83. COPD comorbidities II

P540
The role of modification of CURB-65 score as prediction factor for one year survival in acute exacerbation of COPD
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Introduction: Acute exacerbation of COPD (AECOPD) is associated with a high risk of mortality. A risk-prediction model using information easily obtained on admission could help to identify high-risk individuals. The CURB-65 score was developed to predict mortality risk in community acquired pneumonia. A retrospective study found that this score was also associated with mortality in AECOPD.

Methods: Consecutive patients with physician diagnosed AECOPD admitted to a public hospital during a 1-year period were studied prospectively. The modification of CURB-65 Score were calculated from information obtained at initial hospital presentation. The modification of CURB-65 Score are one point each for Confusion, Urea > 7 mmol/L, Respiratory rate ≥ 30/min, Systolic blood pressure < 90 mmHg or diastolic blood pressure < 60 mmHg, age ≥ 65 years and present of cardiovascular disease. Remeasure will be done every three month and looking for the corelation between both using McNemar test. After complete one year of evaluation, the relation between modification of CURB-65 score and risk of mortality will analyze using Chi Square test.

Result: Research is still proceeding and 92 patients have been collected. 30-day survival
Densitometric diagnosis of osteoporosis in patients with chronic obstructive pulmonary-artery disease

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The aim of the Study: To study the state of bone mineral density (BMD) in patients with chronic obstructive pulmonary disease (COPD).

Materials and methods: Studied 104 patients with COPD. The study group comprised men with long smoking history. Mean age 61 ± 6.7 years. The study of respiration function was performed on a multi-type installation "Master-LabJaeger". The study of bone mineral density (BMD) of lumbar spine and proximal femur was performed by X-ray absorptiometry at the densitometer "Lunar DPX-NT". The frequency of osteoporosis was assessed in the whole group and separately for each stage of COPD.

Results: In the whole group was most impressed by osteoporosis, lumbar spine - in 37.2% of cases, osteoporosis of the femoral neck - in 19.7% of cases. The lowest BMD were observed in patients with stage 4 COPD (<0.05). Osteoporosis of the femoral neck was detected in 5.4% of patients with COPD stage 2, with 23.6% of patients with COPD stage 3, the maximum percentage of osteoporotic changes in the femoral neck was observed in patients with COPD stage 4 - 54.5%. A significant correlation values of bone mineral density with BMI r (0.44, < 0.01), with the COPD r (0.43, < 0.01).

Conclusion: Densitometry is an important method of diagnostics of osteoporosis and should be applied in full in COPD patients.

Is COPD a risk factor for diabetes?

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Introduction: Diabetes mellitus is one of the multiple endocrinological disorders induced by COPD through systemic inflammatory, oxidative stress, smoking and administration of glucocorticoids.

Aims and objectives: To investigate if COPD is a risk factor for diabetes mellitus DM and which are some other contributing factors.

Methods: 2 groups of pts were assessed for age, gender, body mass index (BMI), smoking, alcohol intake, diabetes and dyslipidemia. First group was compound of non-COPD pts (N=272, 62 M/252 W, 210 F/67 W, mean age 60.67, SD 13.75) and the second one of COPD pts (N=178, 103 M/75 F, 58 F/21 M, mean age 64.79, SD 10.78). COPD pts were staged according to GOLD criteria in stage I 122/27,1% pts, stage II 206,2% pts, stage III 22/4% and stage IV 6/1%.

Results: The relative risk RR for DM to appear in COPD pts is 1,380 (95% CI 1.054-1.806). RR is 1.023 (95% CI 0.896-1.146) in COPD stage I, 1.252 (95% CI 1.094-1.475) in stage II and 2.062 (95% CI 1.836-4.930) in unified stages III and IV. There is a significant correlation coefficient R of 0.154 between COPD and DM, 0.256 for COPD, BMI and DM and respectively 0.293 for COPD, BMI, dyslipidemia and DM.

Conclusions: There is a small risk for DM to appear in the whole group of COPD pts, but RR increases while advancing the severity of disease. Being mild in stages I and II, RR become moderate in the unified group of pts staged III and IV, considered together due to the low number for each separate stage. Correlation between DM and COPD is weak, but it is moderate and relevant when adding BMI and dyslipidemia. The risk to develop DM in COPD increases with the severity of disease, and the presence of two other important factors, BMI and dyslipidemia.

The relationship of comorbidities with clinical and physiological parameters in COPD

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Chronic obstructive pulmonary disease (COPD) is defined as a systemic inflammatory disease. Systemic inflammation can start certain comorbidities or increase the severity of disease. This study aims to assess the relationship of comorbid diseases with clinical and physiological parameters.

The study enrolled 115 patients (15 female, 100 male) who are on regular follow-up in COPD outpatient clinic. In each patient the presence of cardiovascular disease (hypertension, coronary artery disease, arrhythmia, heart failure), hyperlipidemia, cachexia, malignancy, diabetes, osteoporosis, anxiety disorder, depression, obstructive sleep apnea, and anemia was questioned. The most frequent diseases were hypertension, coronary artery disease, and hyperlipidemia (43.9%, 39.6%, 27.4%, respectively). Cardiovascular diseases were more common in those with a FEVI percent below 50 (p<0.10, p<0.05). Hypoxemia level was related to heart failure in COPD patients (p<0.014, p<0.05).

In patients with a high Charlson Comorbidity Index (CCI) coronary artery disease (p=0.032, p<0.05) hyperlipidemia (p=0.00, p<0.001), diabetes (p=0.00, p<0.05), anemia (p=0.019, p<0.05) were more common. In patients with a high COPD assessment test (CAT) hypoxemia level was more prevalent.

As a conclusion, disease stage and hypoxemia level are related to concomitant cardiovascular system diseases. A more than expected deterioration in general health status is observed in COPD patients with comorbidities.
P546 The influence of metabolic turbulence in mortality rate of COPD patients: A five years follow up study
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Background: Patients with chronic obstructive pulmonary disease (COPD) or metabolic syndrome (MS) present systemic inflammation and the association between diseases can increase risk of cardiovascular events. However, the influence of MS in survival of COPD patients is still unclear.

Methods: We followed 115 COPD patients (age: 64.5±1.21 years, FEV1: 58.7±2.75%) during five years and causes of death were noted. At baseline, patients’ clinical history and physical examination were assessed, and anthropometric (weight, height, body mass index and waist circumference), spirometry, 6-minute walking distance (6MWD), dyspnea perception by the modified medical research council (MMRC), serum lipid profile and triglycerides measurements were performed. The diagnosis of MS was established by harmonization MS criteria. The Cox proportional hazard analysis was used to evaluate the influence of MS in the survival time, adjusted for potential confounders (age, gender and BODE index).

Results: MS was present in 35.6% of patients and hypertension (47.8%) was the MS component more prevalent. More than 80% of the patients presented at least one diagnostic component of MS. During the period of study, 17.0% died. We did not observe statistical difference in mortality between groups with and without MS (HR: 1.30, 95%CI: 0.32-5.20).

Conclusion: Patients with COPD have intermediate prevalence of MS; however, no association between MS and mortality was found in these patients.

P547 COPD: Different psychological status (PS) in patients with different cardiac co-morbidities rate
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Aim: To evaluate whether and in which extent cardiac co-morbidity have influence on the PS in patients with COPD.

Study population: 78 outpatient with COPD made the study sample. Exclusion criteria were I) mental diseases.

Methods: For the evaluation of the PS the depression (by YZung scale), the anxiety (by Ch.D. Spilberger questionnaire) and the vegetative lability (by VELA test) were studied in all patients. Cardiac co-morbidity rate was established by original criteria of patient’s medical documentation.

Results: In accordance with cardiac co-morbidity rate all patients were divided on two groups (GR): GR I (n=17; 21.8%) without any and GR II (n=61; 78.2%) – with cardiac co-morbid conditions. Both groups were similar regarding to age, sex and smoking status. The data of psychological tests are presented in the table 1.

<table>
<thead>
<tr>
<th>Groups</th>
<th>Depression (Mean±SD)</th>
<th>Personal anxiety (Mean±SD)</th>
<th>Situational anxiety (Mean±SD)</th>
<th>Vegetative lability (Mean±SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I, n=17</td>
<td>25.6±6.3</td>
<td>22.8±4.5</td>
<td>21.6±2.8</td>
<td>19.4±3.6</td>
</tr>
<tr>
<td>II, n=61</td>
<td>44.9±9.6*</td>
<td>27.6±4.2*</td>
<td>25.1±3.7*</td>
<td>28.9±3.1*</td>
</tr>
</tbody>
</table>

*p<0.05, #p=0.01

Conclusions: 1. 78.2% of patients with COPD had cardiac co-morbidity. 2. Cardiac co-morbid conditions significantly impair psychological status in patients with COPD, and the most significant changes concern depression and vegetative lability level.

P548 Pulmonary hypertension in COPD: Prevalence and characteristics
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Background: Pulmonary hypertension (PH) is a common complication in COPD; its prevalence is unknown due to low accessibility of right heart catheterization.

Aim: To evaluate the prevalence of PH in COPD patients (pts) and define the characteristics of this group.

Methods: Retrospective study including 66 consecutive COPD pts hospitalised in our unit during 2012. Spirometry, peripheral echocardiography, history of exacerbations and comorbidities were obtained from patients records. PH was defined as systolic pulmonary arterial pressure (sPAP) greater than 35 mmHg.

Results: Among 66 COPD pts studied, mean age was 67 years and GOLD stages were II - 26 pts, III - 15 pts, IV - 22 pts. Only 33 pts had undergone echocardiography. Among them, mean age was 68, GOLD stages were II – 11 pts, III – 7 pts, IV – 15 pts. PH was found in 12 pts (36,4%). Mean FEV1 was 46,4% in COPD pts without PH and 36,9% in pts with PH (p=0.07). PH resulted in right ventricular (RV) enlargement in 9 out of 12 pts; these particular COPD pts had lower mean FEV1 (37%) than pts with PH without RV enlargement (56%) (p = 0.02). More severe PH was found in 7 pts; the mean FEV1 was 37,2% versus 36,7% in pts with moderate versus mild PH. No significant association between PH and GOLD stage, FEV1, polyglobulia, COPD exacerbation or basal SpO2 were found.

Conclusions: The prevalence of PH in our COPD pts was 36,4%, probably overestimated, as echocardiography was performed mostly in pts with higher GOLD stage. No significant associations between PH and GOLD stage, FEV1, polyglobulia, COPD exacerbation or basal SpO2 were found. RV involvement due to PH seems to occur mostly in pts with more severe obstructive disease.

P549 Cognitive function of patients with COPD after virtual admission – A randomized clinical trial
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Background: Substantial healthcare resources are spent on Chronic Obstructive Pulmonary Disease (COPD). As a result, the involvement of patients in monitoring of their condition has been suggested. However, the level of cognitive functioning must be taken into consideration before self-care strategies can be adopted.

Aim: We hypothesized that cognitive performance would be better in COPD patients allocated to virtual admission - using a telematic solution - compared to patients admitted to conventional hospitalization after exacerbation.

Methods: This study was a Randomized Clinical Trial. The primary outcome was cognitive function evaluated at discharge and after six weeks using a neuropsychological test battery comprising 4 tests and 7 variables. Secondary outcomes included self-reported cognitive function (SCF), activities of daily living (IADL), anxiety and depression (HADS).

Results: We included 44 patients consecutively. Baseline data were: Mean age 70 years (SD 10); forced expiratory volume in one second (FEV1) 1.0 L (SD 0.55); Oxygen saturation 94.5 (SD 2.5); and a Mini Mental State Examination score of 27.5 points (SD 1.6). The performance in all seven neuropsychological test variables tended to be better in the group allocated to virtual admission, but the difference was only statistically significant in the time for the Stroop Color Word test, (p=0.05). The pattern was the same at follow-up after six weeks but the differences were less pronounced. There were no significant differences in SCF, IADL, and HADS at discharge or after 6 weeks.

Conclusion: Cognitive function may be better preserved in COPD patients treated for exacerbation during virtual admission at home.

P550 Longitudinal changes in detrended fluctuation analysis “alpha” of PEF in COPD

The full abstract can be found on page 890s.

P551 Anxiety and dyspnea relation in early stage COPD patients
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Introduction: Anxiety is a co-morbid diseases in COPD. Anxiety prevalence in COPD patients is higher than general population. Although the relationship between anxiety and COPD can not be revealed yet, increased anxiety prevalence was associated with increased dyspnea level.

Aim: To determine the rate of anxiety and relationship of anxiety and dyspnea in early stage COPD patients who do not have advanced functional restriction.

Method: COPD patients that volunteered to participate the study who admitted to hospital with a reason other than COPD exacerbation was included to this cross-sectional/descriptive study consecutively. Beck anxiety inventory, medical research council (MRC) dyspnea scale applied.

Results: 134 patients with GOLD-1 COPD included. Mean age was 58.1±10.53, 92.5% of them were male. Active smokers and former smokers were 61.9% and 38.1%, respectively. 64.9% did not have co-morbid diseases. According to MRC dyspnea scale 33.6% of the patients were in grade I and 55.2% were in grade 2, 34.1% of the patients that answered the question “Do you have shortness of breath?” answered as “No” were having MRC grade 2 and 3 dyspnea. 11.2% of 134 participants had mild and 9% had moderate anxiety. In patients with anxiety 89% were having MRC grade ≥2.Although there was no statistically significant relationship between shortness of breath and level of anxiety, there was a significant relationship between MRC grade and level of anxiety (p=0.529 and p=0.004, respectively).

Conclusion: MRC scale can be more effective in detection of dyspnea in early stage COPD. All COPD patients with MRC score ≥2 should investigate for anxiety.
P555
Inflammatory markers in COPD patients with and without cachexia

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Background: Inflammatory and oxidative-stress biomarkers have been implicated in the pathogenesis of muscle atrophy found in COPD patients. We hypothesized that factor analysis followed by cluster analysis of functional, clinical, radiological and exhaled breath metabolic features identifies subphenotypes of COPD in a community-based population of heavy (ex-)smokers.

Methods: 157 of 300 subjects fulfilled the criteria for COPD (850±140 mg/ml and 2.8±1.0 mg/l, respectively). Severity disease was similar in both groups (FEV1, 45% vs 47%, respectively). Previously VTD (relative risk (RR), 1.1; 95% CI, 1.0–4.0), obesity (RR, 2.1; 95% CI, 1.0–5.0), cancer (RR, 2.6; 95% CI, 1.3–5.1) and elevated CRP (RR, 3.3; 95% CI, 1.4–6.6) were significantly associated with PE-related death, right heart failure or prolonged hospital stay. The number of COPD patients diagnosed for acute PE was slightly higher than previously reported. In addition, COPD patients might be an under recognized group with increased mortality.

Results: We included 127 patients (70±10 years, 70% men, GOLD II/IV 87%). Left ventricular dysfunction (LVD) was recorded in 70 (55%) patients. NT-proBNP was higher in patients with LVD but decreased significantly from admission to discharge in patients with and without LVD (p=0.004). A 30% decrease was observed in 52% of patients. TnT was not different between patients with and without LVD but decreased significantly in patients with LVD (p=0.043).

Conclusions: LVD is common in patients with acute exacerbation of COPD. NT-proBNP and TnT dynamics suggest clinically relevant implications of cardiac dysfunction with potential to identify cardiac triggers of clinical deterioration.

P556
The prevalence of undiagnosed COPD and approaches to promote early COPD diagnosis in lung cancer population

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Background: Chronic obstructive disease (COPD) is a risk factor and important co-existing disease for lung cancer, however, the current status of diagnosis and treatment of COPD in lung cancer population are not fully described. This study was designed to address this issue in a general teaching hospital in China.

Methods: Medical records of the hospitalized patients with lung cancer in Zhongshan Hospital, Fudan University from Jan 2006 to Dec 2010 were reviewed. The co-morbidity of COPD were confirmed by the spirometric results according to GOLD definition. The diagnostic rate and the rate of appropriate treatment was analyzed.

Results: During the study period, the prevalence of COPD in hospitalized lung cancer patients was 21.6% (705/3263). The diagnostic rate of COPD in lung cancer patients was 7.1%, and the rate of appropriate treatment for stable and acute exacerbation of COPD was 27.1% and 46.8% respectively. Respiratory physicians had a higher diagnostic rate than non-respiratory doctors (34.8% vs 2.9%, p<0.001), and a better compliance with GOLD guidelines of the treatment for acute exacerbation of COPD (63.6% vs 37.5%, p=0.048). Accuracy diagnosis significantly increased the guideline-compliant treatment. The diagnostic rate was poorer in patients with history of tobacco exposure, respiratory diseases, or respiratory symptoms.

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Conclusions: COPD is substantially underdiagnosed and undertreated in hospitalized lung cancer population. History of smoking, respiratory diseases, or respiratory symptoms will promote the diagnosis of the disease. Education among patients and doctors and improvement of disease management are urgently required in this special population.

P557
The association between pulmonary arterial hypertension secondary to chronic lung disease and serum asymmetric dimethylarginine levels
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Asymmetric dimethylarginin (ADMA) is an endogenous molecule that prevents nitric oxide synthase enzyme inhibition. It has been shown that serum ADMA levels increase in COPD patients as well as idiopathic pulmonary hypertension patients. In this study, association between serum ADMA levels and pulmonary hypertension secondary to COPD and interstitial lung disease (ILD) was evaluated. Fifty-six COPD and 20 ILD patients who have no documented additional disease were included into the study. Echocardiography was used to evaluate pulmonary arterial pressure (PAP). Serum ADMA levels were measured by ELISA. Association between OPAP and serum ADMA levels were evaluated by Pearson correlation test. Mean ADMA levels of patients have normal and high OPAP were compared by student-t test. Mean serum ADMA levels of patients have increased OPAP was found significantly higher than that of patients have normal OPAP (p<0.05). A positive correlation (Pearson r=0.6, p<0.01) was found between serum ADMA levels and OPAP. Evaluation of COPD and ILD patients separately showed that significantly higher ADMA levels were found in pulmonary hypertension patients (p<0.05) in both groups. COPD and ILD groups showed correlation between serum ADMA levels and OPAP and ILD Pearson r=0.47 and 0.72 consequently also exist. ROC analysis was used to evaluate the value of serum ADMA levels measuring in diagnosis of pulmonary hypertension.

Area under curve was found 0.7. Serum ADMA levels measurement may be an indicator for PH secondary to COPD and ILD but it is not enough sensitive test according to the ROC analysis.

P558
Pneumothorax secondary to chronic obstructive pulmonary disease
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Spontaneous pneumothorax is defined by the presence of air in the pleural cavity without history of trauma. This is a significant clinical problem. COPD is a common cause of pneumothorax. The risk of recurrence of spontaneous pneumothorax secondary to COPD is high and various studies quote rates 20-60%.

Methods: Retrospective cohort study of all patients COPD admitted with pneumothorax to the pulmonary department between January 2004 and September 2011. The aim: to assess the frequency of pneumothorax in the COPD and describe its clinical profile and scalable.

Results: In a study period of 6 years, 248 cases with a diagnosis of pneumothorax were reviewed, the rate of pneumothorax secondary to COPD was 67% (80 patients COPD developed 167 pneumothorax). Our series is composed mainly of men, mean age 59±8 years. The notion of smoking was found in 100%; ex-smokers 67% and active smokers 33%. The most frequent initial symptom was dyspnea 100% with pleuritic chest pain 42%. The episode of pneumothorax revealed the disease in 32% and was responsible of exacerbation of COPD in 68%. According to GOLD classification, Fifty five (68%) had moderate COPD and twenty five (31%) had severe COPD. All patients received tube chest drainage and hospital stay mean was 12 days range (6-23 days). Twenty eight (35%) had recurrence of pneumothorax. Forty two patients (52%) had emphysema. Four patients developed empyema, six had emphysema subcutaneous and two had pneumonia after chest tube. The evolution was favorable in 74 cases and 6 patients died in an array of acute respiratory failure.

Conclusion: Pneumothorax represents a factor of mortality for patients suffering of COPD and the surgical treatment is needed to prevent recurrence.

P559
Endocrinopathies and related with COPD exacerbation
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Osteoporosis, metabolic syndrome, thyroid dysfunction are common in COPD. Results related with Vit D Deficiency associated with COPD exacerbation are controversial. This study is planned to investigate the levels of Vit D, thyroid hormones and bone density in COPD related with exacerbation numbers, hospitalization duration related with exacerbation, and the number of antibiotics for exacerbations. Seven patients with the mean age of 69.11±10.02 years and the mean FEV1: 19.38±16.91 were included in the study. Diabetes Mellitus (DM) has found in 13 and hyperlipidemia has found in 9 patients. Vit D Levels was reduced in 90% and thyroid hormones abnormalities were seen in 50% (1 hypothyroidi, 3 subclinical hypothyroidi) of the patients. Bone mineral density was normal in 21 (30%) and osteopenic in 24 (34.3%) and osteoporotic in 25 (35.7%) of the patients. These abnormalities did not relate with FEV1, exacerbation numbers in the last year, ICU admission rate and the duration of hospitalisation. Endocrinopathies in COPD have been encountered frequently however the impact of these abnormalities of disease outcomes have not elucidated thoroughly. This study has not showed any relation of endocrin abnormalities with parameters of exacerbations.
83. COPD comorbidities II

Longitudinal changes in detrended fluctuation analysis “alpha” of PEF in COPD

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Introduction: Detrended fluctuation analysis can assess the “memory” of previous events with the exponent alpha. Alpha is higher in COPD than asthma, responses to pharmacotherapy, and is related to exacerbation frequency, but is not known whether alpha changes with increasing disease severity.

Methods: We examined 230 patients from the London COPD cohort who recorded for at least two year on diary cards daily morning, post-medication PEF measurements made with Mini-Wright PEF meter. Patient characteristics were collected at recruitment to the cohort. The data was divided into yearly intervals, and the alpha and mean PEF in each yearly interval calculated. Random-effects, GLS regression models were used to assess changes over time.

Results: The 230 COPD patients (144M; mean age (SD) 68.3 (8.1) years; FEV1 1.12 (0.47) l, FEV1 % predicted 44.6 (16.5), FEV1/FVC ratio 0.45 (11.7). There were 1000 yearly intervals with on average 4.3 per patient (range 2-15). Figure 1 shows a predicted alpha in the first year of 0.93 (95% CI 0.91-0.95) with alpha falling by -0.0008 per year (-0.007 to 0.005; p=0.791). Over the same period PEF fell from the 227 l/min (217 to 236) by -4.3 l/min per year (-5.1 to -3.7; p<0.001).

Figure 1

Conclusion: In COPD patients, PEF declines over time but alpha remains unchanged. These results suggest that alpha is assessing a feature of the airways that is independent of lung function and changes little over time.