

## ABSTRACTS

**ASSOCIATION BETWEEN MODELLED TRAFFIC-RELATED AIR POLLUTION AND ASTHMA SCORE IN THE ECRHS****B. Jacquemin, J. Sunyer, B. Forsberg, et al***Eur Respir J* 2009; 34:834-842

The aim of our analysis was to study the association between air pollution and asthma among adults. For this goal, a previously developed "asthma score" was used. Persons aged 25–44 yrs were randomly selected (1991–1993) and followed up (2000–2002) within the European Community Respiratory Health Survey (ECRHS I and II, respectively). The asthma score was defined from 0 to 5, based on the positive answers to the following symptoms reported for the last 12 months: wheeze/shortness of breath, chest tightness, dyspnoea at rest, dyspnoea after exercise and woken by dyspnoea. Participants' home addresses were linked to outdoor modelled NO<sub>2</sub> estimates for 2001. Negative binomial regression was used to model the asthma score.

The score from ECRHS II was positively associated with NO<sub>2</sub> (ratio of the mean asthma score (RMS) 1.23, 95% CI 1.09–1.38, for an increase of 10 µg·m<sup>-3</sup>). After excluding participants with asthma and symptoms at baseline, the association remained (RMS 1.25, 95% CI 1.05–1.51), and was particularly high among those reporting a high score in ECRHS II. The latter probably reflects incident cases of asthma.

Our results suggest that traffic-related pollution causes asthma symptoms and possibly asthma incidence in adults. The asthma score offers an alternative with which to investigate the course and aetiology of asthma in adults.

---

**MORTALITY IN BRONCHIECTASIS: A LONG-TERM STUDY ASSESSING THE FACTORS INFLUENCING SURVIVAL****M. R. Loebinger, A. U. Wells, D. M. Hansell, N. Chinyanganya, A. Devaraj, M. Meister and R. Wilson***Eur Respir J* 2009; 34:843-849

There is little literature about the mortality associated with bronchiectasis. The aim of the present study was to investigate factors affecting mortality in patients with bronchiectasis. In total, 91 patients were examined for aetiology, pulmonary function tests, high-resolution computed tomography, sputum microbiology and quality of life scores and were then followed over 13 yrs.

Overall, 29.7% of the patients died. On multivariate analysis, age, St George's Respiratory Questionnaire activity score, *Pseudomonas aeruginosa* infection, total lung capacity (TLC), residual volume/TLC and the transfer factor coefficient were all independently associated with mortality.

In patients with moderate to severe bronchiectasis, mortality is associated with a degree of restrictive and obstructive disease, poor gas transfer and chronic *pseudomonas* infection. These features should guide future research into disease progression, and identify those patients needing intensive treatment.

---

## QUANTITATIVE COMPUTED TOMOGRAPHY: EMPHYSEMA AND AIRWAY WALL THICKNESS BY SEX, AGE AND SMOKING

T. B. Grydeland, A. Dirksen, H. O. Coxson, S. G. Pillai, S. Sharma, G. E. Eide, A. Gulsvik and P. S. Bakke

*Eur Respir J* 2009; 34:858-865

We investigated how quantitative high-resolution computed tomography (HRCT) measures of emphysema and airway wall thickness (AWT) vary with sex, age and smoking history. We included 463 chronic obstructive pulmonary disease (COPD) cases and 431 controls. All included subjects were current or ex-smokers aged 40 yrs, and all underwent spirometry and HRCT examination. The HRCT images were quantitatively assessed, providing indices on lung density and airway dimensions.

The median (25–75th percentile) %LAA950 (% low-attenuation area < -950 HU) was 8.9 (3–19) and 4.7 (1–16) in male and female COPD cases, respectively, and 0.71 (0.3–1.6) and 0.32 (0.1–0.8) in male and female controls, respectively. %LAA950 was higher in ex-smokers and increased with increasing age and with increasing number of pack-years. The mean±SD standardised AWT was 0.504±0.030 and 0.474±0.031 in male and female COPD cases, respectively, and 0.488±0.028 and 0.463±0.025 in male and female controls, respectively. AWT decreased with increasing age in cases, and increased with the degree of current smoking in all subjects.

We found significant differences in quantitative HRCT measures of emphysema and AWT between varying sex, age and smoking groups of both control and COPD subjects

---

## PULMONARY ARTERIOVENOUS MALFORMATIONS ASSOCIATED WITH MIGRAINE WITH AURA

M. C. Post, M. W. F. van Gent, H. W. M. Plokker, C. J. J. Westermann, J. C. Kelder, J. J. Mager, T. T. Overtom, W. J. Schonewille, V. Thijs and R. J. Snijder

*Eur Respir J* 2009; 34:882-887

Migraine with aura (MA) is associated with cardiac right-to-left shunt. We prospectively studied the association between pulmonary arteriovenous malformations (PAVMs) and MA in hereditary haemorrhagic telangiectasia (HHT).

All 220 consecutive HHT patients who underwent high-resolution chest computed tomography for PAVM screening were included prospectively. Prior to screening, a structured validated headache questionnaire was completed by 196 patients (57% female; mean±sd age 44.6±15.2 yrs). Two neurologists diagnosed migraine according to the International Headache Society Criteria.

A PAVM was present in 70 (36%) patients. The prevalence of MA was 24% in the presence of a PAVM compared with 6% in the absence of a PAVM (OR 4.6, 95% CI 1.84–11.2;  $p = 0.001$ ), and MA was an independent predictor for the presence of PAVM using multivariate analysis (OR 3.6, 95% CI 1.21–10.5;  $p = 0.02$ ). A PAVM was present in 68% of the patients with MA compared with 32% in the non-migraine controls (OR 4.6, 95% CI 1.84–11.2;  $p = 0.001$ ), and a PAVM was an independent predictor for MA using multivariate analysis (OR 3.0, 95% CI 1.00–9.20;  $p = 0.05$ ).

In conclusion, PAVMs are associated with MA in HHT patients

## SEASONALITY OF TUBERCULOSIS IN AN EASTERN-ASIAN COUNTRY WITH AN EXTREME CONTINENTAL

Climate N. Naranbat, P. Nymadawa, K. Schopfer and H. L. Rieder

*Eur Respir J* 2009; 34:921-925

Aggregate monthly notifications of incident sputum smear-positive tuberculosis (TB) in Mongolia, stratified by sex and age groups, were analysed separately for Ulaanbaatar, Mongolia, and the rest of the country for the 9-yr period from 1998 to 2006.

TB notifications were compared with ambient surface temperature.

More than twice as many TB cases were notified in the peak month (April) compared with the trough months (October–December), paralleling the temperature curve. The fluctuations occurred consistently over the entire observation period, were identical in the capital compared with the rest of the country, and were independent of age and sex.

TB notifications parallel the temperature amplitudes and have a magnitude not reported elsewhere. We hypothesise that the influence of temperature on life either indoors or outdoors is consistent with the transmission probability of *Mycobacterium tuberculosis* and the subsequent delay to disease recognition and notification with the incubation period, possibly co-determined by other factors, rather than accessibility to services

---

## ADMISSION HYPOGLYCAEMIA IS ASSOCIATED WITH ADVERSE OUTCOME IN COMMUNITY ACQUIRED PNEUMONIA

A. Singanayagam, J. D. Chalmers and A. T. Hill

*Eur Respir J* 2009; 34:932-939

The aim of our study was to investigate if hypoglycaemia correlates with outcome in community-acquired pneumonia (CAP).

We performed a prospective, observational study of consecutive patients presenting with a primary diagnosis of CAP in Lothian (UK). Admission plasma glucose was measured and, on this basis, patients were divided into two groups, hypoglycaemic ( $<4.4 \text{ mmol}\cdot\text{L}^{-1}$  or  $<79.0 \text{ mg}\cdot\text{dL}^{-1}$ ) and nonhypoglycaemic ( $\geq 4.4 \text{ mmol}\cdot\text{L}^{-1}$  or  $\geq 79.0 \text{ mg}\cdot\text{dL}^{-1}$ ). Outcomes of interest were 30-day mortality, need for mechanical ventilation and inotropic support. Multivariable logistic regression was used to compare these outcomes in hypoglycaemic patients to nonhypoglycaemic patients, adjusting for diabetes mellitus, prior statin use and Pneumonia Severity Index. In total, 1,050 patients were included in the study with 5.4% classified as hypoglycaemic. Increased rates of 30-day mortality (28.1% versus 7.5%,  $p<0.0001$ ), need for mechanical ventilation (29.8% versus 6.5%,  $p<0.0001$ ) and need for inotropic support (21.1% versus 4.8%,  $p<0.0001$ ) were observed in hypoglycaemic patients compared with nonhypoglycaemic patients. On multivariable analysis, hypoglycaemia was independently associated with increased 30-day mortality (OR 2.25, 95% CI 1.1–4.7;  $p = 0.03$ ), need for mechanical ventilation (OR 3.8, 95% CI 1.9–7.5;  $p = 0.0002$ ) and need for inotropic support (OR, 2.9, 95% CI 1.4–6.3;  $p = 0.0006$ ).

Admission hypoglycaemia is associated with increased 30-day mortality, need for mechanical ventilation and inotropic support in patients presenting with CAP

---

## PROPOFOL VERSUS COMBINED SEDATION IN FLEXIBLE BRONCHOSCOPY: A RANDOMISED NON-INFERIORITY TRIAL

D. Stolz, G. Kurer, A. Meyer, P. N. Chhajed, E. Pflimlin, W. Strobel and M. Tamm

*Eur Respir J* 2009; 34:1024-1030

Combined sedation with a benzodiazepine and an opiate has been proposed as standard sedation for bronchoscopy. Propofol is a sedative-hypnotic with a rapid onset of action and fast recovery time, but carries the potential risk of respiratory failure.

Consecutive patients ( $n = 200$ ) were randomly allocated to receive either the combination midazolam and hydrocodone or intravenous propofol. The primary end-points were the mean lowest arterial oxygen saturation during bronchoscopy and the readiness-for-discharge score 1 h after the procedure.

The mean lowest arterial oxygen saturation during bronchoscopy did not differ across treatment groups ( $p = 0.422$ ), and the number of patients recording an arterial oxygen saturation of 90% on at least one occasion was similar in both groups ( $p = 0.273$ ). The median (interquartile range) readiness-for-discharge score 1 h after the procedure was significantly higher in the propofol group than in the combined sedation group (8 (6–9) versus 7 (5–9);  $p = 0.035$ ). Patients assigned propofol exhibited less tachycardia during bronchoscopy and for 1 h after the examination. Minor procedural complications were noted in 71 (35.5%) patients and exhibited a similar incidence in both treatment arms ( $p = 0.460$ ). Propofol is as effective and safe as combined sedation in patients undergoing flexible bronchoscopy, thus representing an appealing option if timely discharge is a priority.

---

## CRYPTOGENIC HAEMOPTYSIS IN SMOKERS: ANGIOGRAPHY AND RESULTS OF EMBOLISATION IN 35 PATIENTS

Menchini, M. Remy-Jardin, J-B. Faivre, M-C. Copin, P. Ramon, R. Matran, V. Deken, A. Duhamel and J. Remy

*Eur Respir J* 2009; 34:1031-1039

The aim of the present study was to describe angiographic findings and embolisation results in smokers with haemoptysis.

We retrospectively reviewed the clinical data and angiographic findings from 35 patients with smoking-related bronchopulmonary disease and no associated comorbidity, who were referred for embolisation for mild ( $n = 6$ ), moderate ( $n = 14$ ) and severe ( $n = 15$ ) haemoptysis. Spirometric classification subdivided our population into: 16 patients with chronic bronchitis but no airflow limitation; and 19 patients with chronic obstructive pulmonary disease (COPD) (stage I:  $n = 12$ ; stage II:  $n = 5$ ; stage III:  $n = 2$ ).

Bronchoscopy depicted focal submucosal vascular abnormalities in three patients and only endobronchial inflammation in 32 (91%) patients. Bronchial artery angiography revealed moderate ( $n = 18$ ) or severe ( $n = 10$ ) hypervascularisation in 28 (80%) patients, and normal vascularisation in seven (20%). No statistically significant difference was observed between the angiographic findings and the severity of COPD, tobacco consumption or the amount of bleeding. Cessation of bleeding was obtained by embolisation in 29 out of the 34 technically successful procedures (85%), requiring surgery in three out of five patients with recurrence. Follow-up (mean duration 7 yrs) demonstrated no recurrence of bleeding in 32 (94%) out of 34 patients and excluded late endobronchial malignancy.

Smokers with various stages of COPD severity may suffer from haemoptysis that is efficiently treatable by endovascular treatment.

## AIRWAY SMOOTH MUSCLE THICKNESS IN ASTHMA IS RELATED TO SEVERITY BUT NOT DURATION OF ASTHMA

A. L. James, T. R. Bai, T. Mauad, M. J. Abramson, M. Dolhnikoff, K. O. McKay, P. S. Maxwell, J. G. Elliot and F. H. Green

*Eur Respir J* 2009; 34:1040-1045

Copyright ©ERS Journals Ltd 2009

Asthma is characterised by an increased airway smooth muscle (ASM) area (ASMarea) within the airway wall. The present study examined the relationship of factors including severity and duration of asthma to ASMarea.

The perimeter of the basement membrane (PBM) and ASMarea were measured on transverse sections of large and small airways from post mortem cases of fatal ( $n = 107$ ) and nonfatal asthma ( $n = 37$ ) and from control subjects ( $n = 69$ ). The thickness of ASM (ASMarea/PBM) was compared between asthma groups using multivariate linear regression.

When all airways were considered together, ASMarea/PBM (in millimetres) was increased in nonfatal (median 0.04; interquartile range 0.013–0.051;  $p = 0.034$ ) and fatal cases of asthma (0.048; 0.025–0.078;  $p < 0.001$ ) compared with controls (0.036; 0.024–0.042).

Compared with cases of nonfatal asthma, ASMarea/PBM was greater in cases of fatal asthma in large ( $p < 0.001$ ) and medium ( $p < 0.001$ ), but not small, airways. ASMarea/PBM was not related to duration of asthma, age of onset of asthma, sex or smoking. No effect due to study centre, other than that due to sampling strategy, was found.

The thickness of the ASM layer is increased in asthma and is related to the severity of asthma but not its duration.

---

## PSEUDOMONAS AERUGINOSA IN PATIENTS HOSPITALISED FOR COPD EXACERBATION: A PROSPECTIVE STUDY

C. Garcia-Vidal, P. Almagro, V. Romani, M. Rodríguez-Carballeira, E. Cuchi, L. Canales, D. Blasco, J. L. Heredia and J. Garau

*Eur Respir J* 2009; 34:1072-1078

Risk factors for *Pseudomonas aeruginosa* (PA) isolation in patients hospitalised for chronic obstructive pulmonary disease (COPD) exacerbation remain controversial. The aim of our study was to determine the incidence and risk factors for PA isolation in sputum at hospital admission in a prospective cohort of patients with acute exacerbation of COPD.

We prospectively studied all patients with COPD exacerbation admitted to our hospital between June 2003 and September 2004. Suspected predictors of PA isolation were studied. Spirometry tests and 6-min walking tests were performed 1 month after the patients were discharged. High-resolution computed tomography (HRCT) was performed in a randomised manner in one out of every two patients to quantify the presence and extent of bronchiectasis. Patients were followed up during the following year for hospital re-admissions.

A total of 188 patients were included, of whom 31 (16.5%) had PA in sputum at initial admission. The BODE (body mass index, airflow obstruction, dyspnoea, exercise capacity) index (OR 2.18, CI 95% 1.26–3.78;  $p = 0.005$ ), admissions in the previous year (OR 1.65, CI 95% 1.13–2.43;  $p = 0.005$ ), systemic steroid treatment (OR 14.7, CI 95% 2.28–94.8;  $p = 0.01$ ), and previous isolation of PA (OR 23.1, CI 95% 5.7–94.3;  $p < 0.001$ ) were associated with PA isolation. No relationship was seen between bronchiectasis in HRCT and antibiotic use in the previous 3 months.

PA in sputum at hospital admission is more frequent in patients with poorer scoring on the BODE index, previous hospital admissions, oral corticosteroids and prior isolation of PA.