393. COPD diagnosis

P3561

Should we use FEV1/FVC <0.70 or FEV1/FVC <LLN to identify subjects with a clinical history indicating COPD – Results from the population-based BOLD study in Salzburg, Austria

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Rationale: To compare the fixed ratio of 0.70 and the LLN to identify subjects presenting with a clinical history indicating COPD.

Methods: We used data from the population-based Austrian Burden of Obstructive Lung Disease (BOLD) study. Participants were aged >= 40 years and completed post-bronchodilator spirometry. Risk factors for COPD and respiratory symptoms were recorded. A clinical history indicating COPD was defined as the presence of one or more risk factors *and* any concomitant respiratory symptom(s).

Results: Among 1258 participants 255 (20.3%) reported presence of one or more risk factors *and* presence of one or more respiratory symptoms, and were therefore considered to present with a clinical history indicating COPD. Among those the proportion of airways obstruction defined by FEV1/FVC<LLN and FEV1/FVC<0.70 was 26% and 39%, respectively.

Altogether 99 (7.9%) subjects presented with a clinical history indicating COPD and FEV1/FVC<0.70, while 65 (5.2%) presented with a clinical history indicating COPD and FEV1/FVC <LLN.

62% of 34 participants with a clinical history indicating COPD and discordant results for airways obstruction (FEV1/FVC<0.70 but FEV1/FVC >LLN) demonstrated FEV1 >80% predicted, and would be considered to have mild disease (GOLD stage 1).

Conclusion: Utilization of the LLN as a threshold for the FEV1/FVC ratio would identify approximately two thirds of subjects with a clinical history indicating COPD and GOLD-defined airways obstruction. The majority of those not identified when using the LLN would have mild disease (GOLD stage I).

P3562

Longitudinal validation of clinical COPD phenotypes identified by cluster analysis

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Because FEV_1 is a poor descriptor of COPD heterogeneity, a great interest has emerged regarding the identification of clinically relevant COPD phenotypes. Using principal component and cluster analyses on multiple clinical variables, we described 4 COPD phenotypes (Burgel, P.R. et al. Eur Resp J 2010; 36: 531-9):

- Phenotype 1: young subjects with severe respiratory disease.
- Phenotype 2: older subjects with mild respiratory disease and few comorbidities.
- Phenotype 3: young subjects with moderate to severe respiratory disease and few comorbidities.
- Phenotype 4: older subjects with moderate to severe respiratory disease and major comorbidities.

Methods: Data regarding vital status of the 322 COPD subjects included in our previous analyses were systematically requested. Cox proportional hazards model was performed to examine whether mortality was different among phenotypes.

Results: Data were available for 303/322 (94.1%) subjects and median [IQR] follow-up was 3.35 [2.01; 4.25] yr. During prospective follow-up, 60/303 (19.8%) died. Differential mortality among phenotypes is shown in Table 1. Interestingly, the highest mortality rate was found among the youngest subjects (Phenotype 1).

Table 1. Mortality according to phenotypes

	Median age at inclusion	Mortality rates	Mortality: Risk Ratio (95% CI)
Phenotype 2	68	7/88 (8%)	1.0
Phenotype 3	59	17/87 (20%)	2.73 (1.13; 6.60)
Phenotype 4	72	21/85 (25%)	3.34 (1.41; 7.87)
Phenotype 1	58	15/43 (35%)	4.50 (1.83; 11.1)

Risk ratios with phenotype 2 as reference.

Conclusion: These data provide strong evidence that our previously identified phenotypes have different natural history.

P3563

Clinical COPD questionnaire (CCQ) score and mortality

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Introduction: Quality of life is an important patient-oriented measure in COPD. The Clinical COPD Questionnaire (CCQ) is a validated instrument for estimating health status, correlating well with instruments such as SGRQ and SF-36. The prognostic qualities of CCQ have not been evaluated. This study investigated the association of CCQ with all-cause mortality in COPD patients.

Methods: A total of 1548 patients with a diagnosis of COPD were randomly selected from 70 Swedish primary and secondary care centres. The analysis included 956 patients (aged 34-75 years). Information was collected using questionnaires and record review. The Swedish Board of Health and Welfare provided mortality data. Cox regression estimated survival with adjustment for age, sex, smoking, education, level of care, and lung function (only available for a subset with spirometry data, n=491).

Results: Over five years, 216 patients (22.6%) died. In patients with CCQ ≥3 indicating very severely limited health, mortality risk was statistically significantly higher than in stable COPD patients with mean CCQ <1 (37.6% vs 11.3%), producing a hazard ratio (and 95% confidence interval) of 3.01 (1.87 to 4.83) after adjustment for the potential confounding factors. In the subset with spirometry data, further adjustment for FEV1%pred reduced the hazard ratio to 2.61 (1.21 to 5.64).
Conclusion: In addition to health status, CCQ has prognostic qualities relevant to mortality in COPD patients, even after adjustment for lung function.

P3564
The "rapid decliner" as a COPD phenotype associated with predominant emphysema
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COPD phenotype should be able to classify patients into distinct subgroups that provide prognostic and therapeutic information. We sought to identify the characteristics associated with a FEV_1 rapid decline in a well defined cohort of 131 outpatients (M/F 112/19, 69±7 years) with moderate COPD, in stable condition, under optimal medical therapy, and without uncontrolled comorbidities,. They were followed-up for 4±1 years. To this aim, we adopted a wide multidimensional approach with a comprehensive clinical, functional, and imaging characterization of all patients. At CT scan, 26% of them had emphysema; 67/131 subjects with FEV1 decline greater than the median value of 40 ml/y were defined rapid decliners. In the univariate analysis the decline of FEV1 was correlated with the duration of smoking ($p<0.005$), presence of emphysema ($p<0.0001$),FRC percent pred. ($p<0.01$) and absolute value ($p<0.005$), RV percent pred. ($p<0.05$) and absolute value ($p<0.01$) at baseline and number hospitalization per year ($p<0.05$) during the follow-up. It was also negatively correlated with chronic cough and phlegm without dyspnoea ($p<0.05$) at baseline. By multivariate analysis, smoking, duration of smoking, chronic cough and phlegm without dyspnoea were retained in association with presence of emphysema in one model ($p<0.01$) and with RV absolute value in another one ($p<0.05$). In conclusion, the rapid decliner phenotype could be identified by radiological emphysema or gas trapping in patients with a long smoking history and dyspnoea and without chronic cough and phlegm.

P3565
Can we assess COPD comorbidities by BODE index?
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Background: COPD is characterized by a poorly reversible airflow limitation resulting from chronic inflammation, mainly due to tobacco exposure. The systemic inflammation induced by smoking may also cause extrapulmonary comorbidities, which may contribute to the clinical manifestations, natural history of COPD and significantly complicate the management and influence the prognosis.
The aim of this study was to evaluate the possibility to assess comorbidities by GOLD/ATS/ERS classification and BODE.
Methods: 158 consecutive COPD patients were enrolled into the study. We analyzed age, gender, anthropometric, pack years, spirometric data (FEV1, FVC, FEV1/FVC), BODE index (BMI, FEV1, MRC, 6 MWD). Comorbidities were assessed by the Charlson Comorbidity Index (CCI).
Results: 158 COPD patients were studied, mean age 64.6±8.9 years. Patients across all stages GOLD/ATS/ERS classification had similar age and pack/years ($p>0.01$). As our data shows, the prevalence of comorbidities was similar when GOLD/ATS/ERS assessment of severity was applied. After the application of BODE classification the increase of comorbidities with severity of COPD was observed. There were no significant correlations between GOLD/ATS/ERS stage and comorbidities. Then Pearson correlation coefficient analysis demonstrated a significant positive correlation between the BODE and the comorbidities ($r=0.29$, $p<0.01$) in COPD patients.
Conclusion: Comorbidity score correlates with BODE, this fact suggests that BODE is potentially able to measure COPD comorbidities. Further work is required to evaluate relationship between the BODE and COPD comorbidities.

P3566
Cluster analysis revealed differences on quality of life and susceptibility to exacerbation between subpopulations of smokers including COPD
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Background: It is necessary to categorize subpopulations of COPD or smokers by non-outcome phenotypes, such as emphysema without airflow obstruction.
Methods: 730 current- or ex-smokers including 382 COPD subjects were studied (66.7±11.0 yrs, 602male/128 females). We collected the data for all the subjects on pulmonary function test, 6 minute walking test (6MWT), body mass index (BMI), dysnpea (modified Medical Research Council (MMRC) Dyspnea Scale, Oxygen Cost Diagram (OCD)), and the extent of emphysema and airway disease assessed by chest computed tomography (CT) (low attenuation area (LAA)% and wall area (WA)%), and we also studied the data on the score of St. George's Respiratory Questionnaire (SGRQ) for QOL [n = 361], and exacerbations [n = 178]. We performed a principal component analysis (PCA) and cluster analysis by k-means method.
Results: PCA showed the major factors as follows: vital capacity (VC), LAA%, WA%, reversibility, PaO2, PaCO2, leg fatigue on 6MWT.
Cluster analysis with these factors classified the subjects into four clusters as follows: Cluster 1; 254 cases with mild emphysema (LAA% 22.1±10.8, WA% 45.0±14.1), Cluster 2; 156 cases with airway disease (LAA% 15.7±11.3, WA% 58.3±12.8), Cluster 3; 152 cases with emphysema and airway disease (LAA% 20.1±13.2, WA% 61.5±11.5), Cluster 4; 168 cases with severe emphysema (LAA% 41.0±11.8, WA% 57.0±11.3).
Cluster 4 has the highest SGRQ score ($p < 0.0001$). Cluster 2 and 4 were more prone to exacerbations ($p < 0.01$).
Conclusions: PCA and cluster analysis revealed that chest CT contributes to the classification to subpopulations in smoker with or without COPD.

P3567
Spirometry in UPLIFT®: Quality and reproducibility over time
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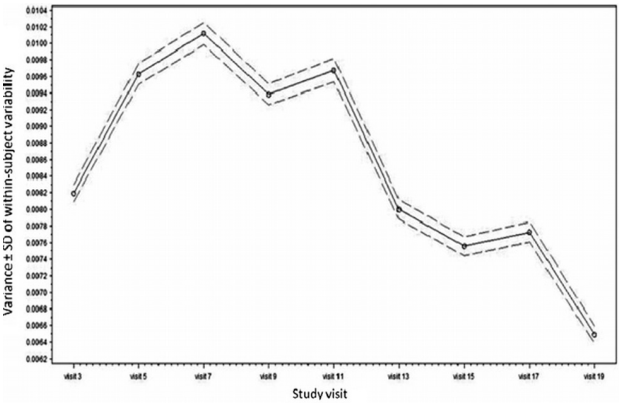
Background: UPLIFT® was a 4-yr, randomized, double-blind, placebo-controlled multicenter trial in 5993 patients (pts) with chronic obstructive pulmonary disease (COPD).
Aims and objectives: To explore spirometry quality and reproducibility in this large trial.
Methods: Within-test variability of pre- and post-bronchodilator (BD) forced expiratory volume in 1s (FEV_1) was within-pt measurement error of acceptable maneuvers in 1 spirometry, compared across study visits. Between-test variability was mean difference of best pre- or post-FEV_1 values between 2 visits (6 mo interval), corrected for normal decline (-15mL), at trial start (a), middle (b) and end (c).
Results: 3 acceptable maneuvers in 93.8% visits. Within-test variability of pre- and post-FEV_1 (mean SD: 0.092L and 0.098L) decreased during the trial (visits 3-19; figure), a similar pattern seen in analysis of pts with measurements at all visits. Between-test variability decreased over time: pre-FEV_1 (a=0.14±0.13L; b=0.13±0.12L; c=0.12±0.12L); post-FEV_1 (a=0.14±0.14L; b=0.13±0.12L; c=0.12±0.12L), and was dependent on age, sex, smoking status, GOLD stage, but not BD response or treatment (tiotropium/control).



Conclusion: Spirometry quality in UPLIFT® was excellent and improved during the trial. Large intersession variability dependent on age, sex, smoking and COPD severity suggests relevant cut-offs for individual disease monitoring are hard to establish.
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P3568
Discriminative characteristics of the CAT score in stable COPD patients
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The CAT score is a new tool to assess health-related quality of life in patients with COPD. Its discriminative charasteristics are yet to be described.

We aimed at assessing the discriminative characteristics of the CAT score collected prospectively in consecutive stable ambulatory COPD patients seen by the authors. The CAT score was compared across GOLD stages, MMRC dyspnea scale, and BODE quartiles. Its relationship with relevant variables was assessed by regression analysis. 213 patients were included (GOLD stage I/II/III/IV: n=12/75/55/71). The distribution of the CAT score was gaussian with no ceiling or bottom effect. Mean CAT score was 14.3±2.1, 16.6±0.9, 19.9±1, 23.7±0.8 in GOLD stages I, II, III, IV. Scores were significantly different between all stages except between stages I and II. Mean CAT score across the quartiles 1, 2, 3, 4 of the BODE index were 15.9±0.7, 19.1±1, 24.3±0.9, 25.4±1.2. Scores were significantly different between all quartiles except quartiles 3 and 4. Mean CAT score across MMRC scale 0-1, 2, 3, 4 were 12.7±0.8, 19.9±0.7, 25.5±0.8, 25.2±1.8. Scores were significantly different between all dyspnea scales except grade 3 and 4. The CAT score was significantly correlated with post-BD FEV1 (r^2=0.17), RV/TLC (r^2=0.17), DLCO (r^2=0.13), 6MWD (r^2=0.15), MMRC dyspnea scale (r^2=0.37), BODE index (r^2=0.31), among other parameters. In multivariate analysis, only 42% of the CAT variability could be explained by relevant variables and only dyspnea and RV/TLC were significant predictors of the CAT score.
We conclude that the CAT score has discriminative characteristics that are similar to those published for more complex tools assessing health-related quality of life in patients with COPD.

P3569
Clinical-morphological changes in bronchial mucous membrane according to the III-IV COPD stages
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Aim: To estimate the deepness, intensity and reversibility of structural changes in bronchial walls in III-IV COPD stg with immunomorphological method using.
Study disign: 42 pts (mean age 59±1.7 years) with COPD: I gr.- 30 pts with III stg (20 male), II gr.- 12 pts with IV stg (9 male). Bronchoscopy with consequent histology sampling and assessing by microscopy and immunohistochemistry (IHC) research was done for all pts. The following indexes were evaluated: Ki-67 (reflect proliferative potential and activity of epithelial regeneration); Cytokeratins 8 (Ctk) (as a marker of glandular epithelium); Ctk 34βE12 (squamous epithelium origin).
Results (*p<0.05):

Groups	Ki-67 (M ± m, %)
I	20±0.3*
II	<3±0.2*

In Gr I all pts had been demonstrated intensive positive membrane reactions with Ctk 8 in uninjurious ciliary's and basal epithelial cells and heterogeneous positive membrane reactions with Ctk 34βE12. The simultaneous co-expression of both types of cytokeratins indicates the reversibility of metaplasia.Histological investigation: hypertrophy of smooth muscles, polipoid overgrowthing of mucous, proliferation of fibroblasts.
In Gr II took place focal positive membrane reaction with Ctk 8 in residual glandular cells, and intensive expression of Ctk 34βE12 without co-expression of both markers.
Conclusion: 1. Pts with COPD III had been estimated changes with high reversibility, but with provided exclusion trigger agents and relevant therapy, in comparison with COPD, stage IV. 2. Pts with COPD, stage IV, the atrophy and sclerosis predominated. Immunomorphological data indicates about regenerative depletion and permanent irreversible changes of bronchial tree.

P3570
Impairment of membranous and vascular components of pulmonary diffusion and plasma endothelin-1 in patients with liver cirrhosis with and without COPD
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Liver cirrhosis (LC) may be rarely complicated by hepatopulmonary syndrome or hypertension. Nevertheless abnormalities of gas exchange are frequent in LC. The mechanisms are still unclear. A reduced hepatic clearance of Endothelin – 1 (ET-1) might play a role.
In 72 pts. with LC, 29 (40.3%) of whom had accompanying COPD, PFT were performed as well as measurements of $PAaDO_2$, diffusion capacity, pulmonary capillary blood volume (Qc), membrane diffusing capacity (Dm) and plasma ET-1. The functional measurements were performed in a matched group of pts. with COPD without liver function impairment (n=38).
None of the pts. had clinically manifest hepatopulmonary syndrome or hypertension. Nevertheless 59/72 (81.9%) of the pts. with LC and all pts. with both LC and COPD and 31/39 (79,5%) pts. with sole COPD showed decreased TLCO. In all pts. but one with sole LC Dm was reduced. Qc was reduced to a lesser extend in 47 (65.2%) pts., with a greater impairment of Dm. In the COPD group the reduction of Dm was the overwhelming mechanism of an abnormal diffusion capacity. $PAaDO_2$ was significantly negatively correlated with TLCO, Qc and to a lesser extend with Dm in pts. with LC without ventilatory impairment. All pts. with LC independently on coexisting COPD showed increased plasma concentratons of ET-1, which were negatively correlated with Qc (r=-0.57, p=0.015).
Impairment of the Dm as well as decreased Qc are responsible for an abnormal gas exchange in pts. with LC contrary to COPD where reduction of Dm plays the most important role. Increased ET-1 in LC might contribute to pathogenesis of gas exchange impairment in LC.

P3571
Clinical characteristics of COPD with mild bronchiectasis
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Aim: We tested the hypothesis that patients who have COPD and develop mild BE have a more deteriorated QOL, exercise capacity, and outcome after 1 year than do patients who have COPD without bronchiectasis (BE).
Methods and subjects: The study population consisted of 204 consecutive patients with COPD. All the patients underwent HRCT of the chest and the following studies: quantitative assessment of bronchiectasis by using the methods reported by Bhalla (1991) and Smith (2010), pulmonary function tests, 6-minute walking test, and assessment for QOL. The outcomes for acute exacerbations were evaluated for 1 year.
Results: The study included 204 patients (men, 189; women, 15) with a mean age of 71.2 years. The prevalence of BE in the patients was 27% (n = 55), and the frequency of exacerbations (FE) was 0.49 per year for 70 of the patients. On adjusting for FEV1%, age, and gender, it was found that the patients who had COPD and BE had significantly risk of FE than did those who had COPD without BE ($p < 0.02$). Visual analogue scale-QOL assessments indicated a trend towards deteriorated QOL for patients with BE with regard to social activity alone. The fat free mass index for patients with BE was significantly lower than that for patients without BE ($p < 0.02$). These data were almost similar for the 2 different assessments performed using the methods reported by Bhalla and Smith.
Conclusions: The patients who had COPD with mild BE had greater likelihood of acute exacerbation than did the patients who had COPD without BE. This characterized phenotype of COPD that is attributed to BE should be evaluated for chronic management even in mild cases of BE.

P3572
Bronchial hyperresponsiveness as phenotypic feature of COPD
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Bronchial hyperresponsiveness (BHR) in COPD applies to a pathophysiologic sign that can provide additional information about severity and features of disease.
Aim: To compare clinical-functional features and health-related quality of life (QL) in COPD depending on BHR level as phenotypic sign.
Methods: 75 moderate severe (II stage) COPD patients (66 male) mean age of 57 yrs were studied. COPD symptoms on the 5-score scale (MRC and Gulsvik, 1988), spirometry parameters, smoking (packs-years) and QL (SGRQ) were analyzed depending on the BHR in metacholine challenge. Criteria of positive BHR was provocative dose (PD_{20})<0,471 mg.
Results: By results of the methacholine challenge patients were divided into two groups: the 1-st positive test (PD_{20}<0,471 mg) and the 2-nd negative (PD_{20}>0,471). BHR was revealed at 52 of 75 (69%) patients. Among them female presented 89%. Women had higher level BHR than men: PD_{20} 0,024 mg vs 0,121 mg (p=0,01). The QL of the 1-st group was worse than the 2-nd group. The median difference of SGRQ domains between two groups worked out: Symptoms 24, Activity 14, Influence 13, Total 15 points (p<0,01 in all cases). The dyspnoea level corresponding to worse QL was higher in the 1-st group: the difference of mean was 0,8 points (p=0,0003). The mean of PD_{20} in patients with severe dyspnea was less in 2,2 times in comparison MRC dyspnea 1-2 grades (p=0,029). BHR contributes to formation of severe dyspnea in COPD: OR 8,6 (CI 1,6<OR<51,5; p=0,007). However no significant differences were found for FEV_1 and smoking status.
Conclusion: A part of COPD patients, especially women have BHR. BHR modifies current of disease and promotes more severe dyspnea, worse QL of COPD patients with comparable value of FEV_1.

P3573
Skin autofluorescence is not a good marker for disease status in COPD
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Rationale: Skin autofluorescence (AF) is measured non invasively and is shown to correlate with collagen linked fluorescence and skin levels of specific advanced

glycation end products (AGEs) (Meerwaldt, R. Ann N Y Acad Sci 2005; 1043:290-298). The aim of this study was to determine weather AF is a measure of disease status in patients with COPD.
Methods: AF was measured with an optical non invasive autofluorescence reader using ultraviolet light for excitation at 300-420nm. AF was measured on the arm in 100 patients with COPD admitted for pulmonary rehabilitation. Lung function parameters (FEV1, FVC), 6min walking distance, BMI, MRC dyspnea score and the Charlson co-morbidity index (CCI) were recorded as markers of disease status. Data are expressed as mean and SD.
Results: Our study group consisted of 55% males, mean age of 63.9±8.2 years, mean FEV_1 of 46.8±17.2%pred, median BODE of 4 (2-5) and median CCI of 1.0 (0-1.75). Mean AF was 3.4±0.7AU and correlated positively with age ($r=0.26$, $p<0.01$). We found no difference in AF between sex, GOLD criteria, BODE index and CCI. No correlation with FEV_1 was observed, but AF was positively correlated with the amount of pack years smoked ($r=0.278$, $p<0.05$). In multivariate regression analysis age and pack year smoked predicted AF for 16%.

Table 1. linear regression of severe COPD patients (n=100) with skin autofluorescence as dependent variable

	Beta	p-value
R2=0.16		<0.01
Age	0.34	<0.01
Amount of pack years	0.27	0.03

Conclusion: Although AF correlated with age and the amount of pack years smoked in a group of severe and complex COPD patients, AF was not associated with any criteria of disease status, suggesting that AF is not a good marker of disease status.

P3574
Association between comorbidities, disease severity and body mass index in COPD patients
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Background: COPD patients are often afflicted by multiple comorbidities.
Objectives: To assess the nature and prevalence of comorbid diseases in a COPD population and to study the association between comorbidities and COPD severity and nutritional status.
Methods: We studied 470 patients who met GOLD spirometric criteria for COPD (post-bronchodilator $FEV_1/FVC < 0.7$). Data on comorbidities and pulmonary function tests were collected. Subjects were stratified by GOLD stage (GOLD I–IV) and body mass index (BMI) as underweight (BMI<21; n=119), normal-weight (n=115), overweight (BMI>25<30;n=130) and obese patients (BMI>30; n=95). Data are presented as mean (SD); Spearman test Kruskal-Wallis test were used.
Results: Of the patients studied, 281 were men (59.8%), with mean age of 64.9 (10.3) years, FEV1 of 1.31 (0.3) l and BMI of 25.3 (5.7) kg/m^2). The average number of comorbidities per patient was 3.1 (1.9). In 105 patients (22.3%) five or more comorbidities were identified. The most frequent comorbidities found were hypertension (44.9%), cardiac disease (20%), diabetes (14.7%), osteoporosis (13.6%) and dyslipidemia (13%). There was no correlation between COPD severity and number of comorbidities ($p>0.05$). There was a significant correlation between BMI and number of comorbidities ($r = 0.323$; $p <0.001$). Obese patients had an average of 4.1 comorbidities, and underweight, normal-weight and overweight patients of 2.8, 2.5 and 3.1, respectively.
Conclusions: We found that comorbidities are frequent in COPD and are associated with increase of BMI. Therefore, COPD patients should be encouraged to maintain their weight in the normal range.
Supported by FIPE/HCPA and FAPERGS.

P3575
Features of mucous membrane changes of bronchial tree at patients with COPD
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Aim: Research was an estimation of expressed of changes of mucous membrane of bronchial tree at patients of COPD on the different stages of pathological process.
Study population and methods: We investigated 86 patients (pts) (53 male, mean age 62.4±4.2 yrs) with COPD. All pts were divided on three groups: I group (gr.) – 10 pts. with COPD I stage (st.); II gr. – 28 pts. with II st.; III gr. – 36 pts. with COPD III st., IV gr. – 12 pts. with COPD IV st. The state of mucous membrane of bronchial tree, degrees of atrophy of epithelium, character and amount of mucus, was estimated.
Results: All pts had manifestations of atrophic change of bronchial tree mucous (1 and 2 degree of atrophic endobronchitis), however significant differences in pts I and II gr. (1 degree of atrophic endobronchitis) didn't found. Endoscopic picture in pts III gr. was characterized by atrophic change (atrophic endobronchitis of 2 degree). Pts with IV st. COPD was dominated by manifestations of deforming endobronchitis against mucosal atrophy 3 st.
In pts. I and II gr. hadn't distinctions in quantitative and qualitative description of sputum: light lucid sputum in little quantity or no. Increase of bronchoobstruction in III gr. was accompany by considerable changes character, viscosity and quantity of sputum (ample quantity rich cloudy mucus).
Conclusions: 1.Progress of COPD is characterized growth of degree and expressed of atrophy displays in the mucous membrane of bronchial tree.
2. Structural change of epithelium of mucous membrane of bronchial tree cause the change of character and amount mucus.

P3576
Gender difference in the perception of dyspnea in former smokers with COPD
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Rationale: Considerable number of COPD patients (pts) suffers from dyspnea and exercise limitation. These symptoms are not in close relation with FEV_1 nor GOLD severity. In addition there is apparent individual susceptibility to dyspnea sensation.
Aim: We measured dyspnea (MRC dyspnea scale) and prognostic indexes (ADO, classical BODE 2004, modified BODE 2009) of stable COPD pts and compared these parameters in male and female subgroups.
Methods: We used data from observational crossectional assessment (Ciliary Study) of stable ex-smokers with mild (n 23), moderate (n 25), severe (n 25) and very severe (n 25) COPD. All 98 pts (79 males, 65.1 years, FEV_1 55.5% ±22.7) were randomly recruited from all our out-patients (n 620).
Results: Severity of bronchial obstruction (FEV_1%) was idenical in both subgroups. The mean values of MRC in males and females subgroups were 1.84 and 2.42 respectively. The mean values of MRC were higher for women in all stages of the disease (stage I- males 1.24 and females 2.50, II- 1.41 and 2.33, III – 1.86 and 2.33, IV – 2.89 and 3.29). Inter-gender difference was statistically significant ($p=0.028$ chi square test). Although we did not find any significant difference between the prognostic parameters (ADO, classical and modified BODE) in males and females, women achieved a higher score in all three indexes.
Conclusion: We confirmed gender difference in the perception of dyspnea among ex-smokers with COPD. We did not show significant gender difference in values of prognostic indexes.
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P3577
Comorbidities associated with chronic obstructive pulmonary disease (COPD) – A clinical study
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OPD continues to be one of the commonest causes of increasing morbidity and mortality globally.While cardiovacular (CVD) and cerebrovascular diseases are decreasing over the years,COPD is the fourth leading cause of death,thanks to continuing smoking habits,atmospheric and industrial pollution. Lack of awareness and late diagnosis add insult to injury. Associated comorbidities such as CVD musculoskeletal disorders and infective exacerbations are not often recognised. (Chabra SK et al.Indian J Chest Dis Allied Sci 2010;52:225-238). Recognition of comorbidities associated withCOPD and concurrent management will go a long way in reducing morbidity and even mortality. The situation is worse in developing countries where diabetes,alcoholic liver diseases and human immunodeficient diseases are rampant and hence this communication. All patients with recurrent cough,dyspnea and chest pain exposed to smoking habits and/or other pollutants were screened, They were subjected to spirometry,imaging studies,metabolic/biochemical lab evaluation, and EKG. Diagnosis was established by the GOLD criteria and comorbidities by relevent clinical evaluation and relevat lab studies.
Results: There were 110 patients in the age group 35-75 years. The majority were males and smokers (95%). Commonest comorbidities were musculoskeletal (30%) and CVD (37%). Infective exacerbations contributed to 20%. More than one was present in few cases.The overall course of the disease was related to patient age,smoking pack year,genetic susceptibility,diabetes and above all treatment compliance.
Mortality in COPD is more often cardiac rather than respiratory causes. Regular physician/community medical education is recommended at regional levels.

P3578
Evaluation of the gas exchange abnormalities in COPD patients with the use of capnometry
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Background: COPD is airway disorder associated with an abnormal inflammatory response of the lungs to noxious particles or gases. Due to progressive nature of the disease the respiratory failure verification is of great importance.

Objectives: This study aimed to investigate capnometry indices in patients with stable COPD (GOLD III-IV) compare to healthy subjects.
Methods: Bodyplethysmography, capnometry. Data are presented as mean±SD.
Results: A total of 87 subjects (age 56.2±1.2 years; 59% male) were enrolled: COPD group (n=42, mean%FEV1 =39.5%), control group (n=45, mean%FEV1 =93.7%). All subjects were performed bodyplethysmography and capnometry, we compared the results between groups.
All bodyplethysmography and capnometry indices of COPD subjects were significantly ($p<0.05$) different from control. The mean values Rtot,% was 241.6±12.7 and 117.7±8.4, IC,% was 81,1±2.2 and 110.9±3.2, RV,% was 189±9 and 101.1±5 in COPD and control group respectively. The capnometry results was Vde%VT 33.8±1.2 and 25.5±1, PECO2, kPa was 2.8±0.1 and 3.2±0.1, end-expiratory lung volume, l was 5.1±0.2 and 4.7±0.2, FeCO2,% was 3.0±0.1 and 3.4±0.1 in COPD and control group respectively.
Conclusions: Capnometry might be a useful tool to detect the respiratory failure in COPD patients.

P3579
The indices of body composition (IBC) in chronic obstructive pulmonary disease (COPD)
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The aim: To analyze of IBC at different stages of COPD as well as the relationships between the IBC, lung function and smoking status.
Material and methods: Bone mineral content (BMC), Fat mass (FM) and Lean mass (FFM, excluding BMC) were detected by dual-energy X-ray absorptionmetry. FM, FFM and BMC were expressed as the ratio to height squared to obtain indices FMI, FFMI and BMCI respectively. The pts (aged 40-69 yrs) were divided into 3 groups according to COPD severity. The 1st group was made of 14 men (GOLD I stage; mean age 55 yrs; FEV_1 78%; BMI 27 kg/m^2, smokers 68%, packs/yrs smoking index 20); the 2nd included 43 men (GOLD II stage; mean age 57; FEV_1 63%; BMI 28 kg/m^2, smokers 80%, packs/yrs 21); the 3rd - 20 men (GOLD III stage; mean age 60; FEV_1 41%; BMI 24 kg/m^2, smokers 84%, packs/yrs 28). The control group was formed of 15 healthy men (mean age 56 yrs, mean BMI 26 kg/m^2, smokers 66%, packs/yrs 20).
Results: The FFMI value was decreased during COPD progression (from 21,3 kg/m^2 in the 1st group to 17,7 kg/m^2 in the 3rd group; $p<0,05$). We revealed the significant correlations between: COPD severity and FFMI (r=-0,54); FMI, FFMI, BMCI and pack/yrs (r= -0,37; -0,38; - 0,3 respectively). FFMI level was higher in 1st and 2nd groups as compare with the control and FFMI significantly correlated with FVC (r=0,4) and FEV_1 (r=0,4). The BMCI value in 1st group and the control was similar (1,06 kg/m^2) and it was significantly higher than in 2nd and 3rd groups (1,01 and 0,89 kg/m^2 respectively). Pts of 3rd group had a lower FMI as compare with the pts of 1st and 2nd groups (4,25 vs. 8,28 and 9,72 respectively; $p<0,05$).
Conclusions: The dynamics of IBC changes can probably reflect COPD progression.

P3580
Evaluation of different domains of the Saint George's respiratory questionnaire (SGRQ) according to the severity levels of chronic obstructive pulmonary disease (COPD)
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Relevance: Spirometric parameters used to determine disease severity may not be appropriate to infer about the different components of functioning in patients with COPD.
Purpose: To compare and correlate the scores of the different SGRQ domains according to the GOLD severity levels in patients with COPD.
Methods: A cross-sectional study was conducted at a hospital university. Comparison (Kruskal-Wallis) and correlation (Spearman) tests were used after performing normality tests. This study was approved by the Ethics Committee.
Results: Table 1 summarizes the data for each GOLD stage. No significant difference was observed between stages I and II or I and III for any of the SGRQ domains. There were no significant correlations between FEV_1 and the SGRQ scores.
Conclusion: The results suggest that there is no linearity between the severity levels of COPD and the SGRQ scores, including the activity and psychosocial impact domains.

Table 1. Age, Sex, FEV_1 and SGRQ escores according to GOLD stages

GOLD stage	Age (yrs)	Sex (M:F)	FEV_1) (% predicted)	SGRQsym	SGRQact	SGRQpsy	SGRQtot
I (n=7)	66±12	6:1	92±8	46±34	49±23[a]	29±21[a]	38±22[a]
II (n=14)	64±9	10:4	68±8	40±19[b,c]	41±20[b,c]	20±14[c]	30±14[b,c]
III (n=29)	66±9	20:9	39±5	55±22	58±17[d]	30±18[d]	43±16[d]
IV (n=13)	63±8	8:5	24±3	61±18	76±19	50±19	60±16

FEV_1: forced expiratory volume in the 1st second; SGRQsym, SGRQact, SGRQpsy, SGRQtot: symtoms, activity, psychosocial impact domains and total score, respectively, ranging from 0 to 100 (worst health status). Data expressed as mean ± standard deviation. [a]Significant difference ($p<0.05$) between GOLD I vs. IV, [b]II vs. III, [c]II vs. IV, [d]III vs. IV.