Session: 8. Hazard identification I

OCCUPATION AND MULTIPLE SCLEROSIS: AN ITALIAN CASE-CONTROL STUDY

[1]O E Oddone, [2]C P Crosignani, [2]S A Scaburri, [2]B E Bai, [2]M C Modonesi, [1]I M Imbriani, [3]B R Bergamaschi. [1]University of Pavia, Pavia, Italy; [2]Italian National Cancer Institute, Milan, Italy; [3]Neurologic IRCCS C. Mondino, Pavia, Italy

Objectives The aim of the study is to explore possible relationships between occupational exposures and Multiple Sclerosis (MS), whose etiology is not well defined yet. To date, only few literature data are available on this subject. A more detailed study on this topic will be proposed as research theme to the Italian Ministry of Health.

Methods We carried out a case-control study, where cases were MS patients included in the MS Register of the Province of Pavia, Northern Italy, and controls, 1:4 matched by sex and age (5 years classes), were randomly selected from the National Health Service population files.

The occupational histories were obtained from Italian Institute for Social Security (INPS) archives by automatic linkage using Italian Occupational Cancer Monitoring (OCCAM) method that estimates the risk of specific occupational cancers, by geographic area and industrial sector.

OR adjusted for sex and age and corresponding 90% confidence intervals were used to estimate the association between exposure and disease.

Results We included in the study 183 MS patients (106 (57,9%) female, 77 (42,1%) male) and 769 controls. Our results suggest an increased risk for men in mechanical manufacturing industry (OR 2.37, 90% CI 1.23–4.58, p = 0.031, 22 cases) and agriculture (OR 4.05, 90% CI 1.20–13.69, p = 0.059, 4 cases). Women show an increased risk in mechanical manufacturing industry (OR 4.31, 90% CI 1.71–10.86, p = 0.009, 8 cases), agriculture (OR 13.18, 90% CI 2.91–59.61, p = 0.005, 3 cases) and leather/shoe industry (OR 7.75, 90% CI 2.49–24.07, p = 0.003, 6 cases).

Conclusions Our preliminary findings indicate that solvent exposures could be related to the risk of MS, as both shoe/leather workers and mechanical manufacturing industry workers are exposed to organic solvents. Interestingly, a major risk of MS was also found among workers engaged in agriculture, suggesting a role of pesticides, whose neurotoxic effect is well known.

THE MORTALITY EXPERIENCE OF UK WORKERS OCCUPATIONALLY EXPOSED TO LEAD

[1]M McElvenny, [1]Miller, [1]Sleeuwenhoek, [1]Van Tongeren, [2]Shepherd, [1]Cherrie. [1]Institute of Occupational Medicine, Edinburgh, United Kingdom; [2]Health & Safety Executive, Bootle, United Kingdom

Objectives Although the worldwide occurrence of lead in the environment has decreased greatly due to the elimination of most leaded petroleum, occupational exposures continue primarily via the lead battery industry and manufacture of lead pigments in paints. Around 7,000 workers are currently under surveillance for lead exposure in Great Britain. The most recent evaluation by the International Agency for Research on Cancer working group described the evidence in humans for the carcinogenicity of inorganic lead compounds as "limited" and for organic lead compounds as "inadequate". The evidence for carcinogenicity in workers exposed to inorganic lead is most consistent for stomach cancer, with lung, kidney and brain cancer showing elevated mortality in some but not all studies. Additional studies to investigate the carcinogenicity of lead are therefore of international importance.

Methods We will present the mortality analysis of some 10,000 workers who were included in a lead worker cohort established by the UK Health and Safety Executive (HSE) in the late 1970s/early 1980s, and which has never previously been analysed. Blood lead summaries are available for the workers, from around the time of cohort recruitment. Exposure will be characterised by these measurements and by exposure assessment groupings based on process codes and other data.

Results Individual mean blood lead levels ranged from 2 to 492 μg/dl. As well as estimating relative risks by calculating standardised mortality ratios for the range of causes of a priori interest, we will examine whether risks increase with increasing level of lead exposure.

Conclusions Many of the cohort studies carried out to date have been small and have suffered from methodological problems, but this study has the power to add substantially to the epidemiological evidence on this important issue.

VALIDATION OF A PRACTICAL MEASUREMENT TOOL FOR INJURY PREVENTION AT WORKPLACES: THE PREVENTION INDEX (PI)

Y S Sun. IFA-DGUV, Sankt Augustin, Germany

Objectives Prevention Index (PI) is a practical measurement tool which is currently used in Germany to monitor prevention activities at workplaces. The 12-item scoring system has 3 subscales rating technical, organisational and personnel-related internal safety conditions of a company. Each item has a rating value from 1 - 9, with higher values indicating higher level of safety conditions. The reliability and validity of this instrument were evaluated in a survey in 128 companies in the German metal industry during the time between December 2011 and May 2012.

Methods The Inter-rater-reliability of this instrument was examined by 2 trained safety engineers of the German Social Accident Insurance. One engineer is responsible for safety consulting of the rated company while the other one is responsible for other firms and less informed about the conditions in the rated company. The agreement of double ratings was quantified by interclass correlation coefficient (ICC) and absolute agreement of the rating values.

Construct validity of the score was examined by principle component analysis (factor analysis) while content validity was evaluated by quantifying the association between PI-values and 5-years injury rates of the corresponding companies. Poisson regression analysis was performed to assess the association between PI-values and 5-years injury rates adjusted for company size and related industrial sectors.

Results Our analysis indicates a moderate to good inter-rater-reliability (ICC = 0.46 - 0.75) of PI-values with an absolute agreement between 72% and 81%. Factor analysis identified three component subscales which meet exactly the structural measure theory behind the score. The Poisson regression analysis demonstrates that higher technical and personnel safety conditions (PI-value ≥7) are associated with decreased injury rates, while less association was found between organisational conditions and injury rates.