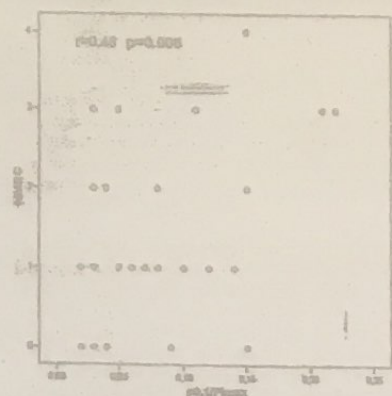


parameters and MMRC. Multivariate analysis determined the independent strength of these associations with MMRC. Results: MMRC correlated with: FEV₁ % (-0.31, p=0.026), FVC % (-0.31, p=0.029), IC/TLC (-0.27, p=0.05), P_{0.1} P_{max} % (-0.30, p=0.037), P_{0.1} P_{max} (0.46, p=0.006), exacerbations (0.24, p=0.04), VAS before (0.50, p=0.004) and after (0.49, p=0.004) and SGRQ total (0.60, p<0.001). Linear multiple regression analysis with MMRC as dependent variable showed that P_{0.1} P_{max} (β=0.80, p<0.001, r²=0.65) was the strongest predictor of dyspnea.



Conclusions: In COPD women, airflow obstruction, degree of hyperinflation, inspiratory muscle strength, number of exacerbations and central drive output were the factors associated with their degree of functional dyspnea. Respiratory drive output measured by the P_{0.1} P_{max} was the main predictor of MMRC scores.

E4664

Validity and reliability of the symptom domain of the clinical COPD questionnaire (CCQ)

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Background There is need for validated brief symptoms questionnaires in COPD. The full CCQ scale is well validated but for isolated use the separate symptoms domain (CCQsym, 4 items, score 0=best 6=worst) requires validation.

Aim To investigate the test-retest reliability, internal consistency, construct validity and responsiveness of the CCQsym.

Methods We used data from two different studies. In study I 88 COPD patients completed the CCQ twice with a 2-week interval. Patients that remained stable were included in the reliability analyses calculated with the Intra Class Coefficient (ICC). Internal consistency was calculated using Cronbach's α. In study II, 169 patients with COPD hospitalised due to an exacerbation, completed the CCQ, SGRQ and BORG dyspnoea score on day 1, 7 and 14. To test the construct validity the hypotheses were: I CCQsym correlates more with the SGRQ symptom domain than the other SGRQ domains and II Separate dyspnoea CCQsym items correlate more with the BORG score than the cough and sputum items.

Results: The ICC of the CCQsym was 0.86. Cronbach's αs were 0.81(day 1) and 0.86(day 14). Correlations are presented in the tables. CCQsym improved 1.3 (p<0.000) points between day 1 and 7.

	SGRQ domain		
	Symptoms	Activities	Impact
CCQsym	0.60*	0.48*	0.55*

Pearson corr. * p<0.05

	BORG	
	Day 1	Day 7
CCQsym	0.51*	0.51*
Short of breath at rest	0.43*	0.43*
Short of breath doing physical activities	0.51*	0.51*
Cough	0.26*	0.26*
Phlegm production	0.12	0.12

Spearman's rank corr. * p<0.05

Conclusion: The CCQsym has good test-retest reliability, internal consistency and construct validity. Data support strong responsiveness of the symptom domain during recovery from an exacerbation.

E4665

The 6-minute walking distance parameters to COPD patients during biennial research

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The aim was to estimate the parameters in 6MWD in patient during exacerbation and remission, and also during 2 years research. Materials were over 80 men are included in the present research with diagnosis COPD at risk and COPD I-III stages in the age of from 40 till 60 years. Comparing the parameters received during an aggravation and remission of process, we have revealed, that their statistically significant improvement was observed only in group with COPD at risk: in patients with COPD I-III it has not been received authentic growth of a distance in the test with 6-minute walking in the period of remission in comparison in an aggravation of disease that proves progressing, irreversible current of disease with gradual decrease in functionalities of patients and tolerances to physical loading already at early stages of COPD. During biennial of supervision by us it has been shown, that at non-smoking men with COPD the distance in the test with 6-minute walking increased from 435±84m up to 502±86m, i.e. for 67m while in group of smokers varied a little: with 403±106m up to 408±102m, i.e. all on 5m. Interrelations with parameters can't be precisely correlated with the experience of smoking (r=-0.77, p<0.05) and quantity cigarettes per day (r=-0.81, p<0.05). On our data, the experience of disease (r=-0.81, p<0.05) and number of aggravations of illness in one year (r=-0.81, p<0.05) play a significant role in reduction in parameters of a distance in the test with 6-minute walking.

E4666

Hoover's sign predicts expiratory flow limitation in chronic obstructive pulmonary disease (COPD)

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Introduction: The Hoover's sign is a paradoxical inward motion of the lateral diameter of the lower rib cage during part of or all the inspiratory phase and is often observed in chronic obstructive pulmonary disease. Expiratory flow limitation (EFL) is the mechanical hallmark of COPD and leads to dynamic pulmonary hyperinflation.

We reasoned that the Hoover's sign may be associated with the presence of EFL in COPD patients.

Methods: All consecutive stable COPD patients that came ambulatory for lung function test and were prospectively studied.

Dyspnoea score was evaluated using the Medical Research Council (MRC) scale and a Hoover's sign was researched during physical examination and with magnetometry. In case of positive finding, EFL was assessed by manual compression of the abdomen (MCA) and inspiratory capacity (IC) measurements were performed.

Results: 73 COPD patients were studied. Magnetometers confirmed Hoover's sign in 46 of them (35 men, 11 women; mean age 68). Inspection and palpation ruled out or confirmed reliably the presence or the absence of Hoover's sign in 67 (92%). 42 of the 46 "Hoover's patients" were re-studied and EFL was present in 35 (83%) of them. The mean IC of these patients was reduced to 73% of predicted value and their mean MRC score was 3 ± 1.

Conclusion: The Hoover's sign, whose detection is easy and reliable during physical examination, predicts the presence of EFL in COPD patients.

E4667

How exactly can we predict the prognosis of COPD?

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Predictive models play a pivotal role in the provision of accurate and useful probabilistic assessments of clinical outcomes in chronic diseases. We aimed to develop a dedicated prognostic index for quantifying progression risk in COPD patients. Data were collected prospectively from 75 COPD patients during a 3 years period from 2002. A predictive model of progression risk of COPD was developed using Bayesian logistic regression analysis by Markov chain method. One-year cycles were used for the disease progression in this model. Primary end points for progression were impairment in basal dyspnoea index (BDI), FEV₁ decline, and exacerbation frequency. Time-varying covariates were age, smoking, body mass index (BMI), GOLD staging, PaO₂, PaCO₂, IC, RV/TLC, and DLCO.

BDI were strongly correlated with exacerbation frequency (p=0.001). BMI was a risk factor for predicting BDI impairment (p=0.03). The following independent risk factors were found significant to predict exacerbation frequency: GOLD staging (OR for GOLD 1 vs 2 and 3 = 2.3 and 4), hypoxemia (OR for mild vs moderate and severe = 2.1 and 5.1) and hyperinflation (OR for absence vs presence = 1.6). PaO₂ (p=0.026), IC (p=0.02) and RV/TLC (p=0.03) were found to be predictive factors for FEV₁ decline. The model estimated BDI, lung function and exacerbation frequency with 95% reliability (p<0.001). Accordingly, this model was evaluated as confident of 95% for assessing the patient status after 3 years looking present data.

In conclusion, using predictive models, it was possible to develop a risk-stratification index that accurately predicted COPD progression. This model can provide decision-making about future in COPD patients with high reliability looking clinical data of beginning.

E4668

Peak expiratory flow value and relationships between functional parameters in COPD

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We aimed to find out relationships between results measured with portable PEF meters, spirometric parameters, SGRQ and SF36 health quality index, 6 MWT and dyspnea index prospectively in COPD patients.

We evaluated a total of 605 cases (509 COPD patients, 96 healthy control group). Correlation coefficient (r value) between the percent of predicted measured with PEF meters (PEFp%) and measured with spirometry for FEV₁%, FVC%, FEV₁/FVC, PEF%, FEV₂₅₋₇₅%, FEV₇₅% and FEV_{25/75}% were 0.789, 0.635, 0.726, 0.813, 0.794, 0.741, 0.649, 0.749 respectively (p<0.000). In COPD patients correlation between FEV₁% and PEFp% were stronger in cases with age <65 years than ≥65 years, in males than females, emphysema than chronic bronchitis and mix, in literated cases than uneducated, healthy than patients with comorbid diseases (p=0.000). We found a linear relation as FEV₁% = 12.6+(0.716 x PEFp%). COPD patients who's predicted FEV₁ were less than 80% had also predicted PEFp value less than 80% in 91,1% of these patients. If we compare FEV₁% and PEFp% according to GOLD staging criteria, kappa value was 0.32 and staging according to ATS guideline resulted in a kappa value of 0.42. All scores of SGRQ, physical functioning, role-physical, general health, vitality, social functioning, role-emotional and PCS scores of SF 36 and 6MWT were strongly correlated with PEFp% than FEV₁% (p<0.000).

PEF meters can be used for following up in COPD patients diagnosed with spirometry, diagnosing COPD in primary care units which have no spirometry and researching COPD in great field investigations. Especially, "normal PEF value" is very important, since normal PEF values can decrease the need for spirometry.

E4669

The stage of severity, BODE-index and quality of life (QL) at COPD

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The aim: To evaluate association between COPD severity, BODE-index and QL. Methods: BODE-index (B.R.Celli, 2004) was investigated at 138 various COPD severity patients (GOLD 2003). QL was measured using of St. George's Respiratory Questionnaire (SGRQ). The correlation analysis between severity, BODE-index and QL was carried out. The measures QL were analyzed depending on gradation of BODE-index.

Results: The considerable increase BODE-index with enhancing of severity COPD has been shown: 0,14±0,36; 1,97±1,18; 4,38±1,52 and 7,22±1,20 points at I, II, III and IV st, accordingly, p<0,001.

All COPD patients I st (n=21) met to low gradation of BODE-index (0-3 points). Among patients II st (n=36) 32 (88,9%) met to low gradation of BODE-index and 4 (11,1%) to moderate gradation of BODE-index (4-6 points). All patients IV st (n=23) met to high gradation of BODE-index (7-10 points) whereas patients III st (n=58) are differed with BODE-index essentially: 19 (32,8%) met to low gradation; 31 (53,4%) - moderate; 8 (13,8%) - high. With increase BODE-index QL deteriorated p<0,001, accompanying by high correlation of the dependence between the domain "Total" and BODE-index (r=0,82; p<0,05) that is more than association between "Total" and FEV₁, r = (-0,68; p<0,05).

The conclusion: Severe COPD (III st) is characterized with heterogeneity by BODE-index. For an estimation of functional status and QL at COPD the BODE-index is a more informative parameter than traditional division COPD on stages of severity.

E4670

Using different pulmonary function parameters for establishing reversibility in COPD patients

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Objective: For COPD patients, FEV₁ is often used for determining reversibility. But it's thought that in some COPD patients who are not reversible according to FEV₁, parameters like FVC and IC can increase after bronchodilatation and they

can be used for determining the efficacy of the treatment. The aim of this study was to investigate these parameters which are thought to be used for reversibility and the relationship between FEV₁.

Material and Method: 54 stable COPD patients were included in this study. PFT performed before the application of a bronchodilator (200µg salbutamol) and 15 minutes after the application.

Results: Of 54 patients, 19 patients (%35.2) were reversible according to FEV₁, 20 (%37.0) according to FVC and 21 (%38.9) were reversible according to IC. Five patients (% 9.3) were reversible only according to FEV₁, 4 (% 7.4) FVC, 4 (% 7.4) IC. Seven (% 13) patients were reversible according to all three PFT parameters. In 35 patients, who were not reversible according to FEV₁, 10 (% 28.5) were reversible according to FVC and 11 (% 31.4) were reversible according to IC.

Conclusion: Spirometric tests used in COPD are weak indicators for detecting symptomatic and functional bronchodilator response. In our study, although there was no significant association between the change ratios of FEV₁, FVC and IC, we thought that in determining reversibility in COPD patients IC should also be used with conventional spirometric parameters and take place in spirometric report.

E4671

Symptom questionnaire and laboratory findings in COPD patients diagnosed by spirometry in Korea

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Rationale: A population-based national COPD study was conducted in Korea. Analysis of parameters from this epidemiologic study is representative of Korean COPD patients.

Materials and Methods: We evaluated symptom questionnaire and laboratory findings in COPD patients diagnosed by spirometry in conjunction with the 2nd Korean National Health and Nutrition Examination Survey, Total 9,243 adults over the age of 18 were recruited. Among them, 88.8% completed questionnaire and 52.1% (4,816 subjects) performed spirometry.

Results: Prevalence of COPD by spirometry in all ages (>18 years) and older ages (>45 years) were 7.8% and 17.2%, respectively. Among COPD subjects, prevalence of previous diagnosis of COPD or asthma was only 22%. In COPD subjects, symptom of dyspnea on exertion was higher (p=0.034) than normal. Frequency of respiratory symptoms such as cough, sputum and wheezing were significantly higher in COPD patients (p<0.005). Total cholesterol level was higher in COPD (193.6 mg/dl vs. 187.4 mg/dl, P=0.001). Blood urea nitrogen and creatinine were higher in COPD patients, but there was no significant difference in hematocrit level (42.2% vs. 41.6%, p=0.106) and hemoglobin level was lower in COPD subjects (p=0.001). There was no significant difference in laboratory finding according to severity of COPD (GOLD stage). In COPD group, income and educational status were lower than subjects with normal spirometry.

Conclusion: In COPD subjects, prevalence of respiratory symptoms was higher than normal spirometry subjects and the levels of cholesterol, blood urea nitrogen and creatinine were higher. But, hemoglobin level was lower and there was no difference in hematocrit level.

E4672

Predictor factors of mortality in COPD patients

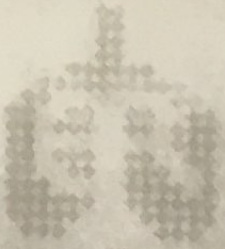
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Objective: The aim of this study was to analyze mortality causes of COPD patients and its associations.

Methods: Prospective analysis of 596 cohort COPD patients followed for three years or until death. Mean age was 66.48 years (SD 9.61 yr.). According to GOLD classification, the patients were GOLD 2: 195 cases (32.7%), GOLD 3: 287 cases (48.1%) and GOLD 4: 114 (19.1%). We only included patients with immunocompetent status at the beginning to the study (not with known hematological disease, neoplasia disease, HIV infection, renal failure, hypogammaglobulinemia or anatomical or functional asplenia). The end point was crude mortality and causes of mortality. Univariate analysis, Kaplan Meier survival curves and multivariate Cox proportional hazard models with covariates were used to evaluate the association between the mortality and different variables.

Results: one hundred-seventeen patients died (19.6%). Mortality was due to respiratory failure 34 (29%), cardiovascular diseases 30 (25.6%), cancer 21 (17.9%) (12 were lung cancer), infections 13 (11%) (12 were pneumonias), gastrointestinal diseases 11 (9.4%), unknown causes 2 (1.7%) and others 6 (5%). According to Cox regression analysis, independent factors related to mortality were: age; RR 1.045 (CI 95% 1.020, 1.070; p<0.001); current smokers: RR: 1.647 (CI 95% 1.071, 2.533; p<0.023); cancer: RR 6.944 (CI 95% 4.387, 10.991; p<0.001); cardiovascular disease RR: 2.623 (CI 95% 1.818, 3.784; p<0.001); severe airflow obstruction (GOLD 4) RR 2.293 (CI 95% 1.547, 3.399; p<0.001); acute exacerbations per year RR: 1.289 (CI 95% 1.173, 1.416; p<0.001).

Conclusion: The main cause of mortality in COPD patients were respiratory disease (respiratory failure, pneumonia and lung neoplasm).



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