

IMPACT OF ROTATION SHIFTS ON AUTONOMIC NERVOUS SYSTEM IN SHIFT WORKERS AS ASSESSED BY SHORT TERM HEART RATE VARIABILITY AND OTHER AUTONOMIC FUNCTION TESTS.

Abstract

Title

Impact of rotation shifts on autonomic nervous system in shift workers as assessed by short term - Heart Rate Variability and other autonomic function tests.

Objective

The objective of the study was to assess the autonomic imbalance in night shift workers when compared to regular day workers using short term HRV and other cardiac autonomic function tests.

Methods

The study was conducted in Physiology Research Laboratory, Department of Physiology, PSG IMS&R, Coimbatore. 30 day shift workers and 30 night shift workers were included in the study. The short term heart rate variability was assessed using a Biopac. Lead II electrocardiogram was recorded for a minimum of 5 minutes using a computerized physiograph (NEVIQUIRE- Digital ECG recorder). The analysis of the HRV was done with the aid of Finland software. Using this HRV analysis, time domain parameters and frequency domain parameters were determined. The other cardiac autonomic function tests were conducted in the research laboratory. The data obtained was subjected to statistical analysis using unpaired t-test.

Results

The mean RR interval showed a highly significant decrease and the mean HR showed a highly significant increase in the night shift workers when compared to the day workers. The RMSSD and the pNN50 were significantly low in night workers. Regarding the frequency domain measures the VLF showed a significant increase while the HF showed a significant decrease in the night shift workers. Among the other cardiac autonomic function tests the Valsalva ratio showed a significant decrease among the night shift workers.

Conclusion

The night shift induces sympathetic over-activity and reduced cardiovagal activity in shift workers. However the delayed effects of shift work and adaptation of the workers to the night shift has to be further explored.

KEYWORDS: Rotation Shifts, Night Shift, Hrv, Cardiac Autonomic Function Tests.