511. The work environment in the clinic

P4934

Medical triage for early detection of silicosis in a ceramic tile production plant

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Objective: Dust containing crystalline silica may cause silicosis, COPD and lung cancer even at low exposure levels. Since no therapy for silicosis is available, early detection is needed to avoid further exposure and progression of the disease. In the Netherlands a national surveillance programme including medical triage has been implemented to identify construction workers with silicosis. For that purpose a diagnostic model has been developed to predict the probability of silicosis by use of a short questionnaire and lung function [1]. In this study medical triage was applied in a ceramic tile production plant.

Methods: The diagnostic model was tailored to the company using historical exposure data. Of a total of 391 workers 353 (90%) participated in the study, 52 of whom (15%) had a high risk (sumscore \geq 5) and were candidate for medical evaluation, including a low-dose high resolution CT-scan of the lungs.

Results: 48 of 52 workers (response 92%) were referred for clinical evaluation. Mean age was 52 (\pm 5) yrs, number of pack years 28 (\pm 21). Silicosis was found in 8 workers (17%), another 3 had an increased number of micronodules on CT (6%). In addition, COPD was present in 6 workers (13%): Gold I in 2 (one of whom had silicosis), Gold II in 3 and Gold III in 1 worker.

Conclusion: Medical triage followed by specific clinical evaluation in a population of tile plant workers was effective in the early detection of silicosis and yielded a high percentage of COPD. The results stress the need for exposure measures in the tile production industry.

References:

 Suarthana E et al. A simple diagnostic model for ruling out pneumoconiosis among construction workers. Occup Environ Med 2007;64:595-601.

P4935

Chest CT screening of asbestos exposed workers in the Arsenal of Brest: Prevalence of asbestos related abnormalities, and incidental findings Anne Pégorié¹, Nicolas Paleiron¹, Thomas Erauso¹, Cecile Tromeur¹, Sophie Herry², Yvan Bec², Bertrand Bouard³, Frédéric Grassin¹, Michel André¹. ¹Service de Pneumologie, Hopital d'Instruction des Armées, Brest, France; ²Service de Médecine de Prévention, DCNs, Brest, France; ³Centre de Medecine de Prévention, La Villeneuve, Brest, France

Introduction: Chest CT screening is part of the recommendations of the French medical surveillance program of asbestos exposed workers, and seems to have shortened the delay in the diagnosis of asbestos related diseases, yet conversely to have increased the number of complementary examinations due to incidental findings. Aims and objectives: The aims of the study were to identify, lung lesions and incidental findings discovered during chest CT screening of asbestos exposed workers, assess the number of lesions considered to be professional diseases, and assess the benefits of incidental findings. The impact of tobacco smoking and the level of exposure were assessed.

Methods: It is a retrospective, analytical study on medical records and chest CT scans of 339 asbestos exposed workers who underwent a first chest CT scan between January 2006 and June 2008, indicated by the health department of Brest military arsenal.

Results: 22% had normal chest CT scans. 54% had pulmonary nodules of which two proved to be malignant. 8.8% had pleural plaques. 3% had dense sub pleural lines. Smokers have twice as many lesions as nonsmokers. No significant difference was shown between patients with different levels of asbestos exposure. On the whole, 9.4% of the images could be related to asbestos exposure. Findings were incidental in 87.6% of cases. They were considered clinically significant in 6 cases. **Conclusion:** The diagnosis of few asbestos related lesions and conversely a large amount of incidental findings raises the question of the benefits of a large scale screening. Indeed, the study highlighted more of a personal, than a medical benefit.

P4936

Asthma and exposure to quaternary ammonium compounds in healthcare settings

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An increased incidence of asthma was reported among professionals working in

healthcare settings. However the role of the quaternary ammonium compounds (QUATS) is not yet clear in the induction or aggravation of these symptoms.

Aim: To analyze, among health care settings professionals, the influence of QUATS and irritants exposure on the occurrence of respiratory symptoms including asthma. **Methodology:** All workers with more than 6 months of seniority working in 7 healthcare facilities were requested. The survey included a self-administered questionnaire, physical examination, spirometry and blood sample. Occupational exposure assessment was made by expert judgment and workplace studies.

Results: 543 workers participated. QUATS occupational exposure was specified for 444 workers: 335 exposed and 109 non exposed. The QUATS exposed workers were 50% nurses, 22% auxiliary nurses, 19% cleaners. The frequency of all variables defining asthma was significantly higher among the QUATS exposed workers: 18.3% vs 5.5% for ever asthma, 14.4% vs 2.7% for asthma confirmed by a physician, 6.7% vs 1. 8% for asthma in the last 12 months, 7.9% vs 1.8% for new onset asthma after entry into healthcare profession. In multiple analysis, after adjustment 2 variables, atopy and quats exposure were associated with physician diagnosed asthma (RR=5.5 [2.7-10.9] p<10-3) and 4.2 [1.3-13.6] p < 0.01, respectively. The same factors were found for rhinitis. Disinfection of surfaces was significantly associated with asthma RR=5.8 (1.7-19.3).

Conclusion: QUATS exposure increased the risk of asthma, the high-risk tasks being the disinfection of surfaces, the preparation of soaking solutions, the dilution of products and the use of sprays.

P4937

Work-exacerbated rhinitis among bakers – Is it a problem? Jolanta Walusiak-Skorupa, Marta Wiszniewska,

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Work-exacerbated rhinitis (WER) is pre-existing or concurrent rhinitis that is worsened by workplace exposures, while the disease has not been caused by the work environment. WER is currently less well characterized than the corresponding entity of work-exacerbated asthma and exact data on its prevalence and associated factors are usually not known. The aim of the study was to evaluate the frequency of WER in bakers with suspected respiratory occupational allergy.

Material and methods: The study group included 393 bakers reporting respiratory symptoms at the workplace. In all subjects questionnaire, spirometry, skin prick tests (SPT), evaluation of serum total and specific IgE level were performed. Recognition of occupational rhinitis (OR) was based on inhalative specific challenge test with evaluation of nasal response (nasal lavage analysis).

Results: OR was found in 138 (35,1%) bakers while WER was recognized in 116 (29,5%) subjects. 66,7% subjects with OR and 43,1% with WER had positive SPT to common allergens, while occupational SPT were positive in 76,8% and 33,6% subjects respectively. In patients with OR the latency period, i.e. duration of exposure before the occurrence of symptoms was 10,8 whereas in bakers with WER 13,8 years. Generally, bakers who suffered from occupational rhinitis were younger than the patients with WER. Additionally, OR coexisted with asthma more frequently than WER.

Conclusions: WER is frequent health problem and concerns about 30% of bakers reporting allergic respiratory symptoms. Its differentiation with OR should include specific challenge test, as anamnesis, skin prick tests to occupational allergens and evaluation of serum allergen specific IgE do not display sufficient specificity.

P4938

Diagnostics and frequency of work-exacerbated asthma among bakers Marta Wiszniewska, Agnieszka Lipinska-Ojrzanowska,

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The term work-exacerbated asthma (WEA) refers to asthma that is worsened by workplace exposures. The aim of the study was to evaluate the frequency of WEA in bakers reporting work-related respiratory symptoms and the usefulness of allergologic tests in differentiating WEA and occupational asthma (OA).

Material and methods: The study group included 393 bakers. In all subjects questionnaire, spirometry, SPT, evaluation of total and specific IgE level were performed. Recognition of OA was based on inhalative specific challenge test with evaluation of bronchial response or a threefold increase in non-specific bronchial hyperreactivity accompanied by increase sputum eosinophilia.

Results: Occupational etiology of asthma was found in 44,5% bakers while WEA was recognized in 16% subjects. 60% subjects with OA and 50,8% with WEA had positive SPT to common allergens, while occupational SPT were found in 74,9% and 34,9% subjects respectively. Whereas specific IgE to flours were found in 61,7% patients with OA and 28,6% with WEA. In patients with OA the latency period was 11,2 years whereas in bakers with WEA 13,3 years. Additionally, OA frequently coexisted with occupational rhinitis (53,7%) while among bakers with WER rhinitis was found in 31,7% subjects.

Conclusions: WEA can be diagnosed in 16% of bakers reporting allergic respiratory symptoms. The specific challenge test with occupational allergens should be performed among bakers with suspicion of work-related asthma, because assessment of sensitization (SPT to occupational allergens, evaluation of specific IgE) is not specific enough to differentiate occupational and work-exacerbated asthma.

P4939

Diagnosis of occupational asthma from serial plots of PEF; first year results of open access to the Oasys internet database

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Occupational asthma requires validation. The most accessible first stage is diagnostic confirmation from serial measurements of PEF or FEV1, supported by all evidence-based reviews. Reliance on these diagnostic methods is limited by interpreter disagreement and record quality. The Oasys diagnostic aid overcomes both of these problems by applying evidence-based data quality and interpreterindependent diagnoses. In April 2010 we made Oasys freely available via the internet. Uploaded records are anonymous but their country of origin can often be identified from the email address. We compare the results of uploaded records for the first 9 months of open access, with records entered in 2010 from our centre, where Oasys has been in use for many years. 349 records have been entered from our centre and 321 records uploaded from centres outside our own; sources including Denmark (32), other UK (165), Korea (5), Italy (5), Taiwan (5) and Unknown (99).

PEF data quality and interpretation

| | Number | Quality optimal | Occupational asthma | |
|-------------------|--------|-----------------|---------------------|--|
| Birmingham | 349 | 174 (50%) | 111 (32%) | |
| Rest of the world | 321 | 167 (52%) | 80 (25%) | |

The table shows that other centres using Oasys are able to achieve similar quality and diagnostic confirmation to our own and is suitable for more widespread use. It is freely available via www.occupationalasthma.com/occupational_asthma_ pageview.aspx?id=4443.

P4940

COPD and its impact on ability to continue to work

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Introduction: COPD affects large numbers of people of working age. This international study measured the personal, social and economic burden of disease in this population. The age, disease severity, and co-morbidity data are presented according to employment status, to identify the characteristics of individuals across the groups.

Method: 2426 respondents from Brazil, China, Germany, Turkey, UK, US were recruited utilising a mixed methods design. Employment status was recorded: currently employed, not working and retired due to COPD. Disease severity was assessed using MRC scores (Mild: 1-2, Mod 3-4, Severe 5).

Results: Retirees reported greater disease severity than workers (MRC m: 4.1 v 3.1, p < 0.005), more co-morbidities (m:2.5 v m:1.1). More retirees reported anxiety and depression. 60% of retirees had mild or moderate disease v 91% in work. 64% (n284) of early retirees retired over 4 years ago.

Table 1. Demographic data of employed and non-employed groups

| Variable | Currently employed (n=710) | Retired due to COPD (n=447) | Non-worker (n=1243) | |
|----------------------|----------------------------|--------------------------------|------------------------|--|
| Age (Mean) | 52.7 | 58.3 | 57.8 | |
| Gender (Males) % | 51 | 47 | 48 | |
| Comorbidities (mean) | 1.1 | 2.5 | 1.8 | |
| Depression % | 23 | 57 | 34 | |
| Anxiety % | 28 | 39 | 38 | |
| Both % | 16 | 49 | 28 | |
| Severity % (n) | | | | |
| Mild | 59 | 8 | 34 | |
| Moderate | 32 | 52 | 44 | |
| Severe | 9 | 40 | 22 | |

Conclusions: It is possible that disease severity limits ability to work, however the trigger to retire may also be due to other factors including co-morbidities. Workers registered the lowest prevalence of psychological disorders and it is unclear whether this is due to milder disease, age or employment status. This data suggests employers and occupational health professionals have a key role in keeping people with COPD in active work for longer.

P4941

A systematic review of serial peak expiratory flow measurements in the diagnosis of occupational asthma

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This work systematically reviews literature on the application of serial peak expiratory flow (PEF) measurements in the diagnosis of occupational asthma (OA) and calculates summary estimates of the sensitivity, specificity and feasibility of serial PEFs.

Methods: Papers were searched for on the Medline database via the PubMed website (http://www.ncbi.nlm.nih.gov/sites/entrez) and on the Birmingham Chest Clinic departmental website www.occupationalasthma.com from 2004 until April 2009 using the search terms "Peak flow AND occupational asthma" and "Peak flow AND work related asthma". Abstracts were screened to select those justifying a full paper review. Papers used in the British Occupational Health Research Foundation (BOHRF) guidelines (current until June 2004) were also reviewed. Case studies and narrative reviews were excluded. Type of analysis, quality of paper, sensitivity and specificity of serial PEFs compared to reference tests and return rates were documented. Results were pooled from all studies to produce overall estimates.

Results: A total of 80 abstracts were reviewed, leading to 23 full papers plus 15 papers from the 2004 BOHRF review. 7 papers were excluded. The pooled sensitivity of serial PEF fulfilling minimum data quantity requirements for a diagnosis of OA was 82% (95% CI 76-90) and the pooled specificity 88% (95% CI 80-95). Return rates were similar between PEFs requested through workplace studies (85%) and those requested in a clinical setting (78%).

Conclusion: Based on a systematic literature search, serial PEF measurement is a feasible, sensitive and specific test for the diagnosis of OA, when potential sources of error are understood.

P4942

FEV1 decline and eosinophilia in occupational asthma

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Background: There are few informations available on how rapidly lung function declines in subjects with occupational asthma (OA) who continue to be exposed. **Subjects and methods:** FEV1 was monitored in 38 subjects with OA (age 41.9±11.7 yrs, 4 smokers and 19 ex-smokers). 16 (44.1%) were exposed to high molecular weight compounds (HMWC) and 22 (57.9%) to low molecular weight compounds (LMWC), with an occupational exposure of 16.0 (range: 1-45) yrs. We used simple regression analysis to provide estimates of the decline in FEV1 during the period of occupational exposure 4.1 (range 1.2-13.7) yrs. The mean rate of change in FEV1 was -32.9 (range: -17.31-426.2) ml/yr.

Results: In all subjects FEV1 decline was significantly worse (p=0.04) in subjects with higher eosinophilia (>3%), but there wasn't difference between subjects exposed to LMWC or HMWC nor respect to the use of inhaled corticosteroids (ICS). Comparison between FEV1% pred at baseline and follow-up visit showed significant improvement only in subjects with lower eosinophilia (91.9 \pm 17.5 vs 96.6 \pm 15.7, p=0.01). Logistic regression analysis (mean annual change in FEV1 < than median value -32.9 ml/yrs as dependent variable) was performed.

| | OR (95% CI) | p value |
|---------------------------------------|-----------------|---------|
| Age | 1.1 (0.9–1.2) | 0.2 |
| FEV1 (% of predicted) | 1.1 (1-1.1) | 0.04 |
| Eosinophilia >3% | 5.0 (0.7-34.0) | 0.09 |
| Therapy with ICS | 0.5 (0.01-18.1) | 0.7 |
| Exposure duration | 0.9 (0.8-1.0) | 0.1 |
| Persistent work exposure vs reduction | 6.8 (1.1-40.9) | 0.03 |
| Smoking habit | 1.0 (0.1–7.0) | 0.9 |

Conclusion: Baseline FEV1 and sputum eosinophilia are both determinants of a more rapid FEV1 decline in patients with OA still exposed in the workplace.

P4943

Pulmonary toxicity in car spray painters

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Background: Spray painters comprise a large population at risk with potentially

high isocyanate exposure. Repeated pulmonary function testing is not sufficient to diagnose and evaluate pulmonary toxicity induced by car paint sprays. Therefore Clara cell secretory protein (CC16) was selected as a sensitive marker of bronchial tree injury

Methods: The study involved 50 workers exposed to isocyanates during car spraypainting; in addition to 30 control subjects,. All participants were subjected to pulmonary function testing, bronchoscopy and lavage, and serum CC16 estimation. **Results:** Different pulmonary function indices as well as CC16 serum levels were found to be significantly decreased in the exposed group. Clara cells were markedly damaged in the exposed subjects, whereas smokers exhibit excessive epithelial cells desquamation.

| Serum | levels | of | CC10 | 5 (ng) | ml |) in ex | posed | and | control | l sut | ojeo | ct |
|-------|--------|----|------|--------|----|---------|-------|-----|---------|-------|------|----|
|-------|--------|----|------|--------|----|---------|-------|-----|---------|-------|------|----|

| CC16 | Exposed smokers | Control smokers | Control non-smokers | P1 | P2 | Р3 |
|-----------|-----------------|--------------------|------------------------|----------|----------|----------|
| Range | 6.20–12.6 | 12.1–16.7 | 17.3–21.8 | t=14.25 | t=12.55 | t=12.16 |
| Mean ± SD | 9.18±1.89 | 14.55±1.25 | 19.8±1.36 | P=0.001* | P=0.001* | P=0.048* |

P1: Comparison between exposed smokers & control smokers.



Conclusions: In this study clear associations between lung function parameters, CC16 serum levels, and exposure to isocyanate-containing paint-sprays were demonstrated. This stresses the importance of regulation and control of such exposure. Also, assay of serum CC16 could be used to detect pulmonary toxic effects.

P4944

Is diurnal PEF variation sensitive and specific for the diagnosis of occupational asthma?

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Serial peak expiratory flow (PEF) measurements on days at and away from work are recommended as the first step in the objective confirmation of occupational asthma. This study aims to identify the best cut off for the difference between diurnal variation (DV) at work and DV at rest (days off work) that is both sensitive and specific for diagnosing occupational asthma.

Methods: Mean 2-hourly PEFs were plotted separately for work days and rest days for 109 workers with occupational asthma and 117 control asthmatics. DV at work and rest was calculated by the Oasys program from records containing ≥ 4 day shifts, ≥ 4 rest days and ≥ 6 readings per day. DV at work minus DV at rest was calculated by% predicted and% mean. Patients were randomly divided into 2 datasets (analysis and test sets). Receiver operator characteristic curve analysis determined a cut off point from Set 1 that best identified those with occupational asthma, which was then tested in Set 2.

Results: ROC curve analysis gave an area under the curve of 0.68 (set 1) and 0.69 (set 2) analysed as% mean and 0.70 (set 1 and set 2) analysed as% predicted. Table 1 shows the sensitivity and specificity of DV at different cut offs in set 2.

Table 1

| Cut off (%) | Set 2: DV at w (% pre | ork – DV at rest dicted) | Set 2: DV at work – DV at rest (% mean) | | |
|-------------|--------------------------|-----------------------------|--|-----------------|--|
| | Sensitivity (%) | Specificity (%) | Sensitivity (%) | Specificity (%) | |
| 7.6 | 20 | 100 | 28 | 95 | |
| 3.4 | 44 | 95 | 54 | 90 | |
| 1.4 | 63 | 83 | 65 | 71 | |
| 0.6 | 67 | 57 | 69 | 57 | |

Conclusion: A 1.4% higher DV at work compared to rest has the best combined sensitivity and specificity for the diagnosis of occupational asthma. Although the sensitivity and specificity are acceptable, they are somewhat lower than other scores calculated by the Oasys program.

P4945

Airway symptoms and lung function among male workers in the aftermath of an oil tank explosion

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Background: In 2007 storage tanks with a heterogeneous mixture of hydrocarbons, sulphur compounds and hydrochloric acid exploded and caught fire in a Norwegian industrial harbour. Pollution in air and soil produced an intense smell until clean up was terminated in 2009. Respiratory symptoms and lung function was assessed 1.5 years after the explosion among male fire-fighters, clean- up workers, and employees working in the industrial harbour at the time of the accident.

Methods: 163 exposed men (fire-fighters, clean- up workers, and local employee at the time of the accident) (response rate 86%) and 90 male controls (home address > 20 km from the accident place), aged 18-67 years participated with a questionnaire and spirometry (response rate 59%). Regression analyses of the relationship between outcomes and exposure were performed, adjusting for smoking, occupational exposure (job exposure matrix), Phadiatop[®] status, infection last month, and age (symptoms).

Results: Exposed men reported more daily cough; odds ratio 2.0 [95% confidence interval 1.1, 3.7]; dyspnoe walking up hill 2.6 [95% CI 1.3, 5.2]) and sore throat 2.3 [95% CI 1.1, 4.7]. FEV₁% predicted was 89.0 among exposed and 91.1 among controls, adjusted difference -1.9 [95% CI -6.6, 2.8].

Conclusion: Fire-fighters, clean up workers and local employee exposed to air pollution from an oil tank explosion had more airway symptoms than a control group 1.5 years after the accident, but not significantly different lung function.

P4946

Is FEV₁ better than PEF at detecting asthmatic changes in diurnal variation? Kerry-Anne Dennis¹, Vicky Moore¹, Cedd Burge¹, Sherwood Burge¹. ¹ Occupational Lung Disease Unit, Birmingham Heartlands Hospital, Birmingham, United Kingdom; ² Health and Human Sciences, NIOSH, Morgantown, United States

 FEV_1 is considered the best measure of airflow obstruction but PEF is more commonly used to diagnose occupational asthma as it's easier to achieve unsupervised. We investigated whether FEV_1 or PEF was more sensitive at identifying asthmatic variation when carried out serially at home and at work.

Methods: 94 asthmatics from the USA and 84 from the UK were studied. The USA group used the Easyone and the UK group the Piko-1, Vitalograph 2110, or Mini Wright Digital meter. Records contained \geq 4 readings per day for \geq 2 weeks with the occupational asthmatic records also having \geq 10 day shifts. Within session PEF and FEV₁ variation was assessed for the USA data (as the meter logged the 3 best attempts) using a coefficient of variation (COV). Diurnal variation% predicted (DV) was analysed for all data. Timepoint analysis (an Oasys program scoring system for occupational asthma) was performed on occupational asthmatics.

Results: The table below compares COV and DV for PEF and FEV_1 (SD=standard deviation).

| | PEF mean (SD) | FEV1 mean (SD) | P value | |
|---------------|---------------|----------------|---------|--|
| COV (USA) | 8.05 (11.68) | 5.67 (8.18) | 0.103 | |
| DV (USA) | 15.51 (9.05) | 12.43 (7.81) | 0.012 | |
| DV (UK) | 17.81 (7.51) | 16.26 (8.35) | 0.196 | |
| DV (USA & UK) | 16.61 (8.49) | 14.26 (8.27) | 0.007 | |

There was no significant difference in the number of day shift positive drops (from Timepoint analysis; a drop signifies a significant difference between work and rest) between FEV₁ and PEF (p=0.859) and no difference in the value required to produce a positive drop (p=0.297).

Conclusion: Diurnal variation is significantly greater for PEF than FEV_1 in asthmatics with similar within session variation using logging meters incorporating some quality control. PEF is as good as FEV_1 for diagnosing (occupational) asthma.

P4947

A quantitative European study to investigate the impact of asthma triggers on the lives of asthma patients

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Background: There is frequent reference to asthma triggers in the patient educa-

tion literature but little is known of patients' experiences with triggers and their impact on and relationship to asthma control.

Methods: We used patient diaries and an online study to quantify the impact of asthma triggers in patients from five European countries (France, Germany, Italy, Spain, UK). 1202 asthma patients completed the study; 177 also completed an online diary every other day for 3 weeks.

Results: People with asthma expressed concern about the long term impact of triggers – only 1% believed that triggers would not affect their asthma. All triggers were perceived as having an impact on asthma symptoms (at least 6.1 for all triggers on a 10 point scale). Perceived impact increased with the increasing number of triggers identified by each patient. 80% of respondents claimed to have modified their behaviour due to exposure to triggers at least once in the last 4 weeks. Patients reporting a high number of triggers experienced more day and night-time symptoms, a greater number of severe attacks, had a lower Asthma Control Test (ACT) score, were more likely to be hospitalised and to miss days at work/school. People with asthma experiencing 16 or more triggers missed on average 12.2 days compared with 2.9 days for those reporting 1–5 triggers. Of those patients with a high number of triggers, just 3% had never adapted behaviour to manage their asthma.

Conclusion: Asthma triggers can have an important impact on the lives of asthma patients. The impact increases with the number of triggers experienced and results in significant behavioural changes.

Funded by GSK

P4948

Occupational asthma in two healthcare workers due to an alcohol hand gel Alastair Robertson, Vicky Moore, Cedd Burge, Marcus Wong, Sherwood Burge. Occupational Lung Disease Clinic, Birmingham Chest Clinic, Birmingham, United Kingdom

Alcohol hand gels are increasingly being used by healthcare workers to reduce the risk of hospital-acquired infection. To date they have not been identified as a cause of occupational asthma in healthcare workers. We present two cases of occupational asthma in healthcare workers due to an alcohol hand gel containing a quaternary ammonium bittering agent (denatonium).

Two healthcare workers, a midwife (case 1) and a nurse (case 2), presented with asthma improving on days away from work. Both had developed symptoms in relationship to using the same alcohol hand rub. Both workers completed serial peak flow measures which showed occupational asthma (case 1 OASYS score 3.43, case 2 OASYS score 3.93). A series of bronchial challenge tests were performed to the hand gel and to a control agent. Case 1 had a dual asthmatic reaction and case 2 had a prolonged immediate reaction to the hand gel. Both workers improved on removal from exposure.

Hand gels containing denatonium are used extensively by healthcare workers. There needs to be an awareness of this agent as a potential cause of occupational asthma in this group of workers.

P4949

Peak expiratory flow monitoring – Optimal criterion for diagnosis of professional asthma?

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Introduction: Basic diagnostic criterion for diagnosis of professional asthma is variability of peak expiratory flow (PEF) values more than 20%. Some authors describe low correlation of PEF with FEV₁. We evaluate correlation of PEF with FEV₁ on obstruction model in the examination of bronchial hyperreactivity.

There were 846 patients examined with suspection to bronchial asthma by bronchoprovocation test. 245 tests were positive.

Results: In the group of the patients with positive result of bronchoprovocation test with histamine we evaluated 1980 PEF values and 1980 FEV₁ values. Analysis with Pearson's correlation coefficient (0,69340) showed positive correlation between PEF and FEV₁ values. We evaluated 480 PEF values and 480 FEV₁ values after highest possible concentration of methacholine, where we found positive correlation between parameters of PEF and FEV₁, which was significantly higher (Pearson's correlation coefficient 0,77404) compared to histamine. Pearson's correlation coefficient showed significantly higher correlation between PEF and FEV₁ for methacholine in all concentrations.

Conclusion: Serial PEF examinations are important in diagnosis of asthma which show higher sensitivity and specificity compared to other methods. The aim was to confirm validity of serial PEF examinations in model study of bronchial obstruction in positive bronchoconstriction tests where correlation of PEF with FEV₁ were analysed. Our results confirmed significantly higher correlation of values PEF and FEV₁ in tests with methacholine and therefore indirectly support the importance of serial PEF analysis in working and nonwork environment (self monitoring) in diagnosis of professional asthma.

P4950

Massive acute gases intoxication: Clinical presentation and outcomes María Sánchez-Carpintero Abad¹, Ana Belén Alcaide¹, Aranzazu Campo¹, Jorge Zagaceta¹, Felipe Lucena², Manuel Landecho², Félix Alegre², Luis Seijo¹, Juan Pablo de Torres¹, Javier Zulueta¹. ¹*Pulmonology, Clínica Universidad de Navarra, Pamplona, Navarra, Spain;* ²*Internal Medicine, Clínica Universidad de Navarra, Pamplona, Navarra, Spain*

On Oct 30th, 2008, a car bomb exploded on the University of Navarre (UN) campus, causing serious damages and several fires. On Nov 5th, during the repairing works, gases retained inside the false ceiling were released, causing intoxication by inhalation in about 300 people.

A longitudinal observational study was performed to assess the presentation and outcomes of 230 patients assisted at the Emergency Room (ER) of the UN Hospital. Employees and students were affected: 104 men and 126 women, with mean age 31 ± 12 y, 23% smokers and 13% with previous respiratory disease. 65% of patients got to the ER on Nov 5th. At the first 6 h commonest complaints were cough (80%), dyspnea (51%), sore throat (38%), and chest tightness (32%). People coming after 6 h had more frequently fever (31%), headache (30%), nausea (25%), asthenia (18%), dizziness (16%), and vomiting (7%). Chest xray (n=218) showed infiltrates in 17.5% and chest CT (n=19) interstitial/alveolar infiltrates in 68%. Blood analysis (n=101) revealed leukocytosis in 65%, and high CRP in 85%. 80 patients were hospitalised (34.8%) with a median length of stay of 1 day (max 5 d). At the ER, patients received bronchodilators (62%) and steroids (54%). Upon discharge, bronchodilators (82%), steroids (30%) and N-acetyl cysteine (82%) were prescribed.

One month after discharge, 206 patients were re-evaluated: 41 (20%) had symptoms, consisting in dyspnea (12%) and cough (11%). Chest xray (n=162) was normal in all the cases. Chest CT (n=36) showed alveolar-interstitial infiltrates in 5 patients. Spirometry (n=193) was normal in all the cases. We describe the clinical features of an acute intoxication by unknown gases, with a biphasic presentation of symptoms and short clinical resolution.