age 67.9 ± 9.8 years, 82% male, with mean CPAP use of 6.7 ± 3.3 years. The primary care follow-up mean period was 19.4 months. The CPAP compliance was 6.9 ± 1.2 hours per night in the sleep unit vs 6.9 ±1.3 hours per night in the primary care follow-up, with no significant mean difference (p=0.500). There were also no significant difference in the BMI (32.0 ± 5.1 kg/m^2 in the sleep unit vs 31.7 ± 7.5 kg/m^2 in the primary care follow-up; p=0.119), in the residual ESS score (4.2 ± 2.8 in the sleep unit vs 4.3 ± 5.6 in the primary care follow-up; p=0.916) or in the residual AHI (2.1 ± 1.4/h in the sleep unit vs 2.7 ± 4.1/h in the primary care follow-up; p=0.601). The percentage of nights with CPAP use more than 4h was significantly lower in the primary care follow-up (97.7 ± 3.6 in the sleep unit vs 88.3 ±19.6 in the primary care; p<0.001).
Conclusions: A 18 month follow-up of stable OSA patients disclosed similar CPAP compliance and efficacy in primary care and in sleep unit settings.

CO 049

PHYSIOLOGICAL EFFECTS OF THREE DIFFERENT VENTILATORY MODES IN PATIENTS WITH OBESITY HYPOVENTILATION SYNDROME UNDER NOCTURNAL NONINVASIVE VENTILATION: A PILOT RANDOMIZED STUDY

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Key-words: Noninvasive Ventilation, OHS, Hibrid Modes

Background: Noninvasive ventilation (NIV) is an established treatment for obesity hypoventilation syndrome (OHS), however studies on the efficacy of different ventilatory strategies (hybrid modes) remains lacking.
Objective: Randomized observational study aimed to analyze the physiologic effects of 3 different NIV ventilatory modes in patients with OHS.
Methods: Eight OHS outpatients (0 females), with median(IQR) age of 64(44-74), BMI of 39(36-43), FEV1/FVC% of 72(69-85), AHI of 24(15-42), mean SpO2 of 85(78-89) and PaCO2 of 50(47-56) were included. Settings were titrated gradually for the patient comfort with IPAP of 24(20-30), EPAP of 11(8-15), Respiratory Rate of 15 (14-16). Patients were admitted during 3 nights to sleep under 3 different modes (Bi-level S/T, AVAPS-AE and volume cycled) in a random order. The tidal volume and target volume were set to 10ml/kg of ideal body weight. During the 3 nights, sleep polygraphy (level III), transcutaneous CO2 (TcCO2), ventilator software data, actigraphy and patient comfort were registered.
Results: All patients tolerated the different ventilatory modes (except 1 – volume mode). Regarding the physiologic effects, no significant differences were found between the different modes, however better comfort was observed in the AVAPS-AE mode.

	AHI	Mean SpO2	Mean TcCO2	Sleep Efficiency
S/T	6(1-18)	93(91-95)	48(37-53)	90(85-93)
AVAPS-AE	7(3-17)	92(91-95)	37(31-46)	75(68-83)
Volume	4(2-10)	93(91-94)	46(39-50)	89(35-93)
p	*0,779*	*0,472*	*0,607*	*0,264*

Conclusions: A reduced number of patients were included, and no differences were found between the 3 ventilatory modes. Hybrid modes may improve comfort and therefore patient's tolerance to nocturnal NIV.

CO 050

CAN WE TRULY CHANGE FROM POLYSOMNOGRAPHY TO POLYGRAPHY IN OBSTRUCTIVE SLEEP APNEA? A COMPARISON BETWEEN THESE TO LEVELS OF SLEEP STUDIES IN A POPULATION OF PATIENTS WITH OBSTRUCTIVE SLEEP APNEA

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Key-words: Obstructive sleep apnea, polygraphy and polysomnography

Introduction: Polygraphy (PG) or polysomnography (PSG) - sleep studies level III and I, respectively, can be used to diagnose sleep apnea. The first focuses exclusively on respiratory parameters that are analyzed as if the entire study was done with the patient sleeping. The second involves a multi-parameter monitoring, in which respiratory variables are analyzed only during sleep, excluding wakefulness in the apnea/hypopnea index (AHI) and respiratory disturbance index (RDI) determination.
Aim: Determine whether PG is a viable and accurate alternative to PSG in the classification of OSAS.
Methods: A total of 90 sleep studies (scoring performed by the same somnologist) with AHI/RDI>5/h were analyzed using the following methodology: conventional PSG scoring (according to AASM 2007) vs. scoring of the same exam as PG (the EEG was staged as sleep from the lights off to lights on). The scoring of respiratory parameters in this last exam was also performed according to AASM 2007. The OSAS was classified as mild, moderate and severe, according to the following values: AHI/RDI 5-14.9/h, 15-29.9/h and ≥30/h, respectively.
Results: Using PSG, we found that 33.3% of the exams were diagnosed as mild, 32.2% moderate, and 34.5% severe. For PG 1.1% were negative, 37.8% mild, 37.8% moderate and 23.3% severe. These differences were statistically significant (Wilcoxon test, p-value 0.000376). The comparison of the results of the two tests is shown in table 1.

Table 1: Comparison of the severity of OSAS PGS with PG

		PG			
		Negative	Mild	Moderate	Severe
PSG	Mild	3.3%	90%	6.7%	0%
	Moderate	0%	24.1%	75.9%	0%
	Severe	0%	0%	32.3%	67.7%

As we analyze sensitivity and specificity (Table 2), we found that 10% of individuals with mild apnea were classified in other categories of the disease and 24% of those classified as mild through PG were actually moderate. In moderate OSAS the results were even less consistent: 24% of the exams in PG were classified as mild and 39% in PG were not truly moderate. In severe OSAS, 32% of the exams were erroneously classified as moderate in PG.

Table 2: Sensitivity/Specificity of PG

	Mild	Moderate	Severe
Sensitivity	90%	75.7%	100%
Specificity	88.3%	80.3%	85.5%

Conclusion: These results demonstrated that PG, although simpler and less expensive, did not classify accurately the severity of OSAS. Since the classification of severity is crucial in the therapeutic decision, the option of PG should be discussed as a method of diagnosis against these results.

CO 051

PLEURAL EMPYEMA - REALITY OF A TERTIARY HOSPITAL

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Key-words: Empyema, pleural infection, thoracic drainage, surgical decortication

Introduction: Pleural empyema is defined by the presence of pus in the pleural cavity. It is associated with significant morbidity and mortality and its incidence appears to be increasing in Western countries.
Objective: To describe the clinical characteristics, comorbidities and clinical outcome of hospitalized patients with the diagnosis of pleural empyema in our hospital.
Methods: Review of the clinical files of hospitalized adult patients diagnosed with pleural empyema between 2012 and 2016. Statistical analysis was performed with SPSS® v24.
Results: From a total of 110 patients, 83 (75.5%) were male. The mean age was 56 years (SD 17). The number of admissions due to empyema increased over the years. Empyema was on the right side in 56 (50.9%) patients and it was bilateral in 6 (5.5%). It was a community-acquired infection in 80 (72.7%) cases. The most frequent comorbidities were smoking (49.1%, n=54), hypertension (35.5%; n=39), COPD (16.4%; n=18), diabetes mellitus (14.5%; n=16), obesity (13.6%, n = 15), active malignancy (11.8%, n=13), thoracic or abdominal surgery (11.8%; n=13) and chest trauma (6.4%; n=7). In addition to antibiotic therapy, thoracic drainage and respiratory rehabilitation, treatment included surgical intervention in 82 (74.5%) patients, 36 (43.9%) by VATS and the remaining by thoracotomy with classical decortication, including 4 conversions to open surgery. Univariable analysis revealed association between surgical treatment and out of hospital referral (=8.47; p<0,001) and with referral more than 5 days after hospital admission (=3.86; p=0.008), which was also observed in multivariable analysis.
The median length of hospitalization was 34.5 days (P_{25}=21; P_{75}=58) and it was longer in patients referred to pulmonology / thoracic surgery more than 5 days after hospital admission (44 vs 27 days; p=0.001) and also in patients with nosocomial empyema (48.5 vs. 29 days; p=0.003).
Median length of hospitalization did not differ significantly between operated and non-operated patients, but it was longer in those who underwent open surgery compared to those who underwent VATS (39 vs 29 days; p=0.055). The complication rate was 12.7% (n=14), including 5 cases requiring surgical reintervention. Overall hospital mortality was 11.8% (n=13) and at 30 days was 15.5% (n=17) and in patients who underwent surgery it was 8.5% (n=7) and 13.4% (n=11), respectively.
Conclusion: In our hospital the number of patients hospitalized for pleural empyema has increased in recent years, with prolonged hospitalizations and significant mortality. Late referral to pulmonology / thoracic surgery was associated with longer hospitalizations, suggesting the need for a timely referral for a better prognosis.

CO 052

SURGICAL RESECTION OF LUNG METASTASES

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Key-words: Lung metastases; Metastasectomy; Prognostic factors

The aim of this study was to report our experience and outcomes in patients previously diagnosed with primary malignant solid tumors who subsequently underwent surgical resection of lung nodules whose final result on the pathological exam was a metastasis.
Between January of 2008 and July of 2017, eighty patients underwent pulmonary resection by video-assisted thoracic surgery (VATS) or by thoracotomy, for lung metastasis. Data were collected regarding demographics, tumor features, treatment and outcome.
The patients included in this retrospective study (n=80) underwent a total of 89 surgeries. The study sample included 48 (60%) male and 32 (40%) female with a mean age of 61,2 years (range, 20-82 years). The primary tumor site was colorectal in 56 patients, lung in 6, soft tissue in 4, kidney in 3 and others tumors in 11. Sixty-six surgeries (83%) were performed due to a solitary metastasis. Eighteen (20%) surgeries were performed by VATS and 71 (80%) were performed by thoracotomy. We performed 58 (65%) wedge excisions, 22 (25%) lobectomies, 8 (9%) anatomical segmentectomies and 1 (1%) right pneumonectomy. Median hospital stay was 4 days (range, 1-21 days). Postoperative complication rate was 9%. Postoperative mortality was 1,3%. Median follow-up was 35 months (range 0 to 96 months). Overall 3 and 5 year survival regardless of the primary tumor site was 71% and 50%, respectively. Overall 3 and 5 year survival for the colorectal carcinoma was 72% and 46%, respectively.
These results support that lung metastasectomy is a safe and effective procedure for patients with treated primary tumors. A select group of patients can achieve long-term survival after resection.

CO 053

LUNG TRANSPLANTATION AND AIRWAY COLONIZATION IN BRONCHIECTASIS

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Key-words: lung transplant, bronchiectasis, cystic fibrosis

Introduction: Pulmonary transplantation is a therapeutic option in patients with cystic fibrosis (CF) and non-cystic-fibrosis bronchiectasis (NCFBQ) with terminal lung disease. All patients present colonized of the airway by pathogenic microorganisms at the time of transplantation, and in the post-transplantation they undergo targeted antibiotic therapy to eradicate them.
Objectives: Analysis of the demographic data of patients transplanted with CF and NCFBQ, evaluation of the microbiological profile of airway colonization before and after lung transplantation, and survival analysis.
Methods: Retrospective descriptive analysis of patients with CF and NCFBQ transplanted between 2010 and 2016.
Results: During this period 100 patients undergo lung transplant, 22% due to bronchiectasis - 14 patients with CF and 8 patients with NCFBQ.
Among patients with CF, mostly female (n = 9), with a mean age of 23 years at the time of transplantation, exocrine pancreatic (n = 14) and endocrine (n = 8) predominated as comorbidities. All patients with CF had chronic respiratory faillure - 14 under long-term oxygen therapy (LTO) and 7 also under noninvasive ventilation (NIV). All patients were colonized with at least two microorganism. The most frequent agents were: Pseudomonas aeruginosa (n = 12), Staphylococcus aureus (n = 10) and Aspergillus spp (n = 8). After transplantation, it was found that 3 patients were still colonized with one of the previously presented microorganisms. At 12 months after transplantation the survival rate was 100% and three of the patients had Bronchiolitis Obliterating Syndrome (BOS).
In the NCFBQ patients, there was a similar distribution by gender, with a mean age of 42 years at the time of transplantation and rare comorbidities - one case of diabetes and one case of hypertension. All had respiratory faillure under LOT and 3 also had NIV. All had previous colonization of the airway, the most frequently identified agent being Pseudomonas aeruginosa (n = 7), followed by Aspergillus spp (n = 2). After transplantation, colonization was observed in a patient with Stenotrophomonas maltophilia, not previously present. Only one patient developed BOS and two patients died in the first year after transplantation.
Conclusions: Despite the usual colonization of the airway, in patients with bronchiectasis, eradication is achieved after transplantation. Although antibiotic therapy is targeted to known microorganisms at the time of transplantation, some patients remain colonized. Although with a lower incidence of comorbidities, patients with NCFBQ had a higher mortality rate in the first year. The incidence of BOS was similar in both groups.

CO 054

LOBAR LUNG TRANSPLANTATION - THE PORTUGUESE EXPERIENCE

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Key-words: Lobar lung transplantation, shortage of donors, size mismatch

Introduction: Lung Transplantation is the treatment of choice for selected patients with terminal lung disease, and was performed for the first time in Portugal in 2001. The shortage of donors is a real problem, and has led to the resurgence for many strategies, to reduce the waiting-list time and waiting-list mortality. One strategy is to increase the donor pool and consequently the amount of available grafts, by the use of extended donor criteria. Another strategy is through lobar lung transplantation in recipients of short stature, in which, size compatibility is problematic. In cases of size mismatch between donor and recipient, size reduction of the lung graft can be done in different ways being lobar transplantation the most frequent technique when there is great size mismatch.
Objective: With this work we analyze the patients submitted to lobar lung transplantation from brain dead donors. We analyzed demographic data, need for cardio-respiratory support during the perioperative period, type of lobar transplant, duration of mechanical ventilation, length of stay, anastomotic bronchial complications, respiratory function tests at 90 days and 1 year post transplant and survival.
Results: 148 lung transplants were performed between June 2001 and December 2016 in Portugal, of which, 4 patients underwent lobar transplantation (2.7%). Age varied between 13 and 43 years, 2 female and 2 male patients. Cystic Fibrosis was the diagnosis in 3 patients and hypersensitivity pneumonia in the older patient. Different types of lobar transplant were performed, 3 lobar transplants (2 of them bilateral) and 1 right lobar and left total lung transplant.
There was necessity for prolonged preoperative ECMO used as bridge to transplant in one patient, and intraoperative cardiopulmonary support in all patients. Mechanical ventilation ranged from 3 to 24 days. There was primary graft dysfunction in one case, and acute rejection in 2 patients. The patient with preoperative ECMO had severe bilateral graft necrosis, and was the only mortality in the series.
The length of stay ranged from 26 to 57 days. There was no bronchial stenosis or dehiscence. Respiratory function tests 90 days post transplant FEV1 ranged from 39% to 88%, and at 1 year ranged from 40% to 105%.
Survival of the remaining patients was identical to the general group submitted to lung transplantation with a minimum of 42 months and a maximum of 78 months to date.
Conclusion: Despite the inherent morbidity lung transplant is an effective strategy to circumvent the shortage of donors, being of utmost importance in pediatric recipients and patients of short stature that are on a lung transplant waiting list .

CO 055

THE FIRST YEAR OF ROBOTIC LUNG SURGERY AT HOSPITAL DA LUZ

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Key-words: Thoracic Surgery, Robotic surgery, Lung Cancer

Background: Technological development has allowed, in the last years, patients with pulmonary pathology to undergo less invasive surgical approaches.
Robot-assisted thoracic surgery (RATS), which is a significant improvement over video-assisted thoracic surgery (VATS), has become increasingly common on a global scale. The main advantages it offers are the three-dimensional view and the precision of both manipulation and intrathoracic dissection. This innovation has facilitated procedures that are technically more difficult, such as segmentectomies and bronchoplastic resections, and improved the quality of mediastinal lymph node dissection.
Aim: We present the results of RATS surgeries performed to date at Hospital da Luz. These date back to 2 June 2016, when Portugal's first robot-assisted pulmonary operation took place.
Results: Twenty-one RATS surgeries have been performed, of which sixteen (76%) were pulmonary resection operations.
These patients had an average age of 61 ± 8; and 50% (n = 8) of them were male.
All the RATS operations were carried out using three 8 mm incisions and a 12 mm incision for the assistant.
We performed eight lobectomies (50%), six anatomic segmentectomies (37.5%) and two wedge resections, for which frozen section examination revealed a benign pathology (tuberculoma and bronchiectasis).
The 14 anatomical resections were performed for neoplastic pathology: two for metastatic disease and the other 12 for primary lung neoplasm.
In each case, systematised lymph node dissection was performed and at least 5 nodal stations were excised.
Staging of the primary lesions ranged from *in situ* tumours to stage IIIA, with stage IA being the most common (6 cases).
Histologically, there was a clear predominance of adenocarcinomas, in 10 of the cases. A large-cell neuroendocrine carcinoma and a pleomorphic carcinoma were also identified.
All the procedures were performed with no intra- or postoperative complications. Median drainage time was 3 days [2-6] and the mean hospital stay was 4 days [3-7].
Conclusion: It is still too early to attempt an overall evaluation of this technique, but it is already evident that there is a faster learning curve than in VATS interventions, provided the team has some solid experience with this technique.
The innovation and development of new thoracic surgery techniques are of critical importance to the implementation of more effective treatments; ones that involve less pain and, where possible, performing lung sparing procedures in patients with early neoplastic pulmonary disease.

CO 056

EMPHYSEMA ANALYSIS IN ALPHA1-ANTITRYPSIN DEFICIENCY: LUNG FUNCTION TESTS VS CT SCAN DENSITOMETRY

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Key-words: Alpha 1-Antitrypsin Deficiency; Emphysema; CT Scan Densitometry; Lung Function Tests

Background: Alpha 1-antitrypsin deficiency (A1ATD) is a genetic disease associated with the presence of pulmonary emphysema. Currently, computed tomography (CT) scan densitometry is recognized as the most sensitive method for detecting and quantifying emphysema. However, it has some limitations that preclude its use in the follow-up of patients.
Aims: The aim of this study was to evaluate whether the extension of the emphysema determined by CT scan densitometry could be evaluated by the lung function tests (LFT) that have fewer limitations, and which lung function tests parameters best correlate with it.
Methods: In this retrospective study, patients with A1ATD followed in the AIATD appointment of the CHUC-HG Pulmonology B Department that performed CT scan densitometry and LFT concomitantly, were included. Correlations between the LFT parameters and total emphysema índex (EIt) assessed by CT scan densitometry were evaluated. A simple linear regression analysis between EIt and independent variables from LFT was performed as well as a multiple regression analysis between the same variables selected by a stepwise procedure. Data were analyzed using IBM SPSS Statistics® version 24.
Results: 65 patients were included (58,5% male; average age of 53,78 ± 15,99 years) with multiple A1ATD phenotypes. The EIt ranged between 0 and 59,27%. From all variables of the LFT, FEV1/FVC had the highest correlation with the EIt (r = - 0,797; p <0,001). The variables of the LFT which predicted the EIt selected by a stepwise procedure were DLCO and FEV1/FVC, explaining 75% of the variance (R^2 = 0; p <0,001).
Conclusion: Several variables from the LFT strongly correlated with EIt assessed by CT scan densitometry. A considerable proportion of the EIt assessed by CT scan densitometry was explained by the multiple regression model reached in this study, that includes the LFT variables DLCO and FEV1/CVF.

CO 057

ALPHA-1 ANTITRYPSIN DEFICIENCY AT PULMONOLOGY APPOINTMENT OF FARO HOSPITAL

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Key-words: Alpha-1 antitrypsin, age, symptoms, emphysema, phenotype

Introduction: Alpha-1 antitrypsin (α1-AT) deficiency, although rare, is one of the most common hereditary disorders in the world, with an increased predisposition for pulmonary disease. Usually, it's underdiagnosed and at time of diagnosis it's already associated to an advanced stage of pulmonary disease.
Objectives: Characterize the population with α1-AT deficiency followed at General Pulmonology appointment at Faro Hospital.
Method: Analytical, cross-sectional, retrospective study of patients diagnosed with α1-AT deficiency followed at General Pulmonology appointment at Faro Hospital. We analyzed the following variables: gender, age, reason and delay of diagnosis, symptoms, smoking habits, comorbidities, α1-AT blood concentration, PFTs, phenotypes, liver involvement and treatment.
Results: We reviewed all the patients followed at General Pulmonology appointment and there were found 22 patients with α1-AT deficiency. 59% were male and the average age at time of diagnosis was 48.7 years old. 18% of the patients were asymptomatic by that time and the main complaint reported by the others was dyspnea (83%). In symptomatic patients the mean diagnostic delay was 8 years since the onset of symptoms. In 86% of the patients the diagnosis was made due to respiratory symptoms or suspicious radiological findings, while the rest of the patients were diagnosed because of family screening. 73% of the patients had smoking habits (50% former smokers), with a mean of 30 pack per year. Relevant comorbidities: previous diagnosis of COPD (46%) and emphysema (64%), 23% had asthma and 14% had bronchiectasis. Around 23% had at least 1 hospitalization for pneumonia. The mean α1-AT blood concentration at diagnosis was 54mg/dL (minimum undetectable and maximum 116mg/dL). 64% had obstruction on PFTs (27% very severe) and 36% were normal, with a mean DLCO of 63% and DLCO/VA of 69%. The commonest phenotype was SZ (50%), followed by ZZ (22%), M1Z (8%), MZ (5%), M1S (5%), M1malton (5%) e null/null $QO_{Ourém}$ (5%). None of them had liver involvement. 32% of the cases had criteria to start prolastin, 1 patient needed pulmonary transplantation, 18% started oxygen therapy and 77% are taking inhalation therapy. Untill now, 2 patients were lost at the follow-up.
Conclusions: In our study male gender and smoking habits history were more prevalent. Although patients were relatively young at the time of diagnosis, there was a significant delay since symptoms onset. Most of the cases started the follow-up due to respiratory symptoms, and dyspnea was the principal symptom reported. The commonest phenotypes were SZ and ZZ. Obstruction on PFTs was prevalent. Only a minority had criteria to start prolastin treatment or even to transplantation.

CO 058

POMPE DISEASE: A CHALLENGE TO DIAGNOSIS

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Key-words: Pompe disease, Diaphragmatic weakness, Enzyme replacement therapy, Peak flow test

Pompe disease (PD) is an autosomal recessive lysosomal storage disease. It is caused by a mutation in the gene that codifies the acid α-glucosidase enzyme, resulting in the accumulation of glycogen in lysosomes, mainly in the skeletal muscle.
The late-onset PD is characterized by progressive muscle weakness, followed by weakness of the respiratory muscles, particularly the diaphragm, leading to respiratory distress and sleep disorders. This spectrum of phenotypic variations could mimic other neuromuscular disorders, like others Myopathies, making the distinction between them difficult.
Since the approval of the enzyme replacement therapy, the early diagnosis of this disease has become crucial because of its impact in the prognosis. Thus, it's of utmost importance the establishment of clinical algorithms to aid the diagnosis of PD.
In this work, we studied 4 patients with PD and 5 patients with other Myopathies. The evaluation of clinical parameters and complementary diagnostic exams didn´t allow the establishment of specific alterations for each of these pathologies, thus explaining the common subdiagnostic of Pompe's patients.
We also analyzed the impact of treatment in PD. After treatment, patients presented a significant increase in the peak flow test, resultant from an increased efficacy in the cough reflex. As for the other parameters analyzed (respiratory function tests, polysomnography, blood biochemistry), only a slight benefit was observed. Nevertheless, the early diagnosis and treatment prevent the progression of the disease, increasing the quality of life and the lifespan of affected individuals.
Taken together, the aim of this study was to warn for the existence of PD, that is present in a group of patients with clinical symptoms of proximal and progressive muscular weakness, generalized fatigue, muscle cramps and increased creatine kinase, being that the diagnosis of these individuals could be done throw a simple and rapid test – the dried blood spot.

CO 059

DYNAMIC HYPERINFLATION - CAN IT BE THE KEY MECANISM OF EXERCISE INTOLERANCE?

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Key-words: Cardiopulmonary exercise testing; Dynamic Hyperinflation

Introduction: Dynamic hyperinflation (DH) presents itself as a pathophysiological consequence of exercise. This entity has been broadly described in obstructive ventilatory patterns, such as chronic obstructive pulmonary disease (COPD) and asthma, as the responsible entity for exercise intolerance. However, expiratory flow limitation during exercise has been described in individuals without disease, athletes and elderly.
Mediano et al, have identified DH around 18% individuals with normal lung function tests at rest and negative methacholine tests.
Objective: Our objective is to illustrate the DH phenomenon during exercise in individuals with complaints of exercise intolerance not explained by lung function evaluations at rest.
Methods: Retrospective analysis of cardiopulmonary exercise testing (CPET), performed in Hospital da Luz between January and June of 2017, to evaluated exercise intolerance not explained by lung function evaluations at rest. In order to evaluate DH during CPET, flow volume curves with inspiratory capacity evaluation were performed during exercise. This evaluation allowed the measurement of end expiratory lung volumes (EELV) and end inspiratory lung volumes (EILV).
Results: Between January and June of 2017, 21 CPET were performed to study exercise intolerance. 8 tests were identified where flow volume curves were performed during exercise. From these patients there were 4 women, between 30 and 76 years old, and 3 former smokers. All of the patients presented with normal lung function at rest and complaints of exercise intolerance. DH was detected in 4 of these 8 patients, with normal oxygen consumption at peak and no other limitation identified (ventilatory, blood gas exchange, cardiac or circulatory).
Conclusion: Exercise intolerance can be explained by several processes, with CPET as the gold standard test for its evaluation. The complementary evaluation of the flow volume curves during exercise can be of extreme value in identifying DH has a limitation factor to exercise. DH can even be presented in individuals without ventilatory limitations at rest.

CO 060

VITAL CAPACITY AND MAXIMAL INSUFFLATION CAPACITY IN PATIENTS WITH AMYOTROPHIC LATERAL SCLEROSIS: PROGNOSIS AND RELATIONSHIP WITH BULBAR-INNERVATED MUSCLE FUNCTION

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Key-words: Amyotrophic, Lateral, Sclerosis, Vital, Capacity, Insufflation, Ventilation

Introduction: Amyotrophic Lateral Sclerosis (ALS) is a progressive and life-threatening neuromuscular disease. Progressive respiratory muscle weakness leads to ventilatory failure eventually conducting to the need for ventilatory support. Vital Capacity (VC), maximal insufflation capacity (MIC) and bulbar-innervated muscle function are good predictors for long-term outcomes. The MIC has been described as a useful value for lung expansion and for augmentation of cough flows.

Objectives: Analyze VC and MIC progression over time and their relationship with bulbar function, timing and usage of Noninvasive ventilation (NIV), tracheostomy placement and survival.

Methods: Patients with ALS were recruited in a university hospital neuromuscular clinic. All patients with a VC value <2000mL and a minimum of 4 VC measurements through an average time limit of 3 months were included. Patients were divided in 2 subgroups (Bulbar and Slow Bulbar) according to initial form of ALS presentation and were characterized according to clinical and demographic variables. The evolution of MIC-CV difference throughout the 4 evaluation moments was analyzed in the 2 subgroups and correlated with timing and usage of NIV and well as tracheostomy placement and survival.

Results: 33 patients (54,5% male) with a median age at diagnosis of 67 (P25-P75: 52-71) years were included. Eighteen (54,5%) patients were included in the Bulbar group (BG) and 15 patients (45,5%) in the Slow Bulbar group (SBG). Median time for NIV onset was 11 (P25-P75: 3-36) months after diagnosis (7 (P25-P75: 2-12) months in BG and 24 (P25-P75: 7-48) months in SBG, p=0,112). The VC decreased over time in both subgroups. Overall, mean MIC was significantly higher than mean VC in all 4 evaluations (MIC1 vs VC1: 2250 vs 1759; MIC2 vs VC2: 2360 vs 1505; MIC3 vs VC3: 2369 vs 1260 and MIC4 vs VC 4: 2212 vs 1105, p=0,001). In subgroup individual analysis, the SBG showed statistically significant MIC-VC differences in all except for the last moment of evaluation (p=0,05); in the BG only statistically significant MIC-VC differences in the first evaluation moment were found (p=0,04). Time under NIV was significantly higher in the SBG (60 (P25-P75: 42-132) vs 24 (P25-P75: 12-30) months, p=0.01). Tracheostomy was performed in 12 patients (36,3%), 75,0% of whom corresponded to patients in the BG. Median survival after NIV initiation was 42 (P25-P75: 22-94) months. This survival was higher in the SBG when compared to the BG (81 (P25-P75: 46-122) versus 22 (P25-P75: 12-39) months respectively, p<0,001).

Conclusion: For patients with ALS, the MIC-VC difference is a good predictor of bulbar-innervated muscle integrity. MIC showed a slower decline in time compared to VC in both Bulbar and Slow Bulbar subgroups. In SBG patients, the differences between MIC and VC were higher and more durable which reflected on more time on NIV and better survival comparing with the BG patients. These results suggest MIC-VC difference may have a role in predicting the total time under NIV, tracheostomy indication and survival in ALS.

CO 061

LOCAL ALLERGIC RHINITIS – CONTRIBUTION OF IN VIVO AND IN VITRO DIAGNOSTIC TESTING

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Key-words: local allergic rhinitis, entopy, rhinomanometry, nasal provocation test, basophil activation test

Local allergic rhinitis (LAR) is characterized by a local inflammatory response mediated by IgE, which is produced solely in the nasal mucosa (entopy). No production of circulating specific IgE (sIgE) or sensitization in the skin prick tests (SPT) is present. It is estimated that 69.6% of rhinitis that are considered non-allergic correspond to LARs. We intended to evaluate the contribution of *in vivo* and/or *in vitro* testing in patients that present symptoms suggestive of allergy, but without evidence of atopy.

Methodology: Twenty patients (mean age: 44 years; 80%♀) with symptoms suggestive of allergic rhinitis triggered by exposure to domestic dust and that had negative SPTs and sIgEs for dust mites underwent a nasal provocation test (NPT) with a dust mite extract (Laboratorios LETI®). A *D. pteronyssinus* or *L. destructor* extract was selected according to clinical history. The result of the NPT took into account clinical criteria and a basal and post-NPT rhinomanometric evaluation. IgEs were dosed in nasal secretions before the NPT, at the end, and after 1h. A basophil activation test (BAT) was performed with mite extracts in 10 patients, 4 healthy controls, and 4 allergic rhinitis patients.

Results: Fifteen of the 20 NPTs (75%) were positive. Fourteen NPTs were performed with *D. pteronyssinus* (12 positive) and 6 with *L. destructor* (3 positive). Five NPTs (35.7%) were positive when considering only clinical criteria, 3 (21.4%) when considering only rhinomanometric criteria, and 7 (42.9%) when considering both. IgEs in nasal secretions were higher than 0.10 kU/L in all patients, though there were no significant differences between patients with positive or negative NPTs, between healthy controls, or between the different collection times of nasal secretions. The BAT evidenced higher stimulation indices in patients with positive NPTs compared to patients with negative NPTs and healthy controls, however it was lower than 2 in 5 patients (PPV=80%).

Conclusions: A diagnosis of LAR was established in 75% of the studied cases. This emphasizes the importance of further workup in these patients, who are potential candidates for allergen-specific immunotherapy. NPT is still the gold-standard for LAR diagnosis. Even though dosing of sIgEs in nasal secretions and the BAT are currently considered auxiliary diagnostic methods, these tests warrant further studies for their optimization and standardization.

CO 062

CHARACTERISTICS AND LONGITUDINAL PROGRESSION OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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Key-words: COPD, Disease Progression, FEV1.

Introduction: The goals of the COPD assessment are to determine the severity level of airflow limitation, its impact on patient's health status and the risk of future events**.** The characteristics and natural history of GOLD B COPD patients are not well described.

Objective: To characterize the natural history of COPD patients followed in a hospital environment, highlighting group B. It is intended to describe the clinical characteristics of group B patients compared to group A, to identify the subgroup of patients who progressed to GOLD D and identify characteristics associated with progression.

Methods: Retrospective study of the clinical processes of a convenience sample of COPD patients attending the Functional Breathing Re-adaptation appointment at the Pneumology B Unit, University Hospital Center of Coimbra, between June 2015 and June 2016. Demographic, functional and clinical data were analyzed. Statistical analysis of the data was performed using Microsoft Excel® and IBM SPSS® v20 programs.

Results: Included 53 patients 85% male, aged 55 to 94 years.
In 2015, our sample consisted of 25% (13) patients GOLD A, 54% (29) GOLD B, 8% (4) GOLD C and 13% (7) GOLD D. In the comparative analysis between group A and B, it was found that FEV1 % predicted was similar between the two groups and a significant proportion of patients in group B had emphysema (79.3% vs 38.5%, p = 0.015), chronic bronchitis (68.9% vs 30.7%, p = 0.041) and cardiovascular comorbidities (89.6% vs 53.8%, p = 0.016).
After 1 year of follow-up, among the 29 GOLD B patients, the majority (18) were stable and remained in group B, 10 patients progressed to GOLD D and 1 patient was reclassified to GOLD A. Concerning baseline characteristics, patients who progressed to GOLD D had a FEV1 % predicted significantly lower than patients who remained in group B (mean 48.6% vs 36.9%, p = 0.014). There were no statistically significant differences regarding age, gender, body mass index, smoking status, chronic bronchitis, emphysema, cardiovascular comorbidities, degree of dyspnea mMRC and FVC. Regarding characteristics after 1 year of follow-up, patients in group D had significantly more exacerbations over the previous year (mean 0.7 vs 1.7, p = 0.001) and lower FEV1 than patients in group B (mean 50, 7% vs 39.1% p = 0.03).

Conclusion: In our sample, GOLD B patients had more cardiovascular comorbidities, emphysema and chronic bronchitis than GOLD A patients. In addition, GOLD B patients who progressed to GOLD D had significantly lower FEV1, indicating that deterioration in airflow limitation is associated with an increased prevalence of exacerbations and disease progression.

CO 063

CAT/MMRC AGREEMENT IN COPD ACCORDING TO GOLD 2017 CLASSIFICATION – ANALYSIS OF A MULTICENTRIC SAMPLE

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Key-words: COPD, agreement, CAT, mMRC, predictors

Introduction: CAT/mMRC agreement according to GOLD 2011 classification was previously questioned in the literature. In 2017 a new COPD classification in groups based only in symptoms and exacerbations emerged. GOLD continues to recommend a comprehensive approach in symptomatic assessment, having in mind that both tools cannot be considered as equivalent.
Objetives: Determine CAT/mMRC agreement using new GOLD 2017 classification. Characterize concordant and non-concordant groups according to demographic and clinical variables. Investigate the presence of agreement predictors among these variables.
Methods: Observational study including 200 stable COPD patients from Pulmonology consultation in two reference hospitals. Completion of mMRC scale and CAT questionnaire at the same appointment. Characterization of patients according to demographic and clinical variables. Determination of CAT/mMRC agreement using Cohen's K coefficient. Investigation of the presence of CAT/mMRC agreement predictors among demographic and clinical variables using binary logistic regression models.
Results: 200 patients were included, 88% males, mean age of 69 ±10 years and mean FEV1 2,08±0,85 L (51±19%). 59 patients (30%) were frequent exacerbators. In this group, mean age was 70±11 years and mean FEV1 1,93±0,78L (45±19%). With regard to comorbidities, heart failure diagnosis was found in 74 (37%), depression in 22 (11%) and OSAS in 21 patients (11%).
CAT/mMRC global agreement was moderate (K=0.462).
The application of mMRC vs CAT allowed to classify, according to GOLD 2017, 78 (39%) vs 42 (21%) patients in Group A, 62 (31%) vs 98 (49%) in Group B; 18 (9%) vs 10 (5%) in Group C and 42 (21%) vs 50 (25%) in Group D. The use of one or another method resulted in a classification into a different GOLD group in 54 (27%) patients: 40 in group A(mMRC)/B (CAT), 10 in group C(mMRC)/ D(CAT), 2 in group B (mMRC)/A (CAT) and 2 in group D (mMRC)/C (CAT).
K of Cohen coefficient was calculated considering separately frequent exacerbators and the remaining sample. No significant differences were found among those two groups (K= 0,45 vs 0,44 respectively).
We found no statistically significant differences in sex, age, body mass index (BMI) and FEV1 between CAT/mMRC concordant and non-concordant patients. The prevalence of heart failure, depression and OSAS was also similar.
Conclusion: In our sample classified according to GOLD 2017, there is a moderate CAT/mMRC agreement. The application of both methods resulted in a group reclassification in 27% of the patients. Agreement was not influenced by gender, age, BMI, FEV1 or relatively common comorbidities in COPD as heart failure, depression and OSAS.

CO 064

THE IMPACT OF OBSTRUCTIVE SLEEP APNEA ON THE QUALITY OF LIFE OF PATIENTS WITH COPD UNDER NONINVASIVE HOME VENTILATION

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Key-words: COPD, obstructive sleep apneia, quality of life

Introduction: Chronic obstructive pulmonary disease (COPD) and obstructive sleep apnea syndrome (OSA) are prevalent diseases in the general population over 40 years of age and the coexistence of both - overlapping syndrome - is also expected to be common. The coexistence of the two conditions results in a deleterious synergistic effect. Patients with overlap syndrome have more marked nocturnal desaturation, poorer sleep quality and increased risk of COPD exacerbations, hypercapnic respiratory insufficiency and pulmonary hypertension. Predictably, in this group of patients has also been reported a greater morbimortality and a worse quality of life.
Material and methods: The authors present the results of the application of the Severe Respiratory Insufficiency (SRI) questionnaire in patients with COPD and in patients with COPD and OSA overlap syndrome under noninvasive home ventilation. The SRI questionnaire is a multidimensional tool developed to evaluate the quality of life of patients with respiratory insufficiency of several etiologies treated with home mechanical ventilation and their translation into the Portuguese language has been recently validated. It contains questions that cover seven domains - respiratory complaints (RC), physical functioning (PF), attendant symptoms and sleep (AS), social relationships (SR), anxiety (AX), psychological well-being (WB) and social functioning (SF). The higher the overall score obtained, the better the health-related quality of life and *vice versa*.
Results: A total of 43 consecutive patients were included from the Home Ventilation consultation at the Centro Hospitalar de Vila Nova de Gaia/Espinho. The following table shows the results obtained.

Categories	COPD	COPD + OSA
Patients N (%)	32 (74.4)	11 (25.6)
Age (years)	69.3	69.9
Sex (% male)	71.9	72.7
BMI (Kg/m^2)	29.6	33.8
HMV (h/d)	7.4	7.6
HMV (months)	43.0	54.0
FEV_1 (% predicted)	34.2	51.6
CVF (% predicted)	59.1	70.2
SRI - RC	59.4	54.4
SRI - PF	49.0	44.3
SRI - AS	54.7	38.0
SRI - SR	76.8	73.5
SRI - AX	44.0	32.3
SRI - WB	57.4	49.7
SRI - SF	57.9	59.3
SRI - SS	57.0	50.2

Abbreviations not yet mentioned in the text: BMI, body mass index; VMD, home mechanical ventilation; FEV_1, forced expiratory volume in one second; FVC, forced vital capacity; SRI - SS: summary scale
Note: the values presented correspond to the mean, except VMD (months), FEV_1 and FVC, which are presented as median

Conclusion: In patients with COPD and OSA overlap syndrome, a lower airway obstruction severity was observed, as indicated by FEV_1. Nevertheless, it was in the patients with overlap syndrome that there was observed a generally lower score in the SRI questionnaire, thus indicating a worse quality of life in these patients when compared to those with only COPD. The data presented corroborate the published evidence in the literature, according to which the coexistence of OSA in patients with COPD interferes negatively in the quality of life, thus reinforcing the importance of an appropriate diagnosis and a therapeutic approach tailored to these patients.

CO 065

MISUSE OF INHALER DEVICES IN COPD OUT-PATIENTS: A PRAGMATIC STUDY

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Key-words: COPD; inhalation technique

Introduction: The type of inhaler device is an important determinant of a correct inhalation technique, and in COPD the therapeutic success depends on a correct inhalation technique. The choice of inhaler devices (ID) for each patient can be as relevant as the drug itself.
Objectives: to evaluate if the type of ID, the patient's preference or the number of DI used by patient can predict a correct inhalation technique.
Methods: COPD out-patients over 40 years old diagnosed according to GOLD criteria were recruited consecutively.We defined for each IDfive steps for a correct inhalation technique and twoessential steps and critical errors, which are likely to make therapy useless. A demographic and clinical survey was applied. Patients were asked to demonstrate the use of their prescribed inhalationdevices, just as he or she does it at home. A statistics analysis was performed using IBM SPSS Statistics for Windows, Version 22.0.
Results: We studied 295 subjects(mean age= 67.7 years, 76.9% males),performing a total of 510inhalation maneuvers. Ten types of IDs were examined, and47.5% of inhalations had at least one step incorrectly performed. In 149 (29.2%) demonstrations critical errors were observed:52.9% with pMDIs, 23.3% with sDPIs, 26.2% with mDPIsand 27.5% with the soft-mist inhaler. In mDPI group, critical errors ranged from16.1% with Ellipta® to 35.1% with Turbohaler®. Misuse was related to priming/loading in 6.9%, to inhalation in 13.1% and to both in 9.2%. Preference reasons for an inhaler were the ease of use (65.4%), ID characteristics (25%) and be accustomed (2.9%). No significant relationship was found between correctperformance of key maneuvers and patient preference (26.8% of preferred and 27.1% of non-preferred IDs had incorrect use, p=948), nor with number of inhalers used per patient (one ID, incorrect use=31%, 2 IDs=27.9%, 3 or 4 IDs=33.3%; p=.519).
Conclusions: Despite significant developments in device engineering in the last years, inhalers mishandling remains an important clinical issue. However, older devices are more prone to critical errors. Unlike others populations studied, in our survey misuse was not associated to multiple inhalers use nor to patient' preference. A good inhalation technique depends on the type of ID, and failure of inhalation maneuver was the main cause of ID misuse..

CO 066

RISK FACTORS FOR RESPIRATORY TRACT INFECTIONS AND EXACERBATION OF COPD

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Key-words: COPD; Symptoms; Exacerbations

Introduction: Susceptibility to infections plays a role in acute exacerbation of COPD (ECOPD). Individual risk factors associated with respiratory tract infections include increasing age, low socioeconomic status, cigarette smoking, heart disease, bronchiectasis, chronic bronchitis or multimorbidity, and are often presented by patients with COPD.
Objective: to evaluate if some risk factors for respiratory infections can predict an increased risk of ECOPD.
Methods: COPD out-patients over 40 years and diagnosed according to GOLD criteria were included. A survey of demographic, socioeconomic and clinical data were applied. We defined acute exacerbation as a worsening of one or more major respiratory symptoms, requiring an unplanned medical appointment that led to some treatment or modification of previous treatment. A statistics analysis was performed using IBM SPSS Statistics for Windows, Version 22.0.
Results: We studied 314 subjects (78% males, mean age=67.7 years), 79.6% living in urban areas, 203 referring low income and 29.3% very low education level (≤3 years). Clinically, 48.1%, 14% and 37.9% referred no, one and two or more treated exacerbations in the last year. The distribution of patients according to GOLD 2017 stage and classification were 10.5%, 43.3%, 34.1% and 12.1% GOLD 1 to 4, and 23%, 39.8%, 2.2% and 35% GOLD A to D.
We found significant association between risk of exacerbations and both education level (p=.023) and income (p=.031).Binary logistic regression indicates an odds ratio of 1.5 times more risk of ECOPD for lower education level (≤3 years of school) and 1.9 more risk of exacerbations for lower income, when controlling for age and gender. Female gender (p=.018) were related with increased risk of ECOPD. Age, asthma in childhood (X^2=.964; p=.617), diabetes (X^2=998; p=.607), obesity (X^2=.126; p=.941), bronchiectasis (X^2=7.660; p=.467) and depression or anxiety (X^2=1.798; p=.407) were not significantly related with increased risk of exacerbation.Ischemic heart disease (X^2=7.186; p=.028) and chronic bronchitis (X^2=13.516; p=.009) were related with increased risk of acute exacerbations.
Conclusions: COPD patients have many risk factors for respiratory tract infections, others than COPD itself, but only low income, low education level, and comorbid conditions as chronic bronchitis and ischemic heart disease are related to increased risk of ECOPD.

CO 067

SYMPTOMS IRREGULARITY CAN PREDICT AN INCREASED RISK OF ACUTE EXACERBATION OF COPD

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Key-words: COPD; symptoms; variability; irregularity.

Introduction: In medicine, added value means intervention in order to improve patient' health status. COPD is a complex and heterogeneous disease, and acute exacerbations are the main cause of mortality. The recognition of broad patient's characteristics may facilitate the choice of the best initial therapeutic approach.
Objectives: To evaluate whether some clinical or functional characteristics can predict an increased risk of acute exacerbations of COPD.
Methods: COPD out-patients over 40 years and diagnosed according to GOLD criteria were included. A survey of demographic and clinical data was applied, and assessment of symptoms was done using COPD Assessment Test (CAT) and the Medical Research Council Dyspnea Questionnaire (mMRC). Acute exacerbation of COPD was defined as a worsening of one or more major respiratory symptoms, requiring an unplanned medical visit that led to any treatment or modification of previous treatment. A statistics analysis was performed, using IBM SPSS Statistics for Windows, Version 22.0.
Results: We studied 314 subjects (78% males, mean age= 67.7 years).The distribution of patients, according to GOLD 2017 stage and classification were 10.5%, 43.3%, 34.1% and 12.1% stage 1 to 4, and 23%, 39.8%, 2.2% and 35% groups A to D. Age was not related with increased risk of exacerbation. Female gender (p=.018) was related with increased risk of exacerbation. CAT total score and mMRC grade were higher in women (p=.002 and p=.011, respectively). Patients with a smoking history are mainly men and have a significantly lower mean age. We found no association between age and disease severity, nor between smoking history and airflow limitation, risk of exacerbations or symptoms. Poor respiratory function, according to GOLD stage (p=.000) are at increased risk of acute exacerbation. We found a strong association between increased airflow limitation, according to GOLD classification, and the mMRC grade (p=.000) and CAT total score (p=.011). Patients with mMRC grade ≥2 (p=.000) or a CAT total score ≥10 (p=.000) are at increased risk of acute exacerbation. Many patients (74.8%), beyond exercise persistent dyspnea, report worsening of symptoms in winter and/or with change in weather. We found a significant association between this symptoms variability or irregularity and a history of frequent (≥2) treated exacerbations (p=.007), when controlling for gender, history of asthma and FEV_1%.
Conclusions: Women are more symptomatic and have more risk of acute exacerbations. There is a clear relationship between risk of acute exacerbation and airflow limitation, between symptoms and airflow limitation, and between symptoms and exacerbations. There is also a clear relationship between symptoms variability and COPD exacerbations. Symptoms irregularity can predict an increased risk of exacerbation.

CO 068

THE DURATION OF ANTI-INFLAMMATORY ACTION OF FLUTICASONE FUROATE (FF) ASSESSED VIA EXHALED NITRIC OXIDE (FENO) IN ASTHMATICS FOLLOWING ADMINISTRATION OF FF/VILANTEROL (VI)

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FF is an inhaled corticosteroid (ICS) with higher glucocorticoid receptor (GR) affinity and greater lung retention compared to other ICS. We investigated whether these attributes confer a prolonged duration of anti-inflammatory action.

This was a randomised, double-blind, placebo-controlled, two-period, crossover study in 27 adults with asthma (GSK Protocol 201499). Following screening, subjects with FEV_1 ≥60% predicted, reversible airway disease and FeNO >40ppb, received FF/VI 100µg/25µg or placebo via an Ellipta inhaler once daily for 14 days. FeNO measurements (NIOX Vero device) were made AM and PM for 14 days during treatment and for 21 days after treatment in each period (≤4 weeks elapsed between periods). Peak expiratory flow (PEF) was measured AM & PM from day -7 to 35. Following cessation of treatment FeNO remained suppressed for ffi18 days and improvements in PEF were maintained for 3-4 days. No SAEs were observed.

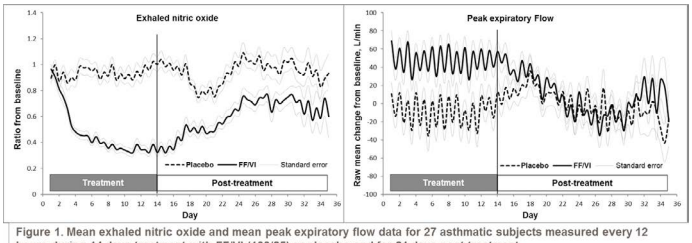

Figure 1. Mean exhaled nitric oxide and mean peak expiratory flow data for 27 asthmatic subjects measured every 12 hours during 14 days treatment with FF/VI (100/25) or placebo and for 21 days post treatment

In contrast, a similar study with budesonide (Thorax 2002;57:889) reported rapid and complete reversal of FeNO suppression ≤7days following 3 wks of treatment with 400 Qg/day. The long duration of anti-inflammatory action of FF observed in this study appears consistent with its high GR affinity and lung retention and was notably longer than the 3 day duration of bronchodilation observed with FF/VI.

GSK funded (201499; NCT02712047)

Conflicts of interests and disclosures:

GB – Medical Research Institute of New Zealand employee. The MRINZ received research funding from GSK for the study.
PDY – GSK employee, holds GSK shares
AB – GSK employee, holds GSK shares
KR – GSK employee
SJ – GSK employee
PB – GSK employee, holds GSK shares
RB – Medical Research Institute of New Zealand employee. The MRINZ received research funding from GSK for the study. RB has received research funding from Astra Zeneca, GSK, Genentech, and Roche; has received fees for consulting or speaking from Astra Zeneca and GSK; and is chair of the Asthma and Respiratory Foundation of New Zealand adult asthma guidelines.
JF – Medical Research Institute of New Zealand employee. JF or the Institute for which he works have received research funding from AstraZeneca, GSK, Genentech, and Roche. JF has received fees for speaking from Astra Zeneca and Novartis, and has received support to attend educational events from AstraZeneca and Boehringer Ingelheim.