

P.2.20 EPIDEMIC OF BLADDER CANCER IN JAPANESE MALE WORKERS EXPOSED MAINLY TO ORTHO-TOLUIDINE

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Background In 2012, ortho-toluidine (OT) was listed as a Group 1 carcinogen by the International Agency for Research on Cancer, based on epidemiologic observations in workers co-exposed to OT and aromatic amines. Between 2014 and 2017, 10 cases of bladder cancer (BC) were identified in Japanese males working at two plants of the same company manufacturing intermediates of organic dyes and pigments.

Objective To describe the features of the BC epidemic at the plants.

Methods We conducted a cross-sectional study of 76 OT and/or aromatic amine-exposed workers including the 10 BC cases at the plants in 2017. The co-exposed aromatic amines were para-toluidine, ortho-anisidine, aniline, 2,4-dimethylaniline, and/or ortho-chloroaniline. Details of each worker's job-site histories were obtained from the company records. Past medical symptoms and histories were checked in physician interviews. The subjects were divided into the BC group (n=10) and the non-BC group (n=66) and compared. No quantitative exposure data were available. The surrogate level of exposure to each aromatic amine was calculated as the summed job-weight-month in each process in each job-year.

Results The mean ages of the non-BC and BC groups were 50 and 56 years and the durations of employment were 23 and 20 years, respectively. The smoking rate in both groups was 80%. Significantly higher rates of gross hematuria (70%) and cystitis (70%) were identified in the BC group's past medical histories. In the BC group, the surrogate levels of exposure to OT were higher than those of exposures to other aromatic amines. The surrogate levels were high in the job processes of filtering, rinsing, drying and packing products.

Conclusions The subjects with BC were associated with a high surrogate level of exposure to OT. OT-exposed workers with past histories of gross hematuria and cystitis need a careful follow-up.

P.2.21 OCCUPATIONAL PESTICIDE EXPOSURE ASSOCIATED WITH A REDUCTION OF RESPIRATORY PARAMETERS IN ETHIOPIAN FARM WORKERS

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There are reports of unsafe occupational handling and use of pesticide in recently intensifying commercial farming systems in Ethiopia. Very few studies reported the effect of occupational pesticide exposure on smaller airway respiratory parameters of farm workers from low and middle-income counties. A cross-sectional spirometry survey was carried out on randomly selected 387 subjects with an objective of investigating whether occupational exposure to pesticides is

associated with a reduction in values of smaller airway respiratory parameters. 206 occupationally exposed (142 male pesticide applicators and 64 female re-entry workers) selected from commercial farms and 180 occupationally un-exposed male and female individuals involved in the survey. After controlling for potential confounders, pesticide exposure in male study subjects was associated with reduced respiratory parameters of Forced Expired Flow at 25% of vital capacity (FEF25%) (l/s) [$\beta = -0.69$ (95% CI -1.11 – -0.27)] and Forced Expired Flow at 75% of vital capacity (FEF75%) (l/s) [$\beta = -0.49$ (95% CI -0.78 – -0.20)]. Also a reduction in respiratory parameters of Forced Expired Flow at 50% of vital capacity (FEF50%) [$\beta = -0.52$ (95% CI -0.95 – -0.09)] was seen among exposed female subjects. The study indicated occupational exposure to pesticides is associated with a reduction of respiratory parameters of smaller airways in both male and female farm workers. Further longitudinal studies on respiratory parameters are warranted in Ethiopian farm workers.

P.2.23 ADVERSE CHILDHOOD EXPERIENCES (ACE) IN EARLY LIFE AND THE RISK OF CHILDHOOD ASTHMA: A DANISH NATIONWIDE COHORT STUDY

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Objective A link between adverse childhood experience (ACE) in early life and subsequent asthma is suggested, but existing studies are often based on parent-reported data for both exposure and outcome. We aimed to examine the association of ACE in early life (bereavement, parental chronic somatic illness, or psychiatric illness/suicide attempt) with childhood asthma, using registry information of exposures and outcome.

Methods We used registry data of 466 556 children born in Denmark, 1997–2004. ACE and asthma diagnosis or medication was obtained from the Danish National Patient or Prescription Registry. We used multinomial logistic regression to examine the association between ACE in early life and phenotypes of childhood asthma, which we empirically estimated using group-based trajectory modeling. We adjusted for year of birth, maternal age, smoking, place of living, parity, parental education and atopic status; we imputed missing data using multiple imputations with chained equations.

Results We identified four asthma trajectories: early onset (before age 3) transient asthma, late onset (3 years or later) asthma, early onset persistent asthma, and never/infrequent asthma. Girls exposed to at least one ACE before the age of 2 years, compared to the non-exposed, had higher odds of being assigned to the early-onset transient asthma group (odds ratio (OR) 1.13 [95% Confidence Interval (CI): 1.04–1.24]),

the late-onset asthma group (OR 1.28 [95% CI: 1.11–1.48]) or the early-onset persistent asthma group (OR 1.27 [95% CI: 1.08–1.48]) compared to the never/infrequent asthma group. Similar results were seen for boys, OR 1.16 [95% CI: 1.08–1.25], OR 1.11 [95% CI: 0.98–1.25], and OR 1.34 [95% CI: 1.20–1.51] respectively. The odds remained largely the same in imputed and unadjusted models.

Conclusion In a Danish nationwide population four asthma trajectories were identified, in agreement with clinical studies. ACE in early life was associated with all asthma phenotypes for both boys and girls.

P.2.24 THE EFFECT OF THE EXPOSURE TO WORK-RELATED POTENTIALLY TRAUMATIC EVENTS ON OCCUPATIONAL FUNCTIONING (WORK LIMITATIONS) AMONG FIREFIGHTERS: A CROSS-SECTIONAL STUDY

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Objective The purpose of this study was to investigate whether firefighters' exposure to work-related trauma events is related to work limitations that form part of social health.

Methods In 2016, 618 firefighters from four cities in Gyeongsangnam-do participated in this study. They were analyzed using a health-related work limitations questionnaire, experience and type of work-related trauma, Korea Depression Scale, and the World Health Organization quality of life assessment instrument. The health-related work limitations consisted of three scales: 'physical work demands,' 'psychosocial work demands,' and 'environmental work demands.' The analysis was done by hierarchical logistic regression analysis.

Results Of the subjects, 70.2% remembered traumatic experiences they had experienced during their job. The total work limitations were 21.5%; the limitation of physical work demands was 16.8%, that of psychosocial work demands was 15.5%, and that of environmental work demands was 13.8%. Logistic regression analysis of the final model 3 showed that, if firefighters have experience of their own risks and personal injury, physical (95% CI=1.169–9.405), psychosocial (95% CI=1.080–8.609), and environmental (95% CI=1.659–14.402), the total (95% CI=1.439–9.678) work limitation was significantly increased. When there was a memory of a terrible body or injury, the total work limitations increased significantly (95% CI=1.092–3.905).

Conclusions When firefighters are exposed to trauma events during their jobs, these have a negative impact on their work. In order to protect and improve the occupational functions of firefighters, effective prevention and management of work-related trauma incidents should be considered.

P.2.27 MANGANESE EXPOSURE IN STEEL AND ALLIED FACTORY: CAUSE OF SECONDARY PARKINSONISM

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Case presentation A 43 year old male presented with 6 months history of gradual onset and progressive bradykinesia, tremors

of upper limbs and walking difficulty in the form of imbalance and short shuffling gait, slurring of speech with hypophonia. Neurological examination revealed slow broken saccades, rigidity with cogwheeling, bradykinesia and short shuffling, festinant gait. He had action and postural tremors of upper limbs. Pull test was positive. Thus a diagnosis of young onset Parkinsonism was considered. But, occupational history revealed that he worked in blast furnace of a steel and allied factory for past 14 years where manganese ore has been using for the strengthening of the stainless steel. He was evaluated with MRI Brain which showed symmetrical hyperintensities involving basal ganglia and subcortical white matter in T2 weighted images. T1 weighted images showed evidence of basal ganglia hyperintensities probably related to mineral deposition. Renal function, thyroid function tests including anti thyroid antibodies, KF Ring, S. Ceruloplasmin, Liver function tests, CSF, ultrasound abdomen- all were normal. Two consecutive serum manganese level tests in six months interval showed initial rise (two times) with the history of exposure and followed by normal level without the exposure. Patient was started on symptomatic medications like levodopa and trihexiphenidyl but after 8 months of medication (March- October, 2018) he had not showed any significant improvement. The written consent was taken from patient for this study.

Conclusion In view of strong occupational history of manganese exposure, the clinical features and non responsiveness of treatment with levodopa, a possibility of manganese toxicity was strongly considered for this rare case of secondary parkinsonism. Also non adherence with the legal mandate of periodical medical examination of workers exposed to toxic metals with long term consequence is very important factor to be corrected in the developing country like India.

P.2.29 DOES A CHANGE IN WORKING CONDITIONS INFLUENCE LABOUR FORCE PARTICIPATION AMONG WORKERS WITH A CHRONIC DISEASE?

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Objective This study investigated the association between changing working conditions and exit from paid employment during the following year among older workers with a chronic disease in the Netherlands.

Method Four annual waves from the Study on Transitions in Employment, Ability and Motivation (STREAM; 2010–2013) provided information on working conditions and demographics for 2838 older workers with a chronic disease, aged 45–64 years. The analytical sample consisted of 5491 responses from 2838 workers. Five types of working conditions were investigated; physical workload, psychological job demands, job autonomy, emotional job demands and social support. Discrete-time survival models were used to estimate the associations of change in working conditions in a particular year on the probability of exiting paid work for persons with a chronic disease in the following year.

Results Of the 2838 workers, a small majority was male (52%), most workers had an intermediate level of education (39.7%), and the mean age was 53.7 years (SD 5.50). Results