from gr.D. (0.07) and ($p<0.05$) compared to the RSA of females from gr.B. (0.27), c) among negative PSF there are: stress (score:96), low familial income (score:83), negative life-conditions (score:79), low education (score:55), low resting time (score:47) and smoking (score:39).
Discussion and conclusions: The cumulative effect of lead-exposure and negative PSF increased significantly the RSA in females. RSA was also increased in females exposed to lead without negative PSF that demonstrate the toxic effect of lead on female reproductive system. In non-exposed females with strong accumulation of negative PSF, the RSA was also high. It is mandatory to reduce the lead-level in all workplaces and to improve the life conditions in females.

HEART AND HEARING

Mo-O-30 MODIFICATION BY VASCULAR FUNCTION OF PARTICULATE ASSOCIATED DECLINES IN HEART RATE VARIABILITY AMONG WELDERS
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Background and aims: Evidence suggests that conditions associated with clinically impaired vascular function result in greater declines in heart rate variability (HRV) in response to fine particulate matter (PM2.5) exposure. We conducted a panel study to investigate whether sub-clinical vascular function modifies particle-related declines in HRV among workers regularly exposed to PM2.5.
Methods: Twenty-three male welders were monitored simultaneously and continuously by ambulatory electrocardiogram (ECG) and a personal direct-reading particle instrument for up to 24 hours on either or both a welding day and a non-welding day for a total of 36 person-days. The standard deviation of normal-to-normal intervals (SDNN) was calculated for all 5-minute segments from the ECG tapes. Moving PM2.5 averages in the preceding 1 through 4 hours of each 5-minute epoch were calculated. Prior to the start of monitoring, three vascular parameters were measured: the augmentation index (AIx), mean arterial pressure, and pulse pressure. Linear mixed effects models were used for statistical analysis, controlling for fixed and time-varying covariates. Data were analyzed for the entire monitoring period as well as for working hours only.
Results: An inverse association between the preceding 1-hour PM2.5 average and 5-minute SDNN was observed. Greater declines in SDNN were observed for AIx values in the upper 25th percentile and pulse pressure values in the lower 75th percentile. During working hours, similar yet stronger patterns were observed between SDNN and 1-hour PM2.5.
Discussion and conclusions: Vascular function as assessed by AIx and pulse pressure appears to modify the association between PM2.5 exposure and HRV in relatively young and healthy workers.

Mo-O-31 VENTRICULAR ECTOPIC BEATS IN BOILERMAKER CONSTRUCTION WORKERS EXPOSED TO METAL RICH FINE PARTICLES
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Background and aims: Epidemiologic and toxicologic studies suggest a link between metal-rich particle exposures and cardiovascular autonomic responses such as changes in heart rate variability, yet the occurrence of cardiac arrhythmias, has not been investigated. We sought to investigate the exposure-response relationship between ventricular ectopic beats (VEBs) and metal-rich particulate matter with an aerodynamic diameter ≤ 2.5 µm (PM2.5) among boilermaker construction workers exposed to welding fumes.
Methods: Using a panel study, we monitored workers by ambulatory electrocardiogram (ECG) over workdays during and following welding fume exposures and on non-workdays. ECGs were analyzed and the presence of VEBs ($\geq$1 VEB over 1 hour period) was recorded. Workers were also simultaneously and continuously monitored for personal PM2.5 exposures. Using mixed effects models to account for the repeated measures data, we estimated the exposure-response relationship between hourly VEB and PM2.5 exposures after adjusting for smoking status, high blood pressure, season and time of day.
Results: The 72 male participants were monitored for an average of 41 hours (Range: 4 -163 hours). The mean (SD) hourly PM2.5 exposure was 0.27 (0.75) mg/m3 during all periods and 0.80 (1.16) mg/m3 while welding. There were 670 hours with one or more VEBs over the 2961 monitored person-hours. As compared to when welding did not occur, there was an increased odds of one or more hourly VEB while welding (OR: 1.61, 95% CI: 0.74, 3.51). When exposure was categorized using tertiles into low (0 to 0.02 mg/m3), medium (0.02 to 0.10 mg/m3) and high (0.10 to 13.50 mg/m3), there was an increased odds of VEB in the medium (OR 1.80; 95% CI: 0.78, 4.13) and high (OR 3.81; 95% CI: 1.56, 9.29) exposure categories, relative to the low exposure category.