HEART RATE VARIABILITY PARAMETERS VARIATIONS AT GEOMAGNETIC DISTURBANCES IN ARCTIC AND ANTARCTIC REGIONS

S. Chernouss, O. Antonenko
Polar Geophysical Institute of the Kola science Centre of RAS, Apatity, 184200 Russia
V. Ilyin
International Centre for Astronomical, Medical and Ecological Research of UAS, Kiev, Ukraine
G. Milinevsky
Ukrainian Antarctic Centre of the Ministry for Education and Science, Kiev, Ukraine
Y. Moiseenko A.A.
Bogomolets Institute of the UAS, Kiev, Ukraine

The existence of heliogeophysical activity impact on the human health is well known now. But most results in this field were obtained on the basis of statistical data. Modern digital equipment permits us to carry out simultaneous monitoring both human organism response and the variations of heliogeophysical parameters. It is of great interest to recognize both global and local features of the response by direct experimental data. The report presents studies of Heart Rate Variability (HRV) parameters response on geomagnetic field variations in the Arctic and Antarctic regions
The volunteers of the Kola Science Centre at Kola peninsula and winterers of the Ukrainian Antarctic station Academic Vernadsky took part in the experiment. Valid ($p<0.05$) correlation between K-indices, which describing the degree of the geomagnetic field disturbances and certain statistic and spectral parameters of HRV were shown. It has been found that spectral parameters of HRV were more sensitive to the influence of the geomagnetic perturbations. In the area of Academic Vernadsky Antarctic station the geomagnetic variations significantly influence on the wave structure of the HRV in 73% of tested wintereres. More than 65% of people within the experimental situation underwent the impact of the geomagnetic field disturbances in the Kola peninsula region. Statistical and spectral analysis demonstrate correlation of autonomic nervous system (sympathetic and parasympathetic) indices as well as correlation of central regulation level index with geomagnetic field variation indices. The responses were rather individual, their intensity and direction depended on the basis type of autonomic homeostasis and current status of tested persons. Possibility of separation of the groups of people undergone to the geophysical disturbances impact is discussed. It is important for selecting people working in the polar conditions and for the assessment of the current status of winterers.