100. Clinical parameters in airway diseases

P935

Tracheal sound level as a potential diagnostic tool for pulmonary obstructive syndromes

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Aim and objectives: to asses the possibility of developing a tracheal sound analysis tool capable of diagnosing obstructive syndromes.

Material and methods: 34 subjects were stratified to the obstructive or control group. Tracheal sound was recorded during a forced expiratory maneuver; acquired signals were analyzed in terms of sound level vs time and a linear regression model was computed. The obstructive subgroup included 21 vs 13 controls. We found statistically significant between group differences for expiratory duration and for the linear regression and negative significant correlations between slope and expiratory duration, FEV1 and FEV1/VC. Building the ROC curve a threshold value of -19.67 for the slope of the linear regression model will associate a sensitivity of 95% and a specificity of 84.6% for this test.

Conclusion: Available data suggests that tracheal sound level analysis could be developed into a diagnostic and monitoring tool; additional mathematical approaches are probably necessary.

P936

Clinical interpretation of St George's respiratory questionnaire in Chinese COPD patients

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Backgrounds: Although the St George's Respiratory Questionnaires (SGRQ) was used widely in China as a valid instrument for quality of life evaluation in COPD patients, the relationship between SGRQ, lung function and therapeutic effect is uncertain.

Objectives: To determine whether the SGRQ was related with lung function in Chinese COPD patients and evaluate therapeutic effect on them.

Methods: After a two weeks run-in period, outpatients (63 patients; 10 women; mean age 67.6 years) were assessed at baseline by the SGRQ-MC, clinical data and spirometry. Then patients were treated in a randomised, open-labeled, parallel group trial with either a combination of $50\mu g$ salmeterol and $500\mu g$ fluticasone propionate twice daily (SF, n = 18, mean age 67.4 years) or $21\mu g$ ipratropine bromide and $120\mu g$ salbutamol quartic daily (IS, n = 18, mean age 66.7 years) for 3 months.

Results: SGRQ activity score and total score were negatively correlated with $FEV_1\%$ predicted (r = -0.427, P = 0.016, activity score; r = -0.368, P = 0.042, total score) and FVC\% predicted (r = -0.534, P = 0.002, activity score; r = -0.504, P = 0.004, total score) in subjects of age less than 70 years. Such relationships were not seen in subjects of age more than 70 years. Moreover, SGRQ score was significantly reduced by SF (difference -19.8; 95% CI -28.3 to -11.3; P < 0.001) but not by IS. SF did not significantly change FEV₁% predicted.

Conclusions: SGRQ was associated with lung function in Chinese COPD patients of age less than 70 years and was valid for evaluating therapeutic effect.

P937

The usefullness of the chronic obstructive pulmonary disease assessment test Young Hwang, Jong Lee, Ho Kim, Ju Cho, You Kim. Internal Medicine, Gyeongsang University Hospital, Jinju, Kyungnam, Korea

Background: It is important to assess and monitor the patients in management of COPD. Recently the COPD assessment test (CAT) has been developed as a short simple method for assessing and monitoring of the quality of life in COPD patients. The obsject of this study is to evaluate the usefullness of the Korean version of COPD assessment test (KCAT) for assessing and monitoring COPD patients in Korea.

Methods: The study was included 60 patients with COPD in outpatient clinic. We investigated the frequency of acute exacerbations during a previous year. We also measured the spirometry and distance to walk for 6 minutes and obtained the MMRC dyspnea scale, Korean version of the CAT, and BODE index. To assess the usefulness of KCAT, correlations between KCAT and other methods were evaluated.

Results: The KCAT score was correlated significantly with FEV1% (r=0.323, p=0.012), the frequency of acute exacerbation (r=0.292, p=0.024), MMRC dyspnea scale (r=0.554, p<0.001), BODE index (r=0.380, p=0.003) and 6MWD (r=-0.372, p=0.004). The mean KCAT score was increased according to GOLD stages. **Conclusions:** The KCAT were shown to be useful assessment of COPD severity. Therefore the KCAT is easily applicable and simple method for assessment of COPD severity in outpatient clinic in Korea.

P938

Collection of year-round hay fever symptoms using a public website (www.allergieradar.nl)

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Introduction: On average 10-20% of the population in the industrialized world suffers from pollen allergy, also known as hay fever. The geographical distribution and severity of hay fever symptoms in the Netherlands year-round is largely unknown. Aims and objectives: Our objective was to study whether symptoms collected by an interactive internet platform from participants characterized by an internet questionnaire can provide relevant information on hay fever.

Methods: On May 13 2009 the website www.allergieradar.nl was launched. Participants could register by completing an extensive questionnaire on their hay fever (symptoms, doctor diagnosis, etc). Once registered, participants regularly entered their geographical position and their symptoms of nose, eyes and lungs on a scale from 1-10. All data from 2009 (May 13-Dec 31) and 2010 (Jan 1-Dec 31) were stored in a database and analysed.

Results: Approx. 7000 entries with symptoms scores were collected in 2009 and in 2010 by 884 and 491 participants, respectively. More than 80% of the participants reported a doctor diagnosed hay fever. The majority of these participants suffered from nose and eye symptoms (>92%) and approx. 50% (also) from lung symptoms. The daily mean maximum symptom score of these participants correlated with the logarithm of the daily pollen counts (correlation coefficient=0.549, p<0.001)). Analysis of the individual symptoms showed that lung symptoms were more severe during the tree pollen season compared to the grass pollen season. **Conclusions:** We conclude that these internet symptom scores are a valuable tool

of has fore symptoms in the general population and for the development of hay fever symptoms in the general population and for the development

P939

Factors associated with better asthma control in eastern Austria

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Background: Asthma control is an important component of quality of care for asthma patients. The controller-to-total-asthma-medication ratio (CTR) has been evaluated as a reliable asthma control and quality indicator.

Aim: To evaluate the effects of a regional "asthma awareness campaign" during 2008 (patient, pharmacy and physician training) on asthma control.

Methods: We used a database form a central health insurance (BGKK, covering 70% of the population) to select a cohort (n=1158) with an asthma diagnosis (HEDIS criteria). Data for 2007 and 2008 regarding hospital and physician visits, pulmonary function tests, medication claims, etc. were extracted. The CTR was calculated from the amount of DDDs of controller medication divided by the amount of DDDs of controller and reliever medication.

Results: The asthma control for the cohort improved from 2007 to 2008 (CTR: 0.758 ± 0.324 vs 0.769 ± 0.326 ; 2007 vs 2008; p = 0.01). Predictors of a higher (better) CTR were female sex, performance of pulmonary functions tests, and type of controller medication (combination preparation). No influence was found for the number of physician visits, type of specialist, and age. From 2007 to 2008 there was a strong trend from single preparations (-7%) to combination preparations (+22%) of controller medication leading to higher costs (+10.6%). Analogously, in a subgroup of the cohort (n = 169) the asthma control test (ACT) showed an improvement (20.11\pm4.29 vs 21.11\pm3.89; p = 0.02), in particular for questions 2 and 4 regarding exacerbations and reliever medication.

Conclusion: Population based data showed that a regional awareness and educational initiative can improve asthma control.

P940

Asthma control test: Cut off values of control according to GINA guideline and its ability to predict exacerbations and treatment decisions

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Introduction: This study assessed ACT cut-off values for asthma control according to the GINA guideline in adults. ACT score in the prediction of exacerbations and serial changes in ACT score over time in relation to treatment decisions was also assessed.

Methods: Subjects completed ACT together with same-day spirometry and fractional concentration of exhaled nitric oxide (FeNO) measurement at baseline and at 3 months. Physicians, blinded to the ACT scores and FeNO values, assessed the patient's asthma control in the past month and adjusted the asthma medications according to management guideline. Asthma exacerbations and urgent health care utilization (HCU) at 6 months were recorded. **Results:** 379 (120 men) asthmatics completed the study. The ACT cut-off for uncontrolled and partly controlled asthma were ≤ 19 (sensitivity 0.73, specificity 0.67,% correctly classified 69.5) and ≤ 22 respectively (sensitivity 0.73, specificity 0.71,% correctly classified 72.1). Baseline ACT score had an odds ratio of 2.34 (95%CI 1.48-3.69) and 2.66 (1.70-4.18) for urgent HCU and exacerbations respectively at 6 months (p<0.0001). However, baseline FeNO and spirometry values had no association with urgent HCU and exacerbations. For serial changes of ACT scores over 3 months, the cutoff value was best at ≤ 3 for treatment decisions with low sensitivity (0.23) and% correctly classified (57.3%) values.

Conclusion: Single measurement of ACT is a useful tool for assessment of asthma control, prediction of exacerbation and changes in treatment decisions.

P941

Relationship between quality of life, exercise capacity and disease severity in patients with chronic obstructive pulmonary disease

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The Chronic Obstructive Pulmonary Disease (COPD) Assessment Test (CAT) is a new, simple questionnaire designed to evaluate quality of life in COPD patients. In contrast to more complex assessment tools (such as St. George's Respiratory Questionnaire), few studies have evaluated its relationship with other disease severity markers in COPD.

In this study we investigated the relationship between CAT score and markers of disease severity in COPD; including forced expiratory volume in 1 second (FEV₁), endurance shuttle walk test (ESWT) and incremental shuttle walk test (ISWT). Fifty patients with a known diagnosis of COPD (male: female ratio 22:28, mean age 68.1±13.3 years, mean FEV₁ 46.9±20.3% of predicted) were evaluated using spirometry, ESWT and ISWT. Quality of life was assessed using CAT. Mean ISWT was 182±124 metres and mean ESWT was 6 minutes 58 seconds ± 6 minutes.

CAT score correlated negatively with ESWT (r = -0.401, p<0.01) and ISWT (r = -0.30, p<0.05). There was no significant correlation with FEV₁ in this study population. However, it is very interesting that CAT score is inversely related to exercise capacity. As the disease gets more severe, quality of life worsens (higher score on CAT) and exercise capacity falls (lower ESWT/ISWT). Although this concept is logical, it was not described prior to this study.

Our study showed that CAT represents a useful instrument to evaluate disease impact in COPD, when interpreted alongside complementary diagnostic information. It would be intriguing to see the relationship between CAT and other parameters of lung function, such as transfer factor and lung volume in future studies.

P942

30 cases of tracheobronchopathia osteochondroplastica: Multicenter analysis Seung Wook Jung¹, Yeon Jae Kim¹, Byung Ki Lee¹, Shin Yup Lee², Chi Young Jung³, Kyung Chan Kim⁴, Dae Sung Hyun⁴. ¹ Department of Internal Medicine, Daegu Fatima Hospital, Daegu, Korea; ² Department of Internal Medicine, Kyungpook National University Hospital, Daegu, Korea; ³ Department of Internal Medicine, Keimyung University Dongsan Hospital, Daegu, Korea; ⁴ Department of Internal Medicine, Daegu Catholic University Medical Center, Daegu, Korea

Background: Tracheobronchopathia osteochondroplastica (TBO) is a rare benign disease characterized by multiple submucosal osteocartilaginous nodules of trachea and bronchi. However, data concerning TBO patients are limited in korea.

Methods: From 2005 through 2010, a retrospective study was conducted in 30 TBO patients recruited from 4 hospitals (3 university faciliated hospitals and 1 community hospital) in korea. The baseline characteristics, clinical presentations, radiographic features, bronchoscopic findings and clinical outcomes in these patients were reviewed.

Results: Among the 14,267 patients with flexible fiberoptic bronchoscopy, 30 patients (0.2%) were diagnosed with TBO. Patients were composed of 17 male and 13 female with a mean age of 60 years. The common symptoms were cough, dyspnea, and hemoptysis. Endotracheal nodules were the most common findig on computed tomography (CT). Osteocartilaginous nodules were mainly present in trachea on bronchoscopy, and the most common type was confluent form. The mean FEV1 was 101% predicted. Treatment included mostly conservative (n = 29) and then symptoms were considerably relieved in 8 cases but there was no significant improvement noted in 18 patients. 4 patients died on account of associated lung lesion.

Conclusion: In accordance with previous studies, TBO is a rare disease and the diagnosis should be suspected based on CT findings and bronchoscopic examination of the airways. This study demonstrated that conservative treatment according to clinical symptom was effective and showed relatively good clinical outcome.

P943

Assessing the quality of life with CAT in bronchiectasis patients Beatrice Mahler. Pneumology, "Marius Nasta" Institute of Pneumology, Bucharest, Romania

CAT is a simple questionnaire used to measure the quality of life in COPD patients

and it includes eight points. Bronchiectasis is a chronic condition with symptoms similar to COPD.

Material and methods: I applied the CAT form to 115 bronchiectasis patients that I subsequently grouped into three categories: 37 posttuberculosis bronchiectasis patients, 53 idiopathic bronchiectasis patients and 25 COPD patients with associated bronchiectasis.

Results: Bronchiectasis and COPD patients with a mean age of 74.4±4.8 years had a 17.7 CAT score, which correlates with a FEV mean value of 53.6±10.8% (p <0.05), postuberculosis bronchiectasis patients with a mean age of 52.4±16.6 years had a 15.1 CAT score correlated with FEV of 66.1±16.3% (p <0.001), while idiopathic bronchiectasis patients had a score of 13, with a FEV of 78.4±18.8% (p <0.001).

CAT Questions	Bx + TB	Idiopathic Bx	Bx + COPD	
Cough	3,2	2	3,3	
Phlegm	3,3	2,2	3,4	
Chest tightness	1,8	1,6	2,2	
Breathlessness	1,8	1,6	2,0	
Activities	1,2	1,2	1,4	
Confidence	1,4	1,2	1,4	
Sleep	1,6	1,4	1,8	
Enery	2,2	1,8	2,2	
Total score	16,5	13	17,7	

Conclusions: All three groups demonstrated a moderate impairment of the quality of life, showing a significant difference between idiopathic bronchiectasis patients and patients with associated COPD. The association of the two respiratory disease leads to a lower quality of life for these patients. All associated respiratory diseases must be considered when interpreting this questionnaire.

P944

Results HEED Belgium – Health-related quality of life in patients by COPD severity within primary care in Belgium

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Pan-European data on health status in COPD are scarce. The purpose of the HEED study was to evaluate the health status from a primary care COPD population in seven European Countries (Jones P. et al. Health-related quality of life in patients by COPD severity within primary care in Europe. Respiratory Medicine 2010). We present here the Belgian results of this Pan-European survey.

This cross-sectional epidemiological study in a primary care setting evaluated health status in 394 COPD patients by Belgian primary care physicians using the St George's Respiratory Questionnaire-C (SGRQ) and the COPD Assessment test (CAT). The Health-related Quality of Life (HRQoL) scores by GOLD stage, using both the SGRQ and the CAT, are shown in Table 1.

Table 1. HRQoL Scores by GOLD Stage

QoL Questionnaire	Stage I (n=40)	Stage II (n=83)	Stage III (n=58)	Stage IV (n=18)	GOLD Health Outcome Population (n=199)
SGRQ Total score,					
Mean (SD)	39.4 (19.8)	43.0 (19.5)	56.3 (18.8)	66.3 (15.8)	46.8 (20.6)
CAT, Mean (SD)	17.1 (9.4)	17.7 (8.7)	20.3 (8.8)	27.1 (6.9)	18.8 (9.2)

HRQoL scores deteriorated as GOLD stage advanced, and the CAT score and the SGRQ score correlated closely (correlation coefficient of 0,8462; p < 0,0001.



Regression Equation: cat8score = 2.17786 + 0.357363*total SGRQ

Conclusion: Although both SGRQ total score and CAT score correlate significantly with COPD severity and with each other, there is important heterogeneity in both HRQoL scores among COPD patients per GOLD stage.

P945

Comparison of health status in stable patients with bronchiectasis due to common variable immune deficiency (CVID), and idiopathic bronchiectasis Lorraine Ozerovitch¹, Samantha Prigmore², Winston Banya³, Robert Wilson¹, Noel Snell¹, Peter Kelleher¹, Jillian Riley⁴. ¹Host Defence Unit, Royal Brompton and Harefield NHS Foundation Trust, London, United Kingdom; ²Respiratory Services, St George's Healthcare NHS Trust, London, United Kingdom; ³Research Services, Royal Brompton and Harefield NHS Foundation Trust, London, United Kingdom; ⁴Post-Graduate Education (Nursing), Royal Brompton and Harefield NHS Foundation Trust, London, United Kingdom

Background: Patients with CVID develop bronchiectasis (bx) due to damage caused by lung infections. Bx is associated with impaired health status (Wilson C *et al* Am J Respir Crit Care Med 1997; 156: 536-541). Improved treatment for CVID+bx has led to fewer infections but little is known about impact on health status.

Methods: Patients undertook a Shuttle Walking Test (SWT) and completed the St George's Respiratory Questionnaire (SGRQ). Scores were compared with data from a previous study of idiopathic bx (Ozerovitch L *et al* Am J Respir Crit Care Med 2004; 169: A330).

Results: 22 patients participated; 9 male (41%); mean age 45 (range 17-67); 20 (91%) on immunoglobulin (Ig) therapy. Patients with CVID+bx had better scores for all SGRQ domains, and better SWT, both of which were clinically relevant; SGRQ >4 point difference (Jones P, Eur Respir J 2002; 19: 398-404); SWT 60-115m (Pepin V et al, Thorax 2011;66:115-120), although neither attained statistical significance.

SGRQ: Mean Scores (SD)	CVID with bx (n=22)	Id bx (n=36)	p:
Symptoms	58.3 (23.7)	65.8 (22.3)	0.23
Activity	37.0 (27.0)	45.4 (25.0)	0.23
Impact	27.8 (22.2)	34.4 (18.1)	0.22
Total Score	35.8 (23.0)	43.0 (18.7)	0.19
SWT(m)	513 (213.0)	432 (157.7)	0.10

There were no significant correlations between SWT and activity component or SGRQ Total Score (r= -0.45, p>0.05; r= -0.43, p>0.05) in the CVID with bx group.

Conclusion: Patients with bx due to CVID have impaired health status and SWT; scores were generally better than for demographically similar historical controls with idiopathic bx, possibly as a result of specific therapy (Ig replacement) in the majority of these patients.

P946

Prospective evaluation of asthma control using three different classification systems

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The goal of asthma treatment is to achieve and maintain current best control and reduce future risk of exacerbations and long-term morbidity. Aim of this study was to prospectively evaluate asthma control using GINA, ACQ (asthma control questionnaire) and ACT (asthma control test) in treated asthma patients in a real-life setting.

In 148 consecutive patients (48.6% male, age 46.3±14.5yrs., FEV1 2.6±0.9 L, FEV1 78.8±21.9% of pred.) who were routinely followed-up in our outpatient clinic asthma control was evaluated using GINA, ACQ and ACT. The GINA classification was taken as the "true" classification and ACQ and ACT scores as "predictor" classifications. The relationship between ACQ and ACT scores and GINA-defined controlled/partly controlled vs. uncontrolled asthma was evaluated with the ACQ cut-point ≥ 1.50 and ACT cut-point ≤ 19 as tests for GINA uncontrolled status in terms of sensitivity, specificity as well as positive and negative predictive values.

The ACQ-7 and ACT correctly predicted GINA-defined uncontrolled asthma in 62.8% and 71.8% of patients, resp. Sensitivity was high with 88% for ACQ-7 and 94% for ACT, specificity was 56.8% and 69.2%, positive predictive value was 62.8% and 71.8% and negative predictive value was 85.2% and 93.1% (ACQ-7 and ACT). Similar results were obtained using ACQ-5. ACQ-7 and ACT detected significantly more patients having uncontrolled asthma compared to the GINA classification (p<0.001).

Our results indicate that an ACQ score ≥ 1.50 and an ACT score ≤ 19 identify patients with uncontrolled asthma for whom a full clinical review is needed. ACQ and ACT are easily and rapidly completed by patients and can serve as useful tools in the clinic to assess asthma control.

P947

Objective measurement of activity of daily living and sleep in subjects with COPD

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Decreased Activity of Daily Living (ADL) and sleep disorders are associated with high morbidity that impacts quality of life in patients with chronic obstructive pulmonary disease (COPD). There is no good data to assess the ADL and sleep of COPD subjects in their home environment.

Wrist based actigraphy (Actiwatch-Spectrum) was used to evaluate activity in COPD subjects to address the hypothesis that actigraphy is a good method of evaluating ADL and sleep and demonstrate subject compliance.

Twelve COPD subjects and twelve age and gender matched controls wore the Actiwatch for fourteen (14) days continuously and the activity data was analyzed for ADL and sleep. Compliance was measured by the built in "off wrist "detector. Total activity counts/day were significantly less ($p \le 0.01$) in the COPD subjects than Controls; 237,494±22,946 vs. 557,842±36,006, respectively. Average activity counts/min and maximum activity counts were significantly less ($p \le 0.01$) in the COPD subjects; 219±28 vs. 630±58 and 1,560±269 vs. 3,163±862, ($p \le 0.01$), respectively. Total sleep time in the COPD subjects was significantly reduced ($p \le 0.01$); 343±15 minutes vs. 451±19 minutes. Sleep efficiency was decreased in the COPD subjects vs. Controls; 72±3 vs. 88±4 respectively ($p \le 0.05$). The minutes of wake after sleep onset was significantly ($p \le 0.01$) increased in the COPD subjects the same in COPD and Controls; 99.6±0.2%

Activity of daily living and sleep were significantly decreased in the COPD subjects as compared to controls and compliance was extremely high for both groups indicating that wrist actigraphy may be a useful measure in COPD.

P948

Cough ability and oxygen saturation (OS) home monitoring in amyotrophic lateral sclarosis (ALS) patients: Preliminary data

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Background: Cough measure by Peak Cough Expiratory Flow (PCEF) and OS monitoring are crucial in ALS time course.

Purpose: In ALS patients (ALS score < 35, MIP< 80% and MEP < 100% prd, PCEF <450 L/m) until drop out (refuse, death, family problems, care under other health facility) were evaluated: a) feasibility of home daily PCEF and OS measurements b) PCEF and OS changes c) PCEF and OS variation before and during each new respiratory derangement event (RDE).

Methods: The patient/caregiver was requested to measure every day PCEF and OS and to annotate RDE.

Results: 10 patients were enrolled. Two patients refused to start the project when at home. Eight patients measured PCEF and OS for 185 ± 173 consecutive days (range 13–431 days) making a 1.246 measurements. Six out 8 patients dropped-out; daily feasibility worsened from 80% in the first week to 25% at the end of the study. The mean compliance to measurements was 86.3% (range 38-100%). Four out 8 patients showed 6 strong RDE. PCEF daily decay (PDD) was 1.29 ± 2.27 . No statistically significant changes in OS were found (from 95.25±1.5 to 95.13±1.71). PDD and OS variations were not different in patient with or without RDE. Both PCEF and OS measured at the first day of RDEs were not significantly different when compared to values before (15 days) and after (30 days) the six RDEs.

Conclusion: In ALS patients, long term feasibility of PCEF and OS daily monitoring is unsatisfactory because of high drops out. However, patient's compliance to measurements resulted high. The PCEF daily decay is extremely variable while OS value remains constant. PCEF and OS don't seem to be influenced by a RDE.

P949

Who win? Spirometry versus symptoms for predicting the longitudinal outcomes in COPD patients - 10 years observation

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The spirometric criteria for COPD diagnosis is the king of the gold standard and GOLD-guide accepted in diagnosis, treatment, follow, and disease prediction.Unfortunately, little attention has been paid on the importance of respiratory symptoms in the prognosis of the disease.

Aim: To evaluate whether spirometric criteria are associated with long term clinical outcomes in COPD patients with or without chronic symptoms. In 2000-2001, 2756 non asthmatic participants in the ECRHS (20-44 years) were classified according to either the GOLD or the lower limit of normal (LLN) spirometric criteria.GOLD+ when FEV1/FVC<70% and LLN+ when FEV1/FVC<LLN. Each subject was

Results

	No airflow obstruction		Airflow obstruction		
	LLN- (no sympt.)	LLN- (sympt.)	LLN+ (no sympt.)	LLN+ (sympt.)	
% ∆FEV1 HSU	6.5 [6.3–6.7] 2.7 [2.2–3.4]	6.6 [6.2–7.1] 5.9 [4.6–7.7]**	7.1 [5.9–8.3] 4.2 [2.1–8.4]	8.7 [6.6–10.8]** 15.8 [9.4–26.7]**	
	GOLD- (no sympt.)	GOLD-(sympt.)	GOLD+ (no sympt.)	GOLD+ (sympt.)	
% ΔFEV1 HSU	6.4 [6.2–6.7] 2.8 [2.3–3.4]	6.7 [6.3–7.1]* 6.5 [5.1–8.2]**	8.9 [6.5–11.3]* 3.3 [0.8–13.2]	11.9 [7.4–16.3]** 19.6 [8.8–43.7]**	

*p<0.05, **p<0.001: vs GOLD-/LLN- (no sympt.).

classified according to the presence of chronic respiratory symptoms.% change in FEV1 (Δ FEV1) and hospital services utilization (HSU) during the follow-up were evaluated in 2000 - 2010.

Results: GOLD+ and LLN+ were 2.0% and 6.3%, respectively. Mean $\&\Delta$ FEV1 and crude rate (1,000/yr) of HSU [with 95%CI] are reported in subjects with or without airflow obstruction:

Spirometric criteria for COPD that don't take into consid. the presence of chronic respiratory symptoms poorly predict longitudinal outcomes in young adults.

P950

Relation of asthma and chronic daily headache

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Introduction: Asthma is one of most prevalent diseases worldwide. Asthma is reported to be related with diseases such as allergic rhinitis, depression, diabetes mellitus and others. Some studies with small sample size recently suggested a relation between asthma and headache. However, the relation needs to be confirmed by a study with larger sample size. The purpose of our study was to examine the relation between asthma and chronic daily headache using a large population-based database.

Method: Data of 8966 subjects were obtained from the Korean National Health and Nutrition Examination Survey II, a nationwide cross-sectional survey with a stratified random sampling. A multivariate logistic regression was performed to evaluate the relation of asthma and chronic daily headache with the adjustment of age, gender, education level, smoking, obesity, severity of stress, sleep disturbance, and divorce or bereavement.

Result: Among a total of 8966 subjects, 665 subjects had asthma and 91 subjects had chronic daily headache. 16 subjects (2.4%) in 665 subjects of asthma group and 75 subjects (0.9%) in 8301 subjects of non-asthma group suffered from chronic daily headache (P=0.001). In a subgroup analysis with only non-smokers, 12 (3.3%) in 367 subjects of asthma group and 52 (1.0%) in 5411 subjects of non-asthma group suffered from chronic daily headache (P=0.001). The multivariate logistic regression revealed that the odds ratios (OR) of chronic daily headache for asthma was 2.0 (95% CI 1.11-3.71). In the subgroup of non-smokers, the OR was 2.7 (95% CI 1.34-5.42).

Conclusion: Subjects with asthma had a higher risk of chronic daily headache than subjects without asthma in this population-based study. Asthma may be related to chronic daily headache.

P951

Effect of GERD on clinical severity and functional characteristics of lung function in asthma

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Background: It is known that almost one third of patients with asthma have symptomatic evidence for coexisting gastroesophageal reflux disorder (GERD) which is thought to be aggravating factor in asthma at least in some cases.

Aims and objectives: We investigated the impact of coexisting GERD on the severity and functional characteristics of asthma.

Methods: Ninety-two patients with asthma diagnosed on the basis of ATS criteria were studied. Asthma clinical severity was measured in using asthma control test (ACT) and evidence for GERD was verified using standard questionnaire. Spirometry, impulse oscillometry, and lung volume studies (using body-plethysmograph and IOS both provide by Jaeger, Germany) were performed. The difference between total airway resistance (TAWR) indicated by resistance at 5Hz and central airway resistance (CAWR) as indicated by resistance at 20 Hz in oscillometry was calculated as representative of resistance of peripheral airways (PAWR). The relationship between the symptoms of GERD, ACT score and parameters of lung function were analyzed.

Results: PAWR and TAWR were both significantly higher in asthma patients with GERD symptoms than patients without GERD symptoms (mean ranks of 56.6 versus 41.9; P=0.01 and 55.8 versus 43.0 kpL/s; p=0.04, respectively). However, the values for ACT score, FEV₁, FVC, PEF, RV, TLC, FRC/TLC were not significantly different in these two groups

Conclusion: Clinical severity of asthma measured by ACT score is not different in asthma patients with and without GERD symptoms and central and peripheral airway resistance is equally influenced by symptomatic GERD.

P952

Six-minute walk test: Comparison with cardiopulmonary exercise test performance, lung function and arterial blood gases in patients with bronchiectasis

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Background: Relationships between the 6-minute walk test (6MWT) and car-

diopulmonary exercise test (CPET) performance have been established in some respiratory diseases. However, in patients with bronchiectasis (BECTs) data are scant in the literature.

Aim: To evaluate relationships between 6MWT distance and CPET performance, lung function (LF) and arterial blood gases (ABG) in patients with stable bronchiectasis.

Methods: A retrospective evaluation of 27 patients with BECTs who attended a rehabilitation program and who had 6MWT, CPET in cycle ergometer, LF and ABG (at rest) evaluation at the start of the program. Spearman's correlation coefficient was used for statistical analysis.

Results: Thirteen male and 14 female with ages ranging from 19 to 75 (median 51 yrs). Sixteen patients were severely obstructed and 11 had airway colonisation. Mean 6MWT distance was 440,4 meters and mean end test saturation was 89,30%. Mean maximal work (MW) was 68,1 Watts and mean end-CPET saturation was 89,37%. Positive correlations were found between 6MWT distance and MW (r=0.721**; p=0.000), VO2max (r=0.551**; p=0.003), VO2max/kg (r=0.497**; p=0.008), PaO2 (r=0.485*; p=0.010) and HgbSat (r=0.481*; p=0.013). No correlations were found between 6MWT distance and FVC, FEV1, FEV1/FVC, residual volume or PaCO2. Considering colonised patients, positive correlations were found between 6MWT distance and FVC, FEV1, FEV1/FVC, residual volume or PaCO2. Considering colonised patients, paO2 and HgbSat at the 0.05 level.

Conclusions: 6MWT is a simple test that seems to mirror exercise capacity evaluated by CPET in patients with bronchiectasis. None of the LF parameters evaluated reflected 6MWT distance in these patients.

P953

Leicester cough questionnaire and sputum colour chart assessment in non-cystic fibrosis bronchiectasis: A cohort analysis

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Introduction: Murray et al. showed that Leicester Cough Questionnaire (LCQ) correlates with disease severity. Sputum colour chart (SCC) assessment was associated with bacterial colonization, bronchiectasis severity and FEV1. We investigated these clinical tools in a cohort of non-cystic fibrosis bronchiectasis (NCFB).

Methods: 63 patients (27male, 59 ± 18 y) with NCFB were recruited. Underlying etiologies of NCFB were analyzed and each patient was evaluated by means of spirometry and LCQ. Exacerbation rate and retrospective sputum culture results were analysed. Sputum was induced with hypertonic saline inhalation, total/differential cell count and SCC of sputum were assessed and IL-8, MCP1, bile acids, NSE and TNF- α were measured.

Results: Patient sputum purulence prediction correlated significantly with SCC evaluated by the doctor (p < 0.0001, r = -0.72). LCQ and subscores correlated significantly with SCC (p = 0.0004, r = -0.37) with more cough impact in more purulent sputa. LCQ total and subscores all correlated significantly with total number of bacteria found in retrospective sputa with worse symptoms in patients with more bacteria found (p = 0.01, r = -0.32). The SCC also correlated with number of cells in sputum cell count (p < 0.0001, r = -0.66), IL-8 (p < 0.0001, r = -0.61) and TNF-alfa (p = 0.002, r = 0.43). Finally, we saw worse FEV1 in patients with more purulent sputa (%: p = 0.01, r = -0.37).

Conclusion: Patient SCC prediction correlated with doctor SCC evaluation. LCQ, subscores and SCC correlate with lung function, presence of bacteria in all sputa and severity of airway inflammation. We conclude that LCQ and SCC are concise, simple tools and should be used in follow-up of NCFB.