

Viable bacteria and *Staphylococcus aureus* in air have been linked to human diseases and considered as the threats in occupational health. Rapidly and accurately monitoring these bioaerosols by a reliable method is essential in characterising human exposure and health risk. This study first evaluated quantitative PCR (qPCR) with propidium monoazide (PMA) of 1.5–46 µg/mL to exclusively quantify viable *S. aureus* of 3–8 log CFU/mL. Results showed qPCR with 1.5 and 2.3 µg/mL PMA performed optimal with a great linearity over six orders of magnitude ($R^2 \geq 0.9$). Viable bacteria and *S. aureus* were further determined with PMA-qPCR for air samples collected from places including cafeteria, kitchen, food waste recycling site and public library. Viable bacteria averaged 1.9×10^4 cells/m³ ranging from 4.7×10^2 to 1.2×10^5 cells/m³. *S. aureus* were detected in 42.3% of samples for which cell levels varied between 4.2×10^1 and 2.8×10^4 cells/m³. Concentrations of *S. aureus* and viable bacteria were positively correlated ($r=0.61$, $p<0.005$) and the percentages of *S. aureus* among viable bacteria averaged 22.7% with 11.6%–43.6% in various locations. With the PMA-qPCR technique, this study demonstrates that the abundance of viable *S. aureus* and total viable bacterial aerosols in various types of occupational fields can be simultaneously quantified. This molecular assay should be taken into account as it will assist occupational hygienists and epidemiologists obtain reliable exposure data in assessing exposure and health risk, managing occupational health and protecting people from biohazards.

Poster Presentation

Injuries

0169

THE EFFECT OF PSYCHOLOGICAL SYMPTOM WITHIN 1 YEAR AFTER OCCUPATIONAL INJURY ON LONG-TERM SELF-PERCEIVED HEALTH STATUS

¹Weishan Chin*, ²Judith Shu-Chu Shiao, ^{3,4}Yue-Liang Leon Guo, ⁵Shih-Cheng Liao, ⁶Kuan-Han Lin, ¹Chih-Chieh Chen. ¹Institute of Occupational Medicine and Industrial Hygiene, National Taiwan University School of Public Health, Taipei, Taiwan; ²Department of Nursing, College of Medicine, National Taiwan University (NTU) and NTU Hospital, Taipei, Taiwan; ³National Institute of Environmental Health Science, National Health Research Institutes, Zhunan, Taiwan; ⁴Department of Environmental and Occupational Medicine, National Taiwan University (NTU) and NTU Hospital, Taipei, Taiwan; ⁵Department of Psychiatry, College of Medicine, National Taiwan University (NTU) and NTU Hospital, Taipei, Taiwan; ⁶The Graduate Institute of Medical Education and Bioethics, National Taiwan University College of Medicine, Taipei, Taiwan

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Background Certain proportion of workers developed psychological symptoms within 1 year after occupational injury. Mental health is associated with overall health status. However, few studies examined the effect of psychological symptoms after occupational injury on long-term health status. This study aims to determine the impact of psychological symptoms within 1 year after occupational injury on health status six years later.

Method 2308 workers who sustained an occupational injury in 2009 and responded to a survey at 3 or 12 months after their injury were followed up in 2015. At 6 years after the injury, they were invited to participate in a questionnaire survey, which included return-to-work condition and self-rated health status. Population attributable risks (PARs) were

estimated to assess the effect of psychological symptom on self-rated poor health.

Results A total of 570 workers (33.5%) completed the questionnaire. Injured workers who had adverse life event within follow-up period, had family member requiring care, did not return-to-work within 1 year after the injury, had severe psychological symptom within 1 year after the injury, and whose physical appearance was severely affected had a higher risk of self-rated poor health. Adverse life event within follow-up period was most important factor, accounting for 34.3% of self-perceived poor health, followed by severe psychological symptom within 1 year after the injury (15.0%), and severely affected physical appearance (11.7%).

Conclusion Injury severity and severe psychological symptoms after occupational injury were risk factors for poor health status. Interventions addressing these factors are warranted to reduce psychological ailments after occupational injury.

Oral Presentation

Occupational Medicine (SCOM/Modernet)

0171

SEDENTARY WORK AND RISK OF VENOUS THROMBOEMBOLISM

¹Camilla Ditlev Lindhardt Johannesen*, ¹Esben Meulengracht Flachs, ¹Niels E Ebbelhøj, ²Jacob Louis Marott, ²Gorm Boje Jensen, Børge G⁴Nordestgaard B, ²Peter Schnohr, ^{1,4}Jens Peter E Bonde. ¹Department of Occupational and Environmental Medicine, Bispebjerg Hospital, Copenhagen, Denmark; ²Copenhagen City Heart Study, Frederiksberg Hospital, Copenhagen, Denmark; ³Department of Clinical Biochemistry and the Copenhagen General Population Study, Herlev and Gentofte Hospital, Copenhagen, Denmark; ⁴Faculty of Health and Medical Sciences, University of Copenhagen, Copenhagen, Denmark

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Objective Prolonged seated immobility during long-distance flights is related to an increased risk of venous thromboembolism (VTE) but little is known on the risk, if any, related to sedentary work. The objective of this paper was to examine the risk of VTE according to sitting posture at work.

Methods A total of 88 077 participants from the Copenhagen City Heart Study and the Copenhagen General Population Study were included in the study cohort, all without previous thromboembolic events and aged below 65 years. Activity level at work was obtained at baseline through self-administered questionnaires. VTEs were identified through national patient registries with complete coverage. Survival analyses were performed to determine the risk of VTE according to activity level at work with adjustment for a range of known determinants including lifestyle and coagulation factors.

Results During the follow-up period of 5 79 116 person years (mean follow-up, 7 years) 805 participants experienced their first venous thromboembolic event. 42% of the population categorised themselves as sedentary workers. Multivariable adjusted analyses showed no difference in risk of VTE between sedentary and walking work [hazard ratio (HR) 0.95 (95% confidence interval (CI), 0.80–1.14)]. Likewise, when considering activity level at work on a continuous scale, defined by Metabolic equivalents (METs), multivariable adjusted HR for 1 MET increase was 1.04 (95% CI 0.96–1.13).

Conclusion Sedentary work defined by a wide-range group of occupations, is not a risk factor for VTE. Whether certain occupations with particularly high exposure to immobilised sitting positions are associated with thromboembolic events is not addressed.

Oral Presentation

Other

0172

"TO BE PRESENTED IN AN ACCEPTED MINI-SYMPOSIUM" ASSOCIATION BETWEEN OCCUPATIONAL LIFTING AND RHEGMATOGENOUS RETINAL DETACHMENT IN A NATIONAL COHORT OF SWEDISH MEN

¹Andrea Farioli*, ²David Kriebel, ¹Stefano Mattioli, ^{3,4}Katarina Kjellberg, ^{3,5}Tomas Hemmingsson. ¹Department of Medical and Surgical Sciences (DIMEC), Bologna, Italy; ²Department of Public Health, University of Massachusetts Lowell, Lowell, USA; ³Institute of Environmental Medicine, Karolinska Institutet, Stockholm, Sweden; ⁴Centre for Occupational and Environmental Medicine, Stockholm County Council, Stockholm, Sweden; ⁵Centre for Social Research on Alcohol and Drugs, Stockholm University, Stockholm, Sweden

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Objectives As the evidence on the possible association between lifting and retinal detachment (RD) is limited and controversial, we analysed a large population-based cohort to investigate the risk of RD arising from occupational lifting.

Methods We assessed the incidence of surgically treated RD occurring between 1991 and 2009 in a national cohort of 49,321 Swedish men conscripted for military service in 1969–1970. We applied a job exposure matrix to occupational data from the 1990 census to estimate the frequency of heavy lifting (>20–25 kg) at the workplace. We fitted Poisson regression models including lifting, myopia, income, and education level to estimate incidence rate ratios (IRR) and 95% confidence intervals of RRD.

Results We analysed 217 RD cases that occurred in 7 80 166 person-years. Estimates adjusted by myopia and socioeconomic factors support the hypothesis that the risk of RD increases among subjects lifting heavy weights at least twice per week, compared to workers not performing lifting (IRR 2.38, 95% CI 1.15–4.93, p for trend across lifting categories 0.014). Myopia was a strong negative confounder of the lifting - RD association. While RD was rare in the entire cohort (0.28 cases per 1000 person-years), the rate peaked at 7.9 per 1000 person-years among workers frequently lifting heavy loads, aged between 50 and 59 years, and affected by severe myopia.

Conclusions Our study provides evidence that performing heavy occupational lifting increases the risk of RD, while myopia and socioeconomic factors may be important negative confounders of this association.

Poster Presentation

Cancer

0173

RADIATION-INDUCED PERITONEAL MESOTHELIOMA AFTER EXTERNAL BEAM RADIOTHERAPY FOR PROSTATE ADENOCARCINOMA: A LONGITUDINAL ANALYSIS OF SEER REGISTRIES

¹Andrea Farioli*, ²Francesca Zanardi, ¹Emanuele Rizzello, ³Giovanna Spatari, ⁴Alessio Giuseppe Morganti, ¹Francesco Saverio Violante. ¹Department of Medical and Surgical Sciences (DIMEC), Bologna University, Bologna, Italy; ²Department of Public Health Sciences and Paediatrics, Turin University, Turin, Italy; ³Department of Biomedical and Dental Sciences and Morphofunctional Imaging, Messina University, Messina, Italy; ⁴Department of Experimental, Diagnostic and Specialty Medicine, University of Bologna, Bologna, Italy

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Objective To investigate the association between external beam radiotherapy (EBRT) for prostate adenocarcinoma (PA) and malignant peritoneal mesothelioma (MPM) using data from the US Surveillance, Epidemiology and End Results (SEER) program.

Methods We identified PA cases diagnosed in 1973–2013 among patients aged ≥ 45 years. The follow-up started one year after the primary diagnosis (to exclude synchronous cancers and limit surveillance bias) and ended at the diagnosis of MPM, other malignancies, death, or at the study end (12/31/2013). We estimated hazard ratios (HR) and 95% confidence intervals (95% CI) of MPM for EBRT, compared to no radiotherapy, by fitting Cox models incorporating inverse probability weights to account for age at diagnosis, race, year of diagnosis, primary cancer surgery, SEER register, and county's mesothelioma relative risk (proxy for individual asbestos exposure).

Results We observed 34 MPM cases occurring in 4,755,045 person-years (rate of 0.7 per 1 000 000 person-years, 95% CI 0.5–1.0). The risk of MPM was higher among EBRT patients (HR 2.1, 95% CI 0.9–4.8) and increased steadily with increasing latency period (1–4 years, HR 1.3, 95% CI 0.4–4.6; 5–9 years, HR 1.9, 95% CI 0.5–7.7; ≥ 10 years, HR 4.9, 95% CI 0.9–28). However, only 8 MPM were observed for latency periods ≥ 10 years.

Conclusions Our study supports the hypothesis that EBRT for PA is associated with MPM. However, the incidence of MPM in our study population was very low; future studies should focus on high-risk populations (e.g. former asbestos workers) to evaluate the clinical significance of the observed association.