

1903

Occupational exposure to dusts, gases, and fumes and incidence of COPD in SAPALDIA

Amar Mehta^{1,2}, David Miedinger^{3,4}, Dirk Keidel^{1,2}, Robert Bettschart⁵, Andreas Bircher⁶, Pierre-Olivier Bridevaux⁷, Ivan Curjuric^{1,2}, Hans Kromhout⁸, Nicole Probst-Hensch^{1,2}, Thomas Rothe⁹, Erich W. Russi¹⁰, Tamara Schikowski^{1,2}, Christian Schindler^{1,2}, Joel Schwartz¹¹, Roel Vermeulen⁸, Thierry Rochat⁷, Nino Kuenzli^{1,2}. ¹Chronic Disease Epidemiology Unit, Swiss TPH, Basel, Switzerland; ²Department for Public Health, University of Basel, Basel, Switzerland; ³Occupational Medicine, SUVA, Luzern, Switzerland; ⁴Department of Internal Medicine, University Hospital, Basel, Switzerland; ⁵Lungen Zentrum, Hirslanden Klinik, Aarau, Switzerland; ⁶Department of Dermatology, University Hospital, Basel, Switzerland; ⁷Division of Pulmonary Medicine, University Hospitals of Geneva, Geneva, Switzerland; ⁸Environmental Epidemiology, Institute for Risk Assessment Sciences, Utrecht, Netherlands; ⁹Department of Internal Medicine and Pneumology, Zuercher Hoehenklinik Davos, Davos Clavadel, Switzerland; ¹⁰Department of Pneumology, University Hospital Zurich, Zurich, Switzerland; ¹¹Department of Environmental Health, Harvard School of Public Health, Boston, United States

Objective: We evaluated if occupational exposures were associated with increased incidence of chronic obstructive pulmonary disease (COPD) in the Swiss Cohort Study on Air Pollution and Lung and Heart Diseases in Adults (SAPALDIA).

Methods: Pre-bronchodilator ratio of forced expiratory volume in one second over forced vital capacity (FEV₁/FVC) was measured in 4,551 non-asthmatic participants (ages 18 to 64) in SAPALDIA at baseline in 1991 and at follow-up in 2001-2003. COPD was defined as FEV₁/FVC < lower limit of normal (LLN, predictions according to the Quanjer spirometric reference equation). Using a job-exposure matrix, historical exposures (ever, never as reference) to mineral dusts, biological dusts, and gases or fumes were determined from self-reported occupations at baseline and during follow-up. Incident rate ratios (IRRs) of COPD were estimated for each exposure after adjustment for potential confounders. Gender, chronic bronchitis at baseline, and smoking status were evaluated for effect modification.

Results: Positive associations were observed between COPD and all occupational exposures but were not statistically significant (p>0.05). Relative to unexposed participants without chronic bronchitis, those with chronic bronchitis who were also exposed to either mineral dusts (IRR: 1.47, 95%CI: 1.00-2.15), biological dusts (IRR: 1.61, 95%CI: 1.12-2.31), or gases/fumes (IRR: 1.53, 95%CI: 1.10-2.12) had increased incidence of COPD. No considerable differences in IRRs were observed across sex and smoking status.

Conclusion: In Swiss working adults with pre-existing chronic bronchitis, occupational exposures to mineral and biological dusts, and gases/fumes increased the risk of incident COPD.

1904

Types and frequency of triggers experienced by asthma patients:

A quantitative study

Peter Dale¹, Emma Elder², Gillian Newbold³, Nicola Vyas⁴, Sian O'Regan⁵, David Price⁶, Kenneth R. Chapman⁷. ¹Global Health Outcomes, GlaxoSmithKline, Stockley Park, Uxbridge, United Kingdom; ²Global Medicines Futures, R&D, GlaxoSmithKline, Stockley Park, Uxbridge, United Kingdom; ³Research Director, HRW Healthcare, Wallington, Oxford, Oxfordshire, United Kingdom; ⁴Research Director, HRW Healthcare, Wallington, Oxford, United Kingdom; ⁵Senior Research Manager, HRW Healthcare, Wallington, Oxford, Oxfordshire, United Kingdom; ⁶Academic Primary Care, University of Aberdeen, Aberdeen, United Kingdom; ⁷University Health Network, University of Toronto, Toronto, ON, Canada

Background: Detailed information about the frequency and type of asthma trigger exposures recognised by asthma patients is not readily available.

Methods: We used patient diaries and an online study to quantify triggers identified by patients with asthma in France, Germany, Italy, Spain and the UK. The study was completed by 1202 adults with asthma on maintenance therapy; 177 also completed an online diary every other day for 3 weeks.

Results: The majority of patients in the study were uncontrolled (76% had an Asthma Control Test score of ≤19). A wide variation in the number of triggers ever encountered by asthma patients was identified (1-36, mean 13); over one-third described having experiencing at least 16 triggers. Key triggers and the proportion of sufferers reporting ever experiencing them were: dust/dusting (72%), colds/influenza/sinusitis (69%), smoking (60%), smoke (59%), air pollution (58%), exercise (54%), strong odours (54%), weather changes (51%), mould (51%) and animals (50%). Dust/dusting was the most common and frequent trigger, whereas colds/influenza/sinusitis although common was experienced less frequently. Whilst many patients experienced a range of triggers, the combination of only 3 (dust/dusting, smoking and exercise) accounted for 79% of triggers experienced in the last 2-3 months. Diary entries showed 67% of asthma patients experienced at least one trigger on every day of diary completion. Only (7%) claimed to experience triggers infrequently (every 4-6 months or less often).

Conclusion: A wide range and high frequency of asthma triggers amongst asthma patients was identified. The most common were dust/dusting, colds/influenza/sinusitis, smoking and smoke.

Funded by GSK

1905

Role of occupational exposure on the outcome of sinus surgery: An observational study

Valerie Hox^{1,2,3}, Stefan Delrue¹, Hans Scheers², Els Adams⁴, Stephan Keirsbilck⁴, Mark Jorissen¹, Peter Hoet², Jeroen Vanoirbeek², Benoit Nemery², Peter Hellings^{1,3}. ¹Dept. of Otorhinolaryngology, Head and Neck Surgery, University Hospitals Leuven, Leuven, Belgium; ²Research Unit of Lungtoxicology, KULeuven, Leuven, Belgium; ³Lab. of Experimental Immunology, KULeuven, Leuven, Belgium; ⁴Clinic for Occupational and Environmental Medicine, Dept. of Pneumology, University Hospitals Leuven, Leuven, Belgium

Background: Functional endoscopic sinus surgery (FESS) is performed in patients with recurrent acute or chronic rhinosinusitis, insufficiently controlled by medical treatment. Several endogenous and exogenous factors may be responsible for failure of FESS with persisting symptoms. The association between occupational exposure and failure of FESS is not known.

Aim: The aim of this study was to evaluate the exposure to occupational agents in patients undergoing FESS and to relate the exposure to the number of FESS procedures needed to control symptoms.

Methods: Questionnaires were sent to 890 patients who had undergone one or more FESS procedures and to 182 control subjects. Besides general medical health questions, the questionnaire asked about professional and recreational activities and exposure levels to high and low molecular weight (HMW and LMW) occupational agents. Exposure was assessed as a binary variable. A chi-square test was used to investigate the relationship between number of FESS and exposure state. Odds ratios were calculated by a Proportional Odds Model.

Results: Occupational exposure was reported in 11.6% of the controls (n=69) and in 24.6% of FESS patients (n=467). There is a significant relationship between increasing FESS and occupational exposure (chi=12.74, p<0.001). Exposed patients had a higher risk for needing at least 1 (OR=2.45, p<0.05) or at least 2 (OR=1.63, p<0.05) FESS procedures compared to unexposed ones. Mainly LMW agents were reported as occupational substances.

Conclusions: Exposure to occupational agents is associated with higher risk of failure after primary FESS, and hence underlines the importance of occupational exposure in the postoperative healing.

1906

Mothers work exposure during pregnancy and asthma in their children, a prospective cohort-study

Berit Hvass Christensen¹, Ann Dyreborg Larsen^{2,4}, Lars Rauff Skadhauge³, Ane Marie Thulstrup⁴, Karin Sørig Hougaard², Kirsten Skamstrup Hansen⁵, Morten Frydenberg⁶, Vivi Schlünssen¹. ¹Dept. of Environmental and Occupational Medicine, School of Public Health, Aarhus University, Aarhus; ²National Research Center for the Working Environment, Copenhagen; ³Dept. of Occupational Medicine, Hospital of South West Jutland, Esbjerg; ⁴Dept. of Occupational Medicine, Aarhus University Hospital, Aarhus; ⁵Dept. of Paediatrics JMC, University Hospital Gentofte, Gentofte; ⁶Dept. of Biostatistics, School of Public Health, Aarhus University, Aarhus, Denmark

Objectives: Prenatal exposures may add to the worldwide increase in asthma prevalence. We estimated the association between maternal work and the asthma prevalence among 7 year offspring.

Methods: Analysis included 45,658 children from the Danish National Birth Cohort and their mothers. Job title (DISCO codes) was classified by exposure agents: High molecular weight (HMW), low molecular weight/irritant (LMW), mixed exposures, farmers, unclassifiable exposures, students and reference (office workers). Children's asthma was defined as ever asthma and/or wheeze in the last 12 months. Atopy was defined as atopic dermatitis ever.

Results: The overall asthma prevalence was 16.1%. The highest asthma prevalence was among children, whose mothers were exposed to LMW/irritant agents during pregnancy (18.6%). Adj. logistic regression analysis showed an association between mother's occupational exposure to LMW/irritants and asthma in the child (OR 1.11 (95% CI 1.01-1.23)). The same tendency was seen for HMW (OR 1.12 (0.85-1.47)). Adjusted models included: Mothers age, BMI, atopy, smoking, use of medication, pets, SGA and gender. Stratifying for atopic status in the children did not change the results: OR 1.21 (0.75-1.96), OR 1.08 (0.77-1.50) for atopic and non-atopic children respectively in the HMW group, and OR 1.13 (0.94-1.35) and 1.13 (1.00-1.27) in the LMW/irritants group. No significant associations to asthma were seen in the other exposure groups.

Conclusion: The results indicate an association between maternal occupational work exposures and the risk of asthma in the child at age 7 years.

1907

Risk factors for decreased work ability among middle-aged men having asthma from youth

Irmeli Lindström¹, Antti Karjalainen², Ritva Luukkainen³, Paula Pallasaho¹, Hille Suojalehto¹, Antti Lauerman⁴. ¹Control of Hypersensitivity Team, ²Team for Monitoring Working Conditions and Occupational Health, ³Team for Statistical Services, Finnish Institute of Occupational Health, Helsinki, Finland; ⁴Dept. of Dermatology and Venereology, University of Tampere, Tampere, Finland

Background: Occupational exposure to irritants and dusts has shown to contribute to respiratory work disability (Toren et al Thorax 2009;64(4):339-44).