**Assessment of Central Hemodynamic Monitoring Among Assistant Train Drivers in Western Russia**

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**Introduction:** Train drivers are exposed to work-related stressors which contribute to higher rates of cardiovascular disease. This project aims to identify early disturbances and trends in central hemodynamic parameters among young locomotive driver assistants in the Moscow region of the Russian Federation in order to elucidate patterns of decompensation.

**Methods:** Subjects in this retrospective cohort study underwent regular hemodynamic monitoring over nine months before every train departure. Automated oscillometric methods were used to measure resting hemodynamic parameters including blood pressure, cardiac output, pulse wave velocity, and systemic vascular resistance with the device “KAP CG osm – ‘Globus’”.

**Results:** The sample was comprised of 168 individuals and 8674 unique measurements; the mean age was 26.2 ± 4.6 years with an average of 52 ± 17 measurements per person over 33.8 ± 8.9 weeks. The average values for each hemodynamic parameter were within normal limits. Across all measurements, heart rate showed the greatest time-independent variation while systolic blood pressure showed the least; coefficients of variation ($\sigma/\bar{x}$) were 10.6% and 6.8% respectively. Hypertensive episodes were observed in 36.3% of participants. Strong, positive correlations were observed between diastolic blood pressure and systemic vascular resistance ($r = 0.72$, $p < 0.001$), systolic blood pressure and cardiac output ($r = 0.71$, $p < 0.001$) respectively. Older subjects tended to have higher diastolic blood pressure ($r = 0.51$, $p < 0.001$). Over time, systemic vascular resistance showed the greatest variance with an average upward trend when data were fit to a linear regression model. Increasing systemic vascular resistance over time was positively correlated with decreasing systolic blood pressure and increasing diastolic blood pressure.

**Discussion:** Persistent changes in central hemodynamics can precede the development of clinical arterial hypertension. The results of this study suggest that implementation of early monitoring and prophylactic measures may be beneficial to high-risk individuals.

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