

**Results** Comparing fast rotating and day shift nurses, significant differences were found in the levels of steroid hormones. Multiple linear regression analysis, considering hormones or vitamin D as dependent variable and work-shift type as independent variable, showed no differences between the two groups as concerns the levels of stress hormones, whereas a significant increase of corticosterone and a marginal decrease of vitamin D were observed in fast rotating shift nurses, after adjusting for age, body mass index, tobacco smoking, and sampling time.

**Conclusion** This work shows that the a rapid rotating shift-work schedule '1–1–1' does not modify the global steroid hormone homeostasis; however, further work is needed to investigate the meaning of the observed increase of corticosterone levels.

1281 **MIRNAS IN EXTRACELLULAR VESICLES MEDIATE THE EFFECT OF PARTICULATE MATTER EXPOSURE ON COAGULATION IN A LARGE SAMPLE OF OVERWEIGHT/OBESE ADULTS**

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10.1136/oemed-2018-ICOHabstracts.1134

**Introduction** In Italy about 45% of people aged  $\geq 18$  years are overweight/obese and might thus be more susceptible to the adverse health effects of air pollution exposure. Particulate matter  $\leq 10 \mu\text{m}$  (PM<sub>10</sub>) represents a common pollutant of living and working environments and has been associated with increased risk of cardiovascular diseases (CVD) and hypercoagulability. Extracellular vesicles (EV) might play an important role in PM-related CVD, as they can travel in body fluids and transfer miRNAs between cells. We investigated whether PM<sub>10</sub> exposure is associated with changes in fibrinogen levels, EV release, and EV-miRNA content in a large sample of overweight/obese adults.

**Methods** EV concentrations were quantified by nanoparticle tracking analysis and flow cytometry. To identify altered levels of EV-miRNAs, we profiled miRNAs of 883 subjects by the QuantStudio 12K Flex Real Time PCR System. The top 40 EV-miRNAs were validated through custom miRNA plates. Statistical analyses included multiple linear regressions, mediation analysis and bioinformatics analysis.

**Results** In a sample of 1630 overweight/obese subjects from the SPHERE (Susceptibility to Particulate Health Effects, miRNAs and Exosomes) study, short-term exposure to PM<sub>10</sub> was associated with increased release of EVs, especially those from monocyte/macrophage components (CD14+) and platelets (CD61+). Nine EV-miRNAs (let-7c-5p; miR-106a-5p; miR-143-3 p; miR-185-5 p; miR-218-5 p; miR-331-3 p; miR-642-5 p; miR-652-3 p; miR-99b-5p) were downregulated in response to PM<sub>10</sub> exposure and exhibited putative roles in CVD. Five of these nine EV-miRNAs were mediators in the positive association between PM<sub>10</sub> exposure and fibrinogen levels.

**Conclusions** Our study sheds some light on the potential mechanisms underlying the adverse cardiovascular health effects of air pollution exposure. Our results were obtained in a hypersusceptible population and thus strengthen the relevance of health promotion interventions for both the general

public and the working population, as they might be particularly feasible in the workplace.

1282 **URINARY 8-OXO-7,8-DIHYDRO-2'-DEOXYGUANOSINE IN TUNISIAN ELECTRIC STEEL FOUNDRY WORKERS EXPOSED TO POLYCYCLIC AROMATIC HYDROCARBONS AND METALS**

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10.1136/oemed-2018-ICOHabstracts.1135

**Background** Electric steel foundry workers are potentially exposed to several toxic chemicals including polycyclic aromatic hydrocarbons (PAHs) and metals. This study was aimed to assess PAHs and metals exposure in foundry workers and its association with the oxidative DNA damage evaluated as urinary 8-oxo-7,8-dihydro-2'-deoxyguanosine (8-oxodG).

**Methods** Ninety-four male workers from an electric steel foundry entered the study. Sixteen unmetabolized PAHs (U-PAHs), 8 hydroxylated PAH metabolites (OHPAHs), 12 metals and 8-oxodG were investigated in urine samples.

**Results** Among U-PAHs, urinary naphthalene was the most abundant compound, followed by phenanthrene; benzo[a]pyrene level was  $< 0.30 \text{ ng/L}$ . Median 1-hydroxypyrene (1-OHPYR) was  $0.52 \mu\text{g/L}$ . Job title was a significant determinant for almost all U-PAHs and metals: employees in the steel smelter workshop had higher levels of high-boiling U-PAHs, maintenance workers and workers from the galvanization and rolling workshop were the most exposed to metals. Median 8-oxodG level was  $3.20 \mu\text{g/L}$ . No correlation between 8-oxodG and 1-OHPYR or any OHPAH was found. Significant correlations between 8-oxodG and some U-PAHs and metals were found, particularly acenaphthylene, phenanthrene, anthracene, fluoranthene, pyrene, chromium, manganese, cobalt, zinc, arsenic, barium, thallium, and lead.

**Conclusions** The oxidative DNA damage was moderate and in the range reported in other occupational fields and in the general population. These results indicate that the investigated biomarkers were only minor contributors to urinary 8-oxodG.

1286 **CLOSING THE GAPS BETWEEN OCCUPATIONAL AND ENVIRONMENTAL EXPOSURES AND HUMAN HEALTH**

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10.1136/oemed-2018-ICOHabstracts.1136