253. Inflammation in airway diseases: diagnosis and management

P2260

Additive role of exhaled NO and blood eosinophil count to predict wheezing in a random population sample

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The fraction of nitric oxide in exhaled air (FeNO) and blood eosinophil count (B-Eos), markers of local and systemic eosinophil activation, respectively, are increased in asthma. Little is known about the relation to reported wheezing in a random population sample or the additive value of these two methods.
FeNO (NIOX Mino) and B-Eos were measured in 12,408 subjects aged 6-79 years from the National Health and Nutrition Examination Survey 2007-08 and 2009-10. Current wheezing, hay fever and smoking habits were questionnaire-assessed.
Subjects with wheezing had higher FeNO and B-Eos than subjects without wheezing ($p<0.001$). Slightly increased FeNO (25-50 ppb) and high FeNO (>50 ppb) related to a higher wheezing prevalence than normal FeNO (14% and 25% vs 12% for normal FeNO, $p=0.001$). Slightly increased B-Eos (300-500 Eos/mm^3) and high B-Eos (>500 Eos/mm^3) related to a higher wheezing prevalence than normal B-Eos (17% and 22% vs 11% for normal B-Eos, $p<0.001$). The risk of wheezing increased with increased B-Eos for subjects with high FeNO and, similarly, with increased FeNO for subjects with high B-Eos (Table).

Risk of wheezing (odds ratios) with increased FeNO and B-Eos

	Normal B-Eos	Intermediate B-Eos	High B-Eos
Normal FeNO	1	1.41	1.51
Intermediate FeNO	1.29	1.81	2.68
High FeNO	1.81	3.51	5.56

Adjusted for gender, age, BMI, smoking and hay fever.

In conclusion, the prevalence of wheezing increased in this random population sample with increased FeNO and blood eosinophil count and the predictive values of these biomarkers for wheezing is additive. The clinical importance of these findings in asthma with regard to phenotyping and individualized treatment has to be determined.

P2261

The effect of long-term macrolides therapy for acute exacerbation of chronic obstructive pulmonary disease: A meta-analysis

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Introduction: Chronic obstructive pulmonary disease (COPD) exacerbations are associated with frequent hospital admission reduction of lung function, and decreased quality of life. Macrolides have airway antiinflammatory actions and may reduce the frequency of COPD exacerbations.
Methods: We searched PubMed and Embase databases to identify randomized

controlled trials (RCTs) that assessed the effect of long-term macrolides therapy for COPD. The primary outcome assessed was frequency of acute exacerbations during follow-up. Both the fixed and random-effects models were used to obtain the hazard ratio of exacerbations associated with the use of macrolides versus controls or placebo depending on the heterogeneity of effects among studies.
Results: Combining six studies (N=1485), use of macrolides showed can decrease relative risk of experiencing acute exacerbation of COPD [point estimate=0.592, 95%CI(0.423, 0.829), P <0.05], but the effect on number of patients with at least one exacerbation was not so sure (RR=0.58, 95%CI[0.33, 1.04], P=0.07). However, subgroup analysis found that prolonged treatment period to more than 6 months can decrease not only relative risk of experiencing acute exacerbation of COPD (with Point estimate=0.569, 95% CI [0.416, 0.778], P<0.05), but also number of patients with at least one exacerbation(RR=0.50, 95%CI (0.27, 0.90), P=0.02). Five studies reported adverse events, and adverse events were more frequent with macrolides (RR=1.35,95%CI(1.09,1.67),p=0.007).
Conclusions: Long-term macrolide therapy in patients with COPD can decrease exacerbations, but the safety is not sure.

P2262
The CT emphysema index is a predictor for exertional desaturation in COPD patients without resting hypoxemia
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Background: Although numerous studies have attempted to correlate various clinical tests with exertional desaturation in patients with COPD, no test has shown significant positive predictive value. The aim of this study was to identify clinical predictors of exertional desaturation focusing on the CT indices, and to determine whether an association exists between exertional desaturation and a particular COPD phenotype.
Methods: A total of 224 subjects were selected from the Korean Obstructive Lung Disease cohort. Exertional desaturation was defined as a post-exercise oxygen saturation (SpO_2) of <90% or a ≥4% decrease. The cohort was divided into desaturator (n=47) and non-desaturator (n=177) groups
Results: Significant differences were observed between the groups in terms of age, BODE index, forced expiratory volume in 1 second (FEV_1), diffusing capacity, and resting SpO_2. The CT emphysema index was significantly higher in the desaturator group. Multivariate analysis showed that the CT emphysema index (RR, 1.028; 95% CI, 1.001 to 1.056; p=0.046) and resting SpO_2 (RR, 0.790; 95% CI, 0.648 to 0.965; p=0.021) were significant independent predictors. In the desaturator group, the rate of decline in FEV_1 was more rapid and health-related quality of life worsened faster than in the non-desaturator group over a 3-year period of follow-up.
Conclusions: In patients with COPD, exertional desaturation possibly occurs in parallel with an increase in the CT emphysema index. Exertional desaturation may be a manifestation of emphysema phenotype, and COPD patients with exertional desaturation are associated with a more rapid decline in lung function and poorer health-related quality of life.

P2263
Managing asthma in the outpatient clinic: Is the diagnosis of asthma confirmed objectively according to guidelines?
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Background: GINA guidelines recommend that a diagnosis of asthma is confirmed by an objective measurement of lung function or the presence of airway hyperresponsiveness. However, currently no diagnostic flowchart exists on asthma, and objective tests are used inconsistently.
Aim: To examine the use of diagnostic tests in newly referred patients with possible asthma in a specialized outpatient clinic.
Methods: The MAPOut I study is a retrospective observational study of all patients consecutively referred to a tertiary hospital specialist clinic over a 12-month period, on suspicion of asthma (n=221).
Data on lung function, peak flow, reversibility to beta2-agonist and airway hyperresponsiveness (AHR) was collected.
Results: Of 221 patients referred to the outpatient clinic with possible asthma, 128 (58.4%) were diagnosed with asthma. At least one objective test was performed in 103 (80.5) of the 128 subjects diagnosed with asthma (reversibility (57.8%), bronchial provocation (53.1%), PEF monitoring (5.0%).
Among these 128 subjects, 80 had at least one positive test confirming presence of disease, corresponding to 63% of all subjects diagnosed with asthma.
Conclusion: Among patients diagnosed with asthma in a tertiary specialist clinic, the diagnosis of asthma was confirmed objectively in 63%. In a significant proportion of patients, treatment decisions were based solely on the presence of symptoms.

P2264
The effect of bronchiectasis on asthma exacerbations
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Background: Bronchiectasis and asthma are different disease, However, some patients have both diseases. There are insufficient data for the effect of bronchiectasis on asthma exacerbations.
Methods: We investigated 2270 patients having asthma in our hospital. Fifty patients had bronchiectasis and asthma. These patients were compared with fifty age and gender matched patients having asthma only. We evaluated frequency of asthma exacerbations (steroid use, emergency room (ER) visit and hospitalization) in each group.
Results: The prevalence of bronchiectasis among the asthma patients was 2.2%. Follow up duration of each group was 51.9±35.2 months for asthma with bronchiectasis and 53.8±29.8 months for pure asthmatics. The number of asthma exacerbation/year (1.08±1.68 vs 0.35±0.42, p=0.004), steroid use/year (0.9±1.54 vs 0.26±0.36, p=0.006), ER visit/year (0.46±0.84 vs 0.26±0.36, p=0.001) and hospitalization/year (0.7±1.44 vs 0.1±0.17, p=0.4) due to asthma exacerbation was higher in asthma with bronchiectasis.
Conclusion: The number of asthma exacerbation, steroid use, and ER visit due to asthma exacerbation was higher in asthma with bronchiectasis than pure asthma.

P2265
Adherence to asthma treatment: Can it be improved in general practice?
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Background: Good treatment adherence is pivotal in maintaining well-controlled asthma, along with the right diagnosis and the right treatment.
Aim: In a GP setting, we aimed to study changes in adherence to asthma treatment among asthmatic patients when using a systematic asthma consultation guide based on the Global Initiative of Asthma guidelines.
Methods: The study comprised 2148 patients aged 18-79 years with doctor-diagnosed asthma from 130 clinics across Denmark. When managing the patients, the clinics were instructed to follow a consultation guide based on the principles of the GINA guidelines. This included evaluation of symptoms, treatment, adherence, lung function, and a scheduled follow-up appointment based on the level of asthma control. Adherence and use of medication were determined using a questionnaire as part of the consultation with a trained asthma nurse.
Results: At the date of analysis 706 patients had attended both baseline and follow-up visit. At baseline visit 542 (76.8%) patients were classified as having high adherence and 94 (13.3%) as having low adherence. Of the 94 who had low adherence at the baseline visit, 83 (88.3%) changed to high adherence at follow-up visit (p<0.001). Fewer patients (n=15 (2.8%)) of those who had high adherence at the baseline visit had changed to low adherence at the follow-up visit (P<0.001). Of those who after asthma education at baseline visit had changed from low to high adherence a better disease control was found at the follow-up visit (p<0.001).
Conclusion: The overall treatment adherence improved significantly when a systematic asthma management approach was introduced and applied by dedicated health care staff.

P2266
Risk factors associated with persistent airflow limitation in difficult asthma
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Introduction: The clinical manifestations of difficult asthma are heterogeneous. Some patients with difficult asthma develop irreversible airway obstruction, which is associated with poor outcomes.
Objective: The aim of the study is to determine clinical characteristics associated with persistent airflow limitation in difficult asthma.
Methods: We retrospectively analyzed 48 patients with difficult asthma between 2005 and 2010. Twenty patients (8 female, 12 male) with persistent airflow limitation (post bronchodilator FEV1/FVC ratio < 70%) were compared to 28 patients (13 female, 15 male) with normal post bronchodilator FEV1/FVC ratio. Patients with chronic obstructive pulmonary disease and bronchiectasis were excluded.
Results: There was no significant difference between the two groups in age (51 vs 45 years, p=0,17), sex (p=0,66), age of asthma onset (35 vs 32 years, p=0,07), number of hospitalizations (p=0,39) and frequency of exacerbations (p=0,74). Rhinitis was more frequent in patients with normal FEV1/FVC ratio (15% vs 35%). But, the difference was not significant (p=0,11). Gatroesophageal reflux was found in 25% of patients in both groups.
Risk factors associated with persistent airflow limitation were as follows: longer duration of asthma (22 vs 9.5 years, p <0.001), current or past smoking (50% vs 21%, p=0.038) and absence of allergy (69% vs 33%, p=0.026). Dust mite sensitization was significantly more frequent in patients with normal FEV1/FVC ratio (26% vs 61%, p=0,33).
Conclusion: Smoking, longer disease duration and absence of sensitization seem to be related to persistent airflow limitation in Tunisian patients with difficult asthma.

P2267

Can we achieve GINA guidelines described asthma control in a developing country?

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Introduction: In Pakistan, 5% of adult population suffer from asthma. Poor disease control accounts for morbidity and recurrent hospitalization. Prospective studies assessing asthma control in Pakistan are lacking.
Aims & Objectives: To assess asthma control and factors predicting good asthma control.
Methods: Consecutive 50 asthma patients were studied in this prospective, interventional study from April to December, 2010. Diagnosis was confirmed by rise in FEV1 of $\geq$12% after bronchodilator. Patients were assessed during intervention period at weeks 0, 4 and 8 and finally after 6 months. Data was analysed using SPSS version 17.
Results: Mean age was 43 years with predominent females (66%). 50% were in lower social class and 58% had family history of asthma. Majority belonged to mild (42%) or moderate (48%) persistent varieties of asthma. At initial assessment 24% used inhalers correctly and 52% required treatment modification according to GINA guidelines. At completion of intervention period 70% had well controlled asthma, 60% used inhaler correctly and 66% were compliant with treament. At completion of non-interventional period (after 6 months) only 40% had well controlled asthma, 44% used inhalers correctly and 50% were compliant with treatment. A linear regression analysis recognised correct inhaler technique and treatment compliance as significant predictors of good asthma control while age, gender, social class, educational level, severity and family history of asthma were not of any signifuicance in this regard.
Conclusion: GINA guidelines stated asthma control is achievable in our setting provided repeated patient education, correct inhaler technique and compliance to medical therapy are ensured.

P2268

Long term inhalatory therapy in asthma – Achieving control of the disease

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Objective: Evaluation of long term inhalatory therapy in asthma and achieving control of the disease using asthma control test.
Methods: This was a prospective study recruiting ambulatory patients aged >12 years with asthma at the Pneumology Hospital Oradea between December 2011 and January 2012.We evaluate the effectiveness of long term inhalatory treatment of the disease with ACT as a means of detecting GINA defined uncontrolled, partially controlled and controlled asthma (uncontrolled and partially controlled asthma are together labeled as "not controlled' according to GINA). Patients with the following were included in the study: hospitalized for asthma and ambulatory patients with asthma. The questionnaire used was ACT Romanian and English version for adults from www.asthmacontroltest.com. Eligible patients answered and submitted the questionnaire to the investigator, patients then performed Spirometry tests followed by interviews with a pulmonologist who evaluated their asthma control and provided treatment modifications as required.
Results: A total of 60 patients participated in the study of mean age 55 years. Females comprised of 55% of the participants and 45% male participants. A mean ACT score was15.05., in which GINA stage 1 and 3 are prominent 35%, but in general patients are unequally distributed among the four stages. Most of the patients were using preventive medication; the majority had uncontrolled asthma according to both GINA and ACT criteria and were stepped up on treatment after their visit.

P2269

Comparing COPD care in Malta, to other European hospitals: Results from the ERS COPD audit

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Background: Proper management of COPD can reduce exacerbations, which in turn reduces disease-related mortality.
Aim: To find out how management of COPD exacerbations in Malta contrasts with other countries.
Methods: A total of 422 European hospitals took part. Every COPD patient admitted with an exacerbation to our hospital over 8 weeks, was included (n=112). The ERS COPD audit proforma and web tool was used. Data was processed by the Data Analysis Team. The authors take full responsibility for any inferences made in this abstract.
Results: The median length of stay was 5 days, while the European Median (EM) was 8 days; there is no early supported discharge programme locally (31.8% of European hospitals run this). The 90-day readmission rate was 47.6% locally vs. 35.1% EM. In Malta there is no respiratory ward (81.7% EM), no specialist COPD clinic (61.8% EM), nor respiratory nurse specialists. There are 4 respiratory teams and 46.4% of patients were seen by pulmonologists (EM 80%). On admission, only 48.2% had spirometry results available (59.6% EM). 6.4% needed NIV (13.4% EM), but 91.1% of patients improved before NIV was needed (40% EM). On discharge 15.5% were given LTOT (30.4% EM), the PaO2 our patients had on admission was 66.9mmHg vs. 59.4mmHg EM. 49.1% of our cases satisfied GOLD criteria to be discharged on LAMA (1.8% vs. 59.8% EM) or ICS + LABA (12.5% vs. 69.5% EM). 45.5% of patients were on antibiotics on discharge (11.9% EM). The 90-day mortality was 7.6% (6.1% EM). Still, this was COPD-related in only 37.5%.
Conclusions: In Malta management of COPD needs to be optimised by establishing and adhering to guidelines. Specialised care is recommended as well as re-auditing at a later stage.

P2270

Clinical features of alpha one antitrypsin deficiency in COPD

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Setting: About 1-3% of patients with diagnosed chronic obstructive pulmonary disease (COPD) are predicted to have alpha1-antitrypsin deficiency (A1ATD).
Objective: To clinically evaluate and increase recognition of AATD in patients with COPD.
Material and methods: Sixty COPD patients were diagnosed on the basis of clinical and pulmonary function tests. They fulfilled the inclusion criteria and divided into group (A) COPD below 40 years (30 cases) and group (B) COPD above 40 years (30 cases). All patients were subjected thorough history taking, radiological examination, blood gas analysis and quantitative measurements of serum alpha-1 antitrypsin by radio -immunoassay.
Results: Mean age of group A&B were (44.17±2.75, 61.87±6.04) respectively with (p value <0.001). The mean serum level alpha 1 antitrypsin in group A&B were (185.03±23.00 with only one case deficient&177.53±49.94 with only four cases deficient) respectively without statistical significance. There is significant relationship between the age of the patient and A1ATD, where in deficient patients mean age 39.63±13.66,and in normal patients mean age 50.18±12.06) with (P value 0.02). There is also significant relationship between family history and A1ATD, where in deficient patients 50%of cases (4 cases) had positive family history, in contrast to 11.61% of cases(13 case) of normal patients (p value 003). There is no significant difference between deficient and normal group as regards gender distribution, smoking history, symptomatic presentations, physical signs, radiological picture, pulmonary function tests and blood gas parameters.
Conclusion: Emphysema at an early age, non smoker with positive family history are clinical features suggestive for A1ATD.

P2271

Chronic kidney disease (CKD) – A forgotten co-morbidity in COPD

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Background: CKD is a less recognized co-morbidity in COPD and its impact on exacerbations and mortality has been under reported.
Objectives: To look at the prevalence of CKD in patients admitted to hospital with exacerbation of COPD. Secondarily, to compare the length of stay (LOS) in hospital and all cause mortality between the CKD and non-CKD cohort.
Methods: We included all patients admitted to hospital with a COPD exacerbation[1] from 1st January 2010 to 31st December 2010. CKD was defined as eGFR<60ml/min/sq.m for at least 3 months[2]. Data was analysed by independent sample t-test, chi-square and Mann Whitney U test using online tool Vassar stats and significance reported at $p \leq 0.05$.
Results: 161 patients (56% females) were admitted each with FEV1/FVC ratio$\leq$0.7 and median FEV1 36% predicted. Spirometry and BMI data were analysed on 113 patients (CKD n= 90, non-CKD n=23) as records for 48 patients could not be obtained. The prevalence of CKD was 18.6% (n=30). CKD group, was older (mean age 75.8 yrs vs 69.2 yrs; p=0.001), included more males (45% vs 43%), had higher Body Mass Index (30 vs 23.8 kg/m^2; p= 0.002), had better FEV1 (46 vs 35.5% predicted; p= 0.02) and longer LOS (8 vs 6 days; p= 0.042). There was no significant difference in mortality between the two groups (n= 7 vs n=30; p=0.84).
Conclusion: CKD is prevalent in COPD and has a significant effect on the LOS during exacerbations; however it does not contribute to increased one year mortality. Hence, more work is required in this field
References:
[1] ICD code J44.1
[2] National Kidney Foundation Kidney Disease Outcome Quality Initiative Advisory Board.

P2272

Characteristics of zz alpha-1 antitrypsin deficiency patients on the Irish national registry

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Rationale: Alpha-1 antitrypsin (AAT) is produced by hepatocytes, and is the

most important antiprotease in the lung. AAT deficiency (AATD) is a hereditary disorder resulting from mutations in the AAT gene. Individuals with this deficiency classically present with lung disease in adulthood. WHO guidelines advocate a targeted strategy in screening COPD, non-responsive asthma, cryptogenic liver disease patients and relatives of known AATD patients.
Methods: The most common AAT phenotype associated with lung disease is ZZ. A chart review of AATD patients on the National Alpha-1 Registry was performed on ZZ patients (n=100). Our registry collects data on pulmonary function tests, GOLD guidelines, initial reason for screening, complications, and smoking history.
Results: We found that ZZ individuals identified as a result of family screening have significantly increased FEV1 (85.3±6.5%, 40.8±2.8years) compared to ZZ patients identified by targeted symptomatic screening (54.38±3.99%, 44.86±1.8 years, p=0.0008). ZZ patients with a history of smoking had significantly decreased lung function (FEV1, 54.8±3.9%, 43.71±1.6 years) compared to never-smoking ZZ individuals (FEV1, 88.24±4.8%, 43.39±3.6 years, p<0.0001).
Conclusions: Our results highlight the role of cigarette smoke in the pathogenesis of lung disease in AATD and the need for increased awareness and early detection of asymptomatic AATD. Identification of patients from a targeted detection programme should include aggressive family screening and allow the initiation of preventative measures before significant lung disease has occurred.

P2273
Trends in diagnosis and clinical presentation of alpha-1 antitrypsin deficiency within an Irish population
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Alpha-1 Antitrypsin Deficiency (AATD) is an autosomal co-dominant genetic disorder associated with a substantially increased risk for the development of chronic obstructive pulmonary disease (COPD) and liver disease. AATD is a notoriously under-diagnosed and under-recognized condition. ATS/ERS guidelines recommend testing of all individuals with COPD and poorly controlled asthma. The objective of the study was to investigate the diagnostic experiences of ZZ AATD individuals in Ireland.
A total of 50 ZZ AATD individuals completed a questionnaire at an Alpha-1 Clinic in relation to their diagnostic experiences and clinical presentation.
The mean age of symptom on set was 36.7 years ±1.7 (range 4-60); mean age of diagnosis was 42.9 years ±1.6 (range 4-68). The interval between onset of symptom and diagnosis was 6.2 years. The mean number of physicians seen prior to a diagnosis was 2.6±0.3 (range 1-13). Symptomatically screened ZZ individuals mean age of symptom on set was 36.2 years ±2.0 (range 4-60): mean age of diagnosis was 44.3 years ±1.9 (range 4-68). The interval between onset of symptom and diagnosis was 8.1 years. The number of physicians seen prior to a diagnosis was 3.1±0.3 (range 1-13). Family screened ZZ individuals mean age of symptom onset was 37.63±3.0 (range 21-51); mean age of diagnosis was 38.5±2.8 (range 21-53). The interval between onset of symptoms 0.9 years. The mean number of physicians seen prior to a diagnosis was 1.2±0.2 (range 1-3).
Our results further underline the need for increased awareness and early detection of symptomatic AATD individuals in the Irish population, especially among the COPD popluation.

P2274
Neural respiratory drive to the diaphragm in patients with COPD during sleep
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Patients with COPD may develop hypoxia and hypercapnia during sleep, in particular in REM stage although normal ventilation is usually sustained during daytime. Reduction of neural respiratory drive during sleep was hypothesized to be an important mechanism underling hypoxia and hypercapnia. However healthy subjects do not develop hypoxia during sleep. To determine whether change of neural respiratory drive in patients with COPD differed from that in normal subjects, we studied nine patients with COPD (age 58.6±11.8 years; FEV1%pred 49±18) and six normal subjects (Age 58.9±10.1 years; FEV_1%pred 98.0%±10.5%). We recorded the diaphragm EMG from a multipair esophageal electrode during overnight full polysomnography including recording of airflow which was measured by pneumotachograph. Sleep efficiency in both groups was low mainly because of interference of face mask and pneumotachograph. Sleep efficiency in COPD group was worse than that in normal group (52.8±16.1 vs 69.5±13.7). Tidal volume (ml/kg) in patients with COPD decreased by 32.2%±21.3% in NREM stages and further decreased by 45.6%±16.6% in REM stage compared with wakefulness. The decrease of tidal volume from wakefulness to sleep in COPD was significantly larger than that in normal subjects. Diaphragm EMG decreased by 30.0%±21.4% and 37.1%±20.0% from wakefulness to NREM and REM respectively in patients with COPD. However, diaphragm EMG in normal subjects remained the same or only slightly decreased during sleep when compared with wakefulness. We conclude that reduction in neural drive during sleep in patients with COPD is greater than that normal subjects and may be responsible for hypoxia in patients with COPD.

P2275
Lung function decline in adult asthmatics. A 10-year follow-up
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Conflicting results exist regarding the rate of lung function decline in asthmatics. We evaluated the longitudinal changes in FEV_1 in asthmatic outpatients during a 10-year follow-up comparing the 1st period (years 1-5) with the 2nd period (years 6-10) also identifying factors affecting changes in functional decline. We studied 105 asthmatics (45 M, aged 18-76 years) with clinical and functional asthma diagnosis. Spirometry was performed every 3 months. FEV_1 variability at the 1st year was computed. Short term treatments with oral steroids (OS) were used as needed. The best FEV_1 measures at 1st, 5th and 10th year were evaluated and normalized for the subject's height at third power (FEV_1/Ht^3). The slopes FEV_1/Ht^3 vs time during the 1st and 2nd periods were evaluated. We evaluated the effect of body mass index, baseline FEV_1, age at enrolment, age of disease onset, disease duration, allergic sensitization, number of OS courses, and FEV_1 variability on FEV_1 decay slopes. Median FEV_1/Ht^3 slope values were -0.013 and -0.006 (l/m^3/year) for the 1st and 2nd period, respectively (p<0.0001). No correlation was found between the slopes of the two periods. 1st period slopes were correlated to FEV_1 variability (p<0.0001), but such correlation was not found for 2nd period slopes. Negative relationship between 1st period slopes and long term reversibility was found (p=0.006). Subjects with disease duration ≤5 years had steeper 1st period slopes (p=0.04). A relationship was found between 1st period slopes and the number of OS courses (p=0.002). In conclusion, FEV_1 decay in treated adult asthmatics is not constant. In particular, it slows down over time, and is influenced by some subjects' clinical and functional characteristics.

P2276
Computer aided lung sound analysis in smokers
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Computer technology was used to record and analyse lung sounds in two groups of healthy young subjects (smokers and non-smokers).
Introduction: Tobacco smoking is known to have adverse effects on human health. It is believed that smoking in early life has a substantial role in the development of chronic lung disease, but it is not yet known when the first measurable effects of smoking can be detected. Computer aided lung sound analysis (CALSA) permits the quantification of lung sounds, which may change in response to smoking related pathological processes. Crackles are one type of added lung sound which can be quantified using CALSA.
Method: Sixty male subjects (30 smokers and 30 non-smokers) aged 26.6*m*4.7 years were recruited from a student population. Lung sound recordings were made using a digital stethoscope, following published guidelines. Sounds were recorded on a computer with Matlab software. Using signal processing techniques, one characteristic of the crackles was measured (namely the two cycle deflection (2CD)) at each anatomical recording site. Statistical analysis was used to quantify differences in crackles between smokers and non-smokers.
Findings: Sixty sets of data have been analysed. The 2CD per site data revealed some statistically significant differences at both anterior sites (anterior left: F(2,57)=9.40, P=0.00; anterior right: F(2,57)=9.51, P=0.00)) and both lateral sites (middle left: F(2,57)=4.2, P=0.02; middle right: F(2,57)=4.36, P=0.02)).
Conclusion: The hypothesis that lung crackle's 2CD differ between asymptomatic smokers and non-smokers has been supported.

P2277
Clinical features of alpha one antitrypsin deficiency in non cystic fibrosis bronchiectasis
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Setting: It's important to identify manifestation of alpha1-antitrypsin deficiency (A1ATD) in bronchiectasis to improve patients care and outcome.
Objective: To clinically evaluate A1ATD in patients with non cystic fibrosis bronchiectasis.
Material and methods: Patients with non cystic fibrosis bronchiectasis were diagnosed clinically and confirmed radiologically. They fulfilled the inclusion criteria and divided into group (A) bronchiectasis with hyperinflation (30cases) and group (B) bronchiectasis without hyperinflation (30 cases). All patients were subjected to history taking, pulmonary function tests, and quantitative measurements of serum A1AT by radio-immunoassay.
Results: Mean age of both groups was (50±8.58) and (36.87±11.35) respectively (p=0.001). There were significant difference in gender distribution (p=0.006), and smoking history (p=0.001). Heamoptysis presented in 12 cases (40%), and 20 cases (66.67%) in both groups respectively (p=0.04). Dyspnea presented in 27 cases (90%) and 19 cases (63%) for group A&B with (P=0.02). There were no significant difference in sinusitis, hepatological symptoms, clubbing and family history. There were significant difference in cyanosis, oedema of lower limb, wheeze, radiological findings and spirometeric tests (P value 0.01, 0.004, 0.001,

0.001, 0.001) respectively. Three cases (5%) of A1ATD were diagnosed among all patients' one case (1.5%) in group (A) of MZ allele and two brother cases (3.5%) in group (B) of SZ allele without statistical significance.
Conclusion: A1ATD is seldom found in patients with bronchiectasis even with concomitant hyperinflation. Inheritance could influence an individual risk of A1ATD for developing bronchiectasis.

P2278
Clinimetric properties of outcome measures in bronchiectasis
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Introduction: In bronchiectasis (BE) there is demand for researchers and regulatory bodies to use robust outcome measures (OM) in clinical trials which have evidence of validity, reliability and responsiveness.
Aim: To explore the evidence for clinimetric properties of commonly used outcome measures in BE.
Methods: A systematic search of key databases (2000-2010) to identify studies in adults with BE which included the following OM; HRCT, FEV1, Quality of life (QoL), exacerbations (PEx), sputum volume/colour, and sputum inflammatory markers (IL-8 and elastase). Data relating to clinimetric properties was extracted.
Results: 68 papers met the inclusion criteria. There was good evidence for all components of validity for HRCT, FEV1, QoL, and with exception of predictive validity for sputum volume/colour and sputum inflammatory markers. There was minimal evidence for validity for PEx. The majority of RCTs in BE included FEV1 (n=9/11) as a key OM however none were able to demonstrate a treatment effect with FEV1. Other research designs (e.g. crossover/cohort studies) were also unable to demonstrate a treatment effect with FEV1. A small number of RCTs (n=5) included the other OMs and some of these studies were able to demonstrate a significant treatment effect (QoL n=2/4, PEx n= 2/4, sputum volume/colour n=1/5 and sputum inflammatory marker n=1/5). Other research designs were also able to demonstrate a treatment effect with these outcomes. There are a small number of studies demonstrating test-retest reliability of these OM.
Conclusions: FEV1 is considered to be the primary outcome in clinical trials however current evidence in BE suggests that FEV1 may not be responsive and other outcome measures should be considered.

P2279
PCD – As serious as CF in every day lung clinic?
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Background: Cystic fibrosis, CF, and Primary cilia dyskinesia, PCD, have very different genetic background, but present very similar in clinic with vicious mucus, bacteria, bronchiectasis and negatively affected lung function. Our regimen involves mucolytica, inhalations, airway clearance and anti-bacterial treatment regardless of diagnosis, but in all cases individualized.
Aim of study: To see whether PCD patients as a group were as affected as CF patients.
Patients: All patients, CF and PCD, seen regularly at our clinic were compared as a whole group and also in an age and gender matched subgroup of 21 pairs.
Results: When comparing lung function in the two groups, $FEV_{1,}$ (in percentage of expected for age and length) showed, to our surprise, to be worse for the PCD group, both in the main group and in the subgroup.
The bronchiectases are evaluated separately and will be presented at the Conference.
There were more, but not exclusively, pseudomonas infections in the CF group – 38 vs 14%. There was no B.cepacia or S.maltophilia in the PCD group.
The BMI was as expected a little lower in the CF group.
Conclusions: The more affected lung function amongst the PCD patients could be due to later diagnosis and less importance given to lung treatment. The focus on early diagnosis, effective inhalation and treatment regimen in the CF group have resulted in better results despite the very complex and severe disease.