CORRELATIONS BETWEEN CERTAIN HEARING CHANGES AND VEGETATIVE BALANCE IN MINERS

Tsaneva, L.1, Dukov, R.2
1 National Center of Hygiene, Medical Ecology and Nutrition, Sofia
2 Bulgarian Academy of Sciences, Sofia Bulgaria

SUMMARY
This study responds to the priorities of the National Health Strategy aimed at control and mitigation of the hazardous effects of the workplace factors on cardio-vascular diseases of people in active working age from the branch “Mining industry”.

The aim of this work is to study the vegetative balance (by analysis of heart rate variability - AHRV) and the correlations with the state of miners’ hearing functions.

Sixty eight miners (diggers and mate-diggers) from mining industry were studied. This paper treats the results of AHRV examination of 25 miners who have no major and additional causes, leading to hearing injury - traumas, other diseases, medicines, etc.

The analysis of heart rate variability was made by computer analysis of heart rate and variability. Standard ECG electrodes at bi-polar breast lead-off were used for recording ECG signals. The echo-cardiographic signal was converted by an ECG converter board into epochs of cardiac events (R-R intervals) for 10 minutes. The principal indices of heart rate variability were analysed.

The obtained results provide the ground for further comprehensive studies on different workers contingents from other industries in order to detect workers with initial changes in the hearing analyser and to establish the corresponding pathogenetically based registration, monitoring, and treatment system.

The studies conducted for monitoring the dynamic of vegetative equilibrium reflect the degree of disturbed heterostasis by chronically manifested sympatic activity in miners, diagnosed by AHRV indices.

The revealed significant relationships between hearing changes and AHRV indices prove the presence of an extra-aural paraprofessional effect and statistically significant relations with the changes in the critical organ.

The revealed highly significant correlations between AHRV indices and hearing show a significant relationship between the physiological vegetative level (assessed by AHRV) and the hearing status at chronic exposure to work-related stress factors in miners.

The chronic sympathicotonia is an additional pathogenic factor (besides acoustic stress) manifested by spastic changes in the microcirculation of the cochlear neuroreceptor elements.

Key words: miners, hearing changes, para-professional effect

Address for correspondence: L.Tsaneva, National Center of Hygiene, Medical Ecology and Nutrition, 15 Dimiter Nestorov str., 1431 Sofia, Bulgaria