



Season variations and possible effects of Pc1 geomagnetic pulsations on the human cardiovascular system

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The analysis of the ambulance Moscow calls, related to myocardial infarction (IM, 85,000 events), sudden death (SD, 71,700 events) and blood pressure crises (BPS, 165,500 events) for 1979–1981, demonstrated their clear season variations with profound summer minimum and winter maximum. The same results we obtained analyzing the 15 year (1970-1985) statistical monthly data of infarction death in Bulgaria. However, there are a great number of clinical and statistical studies confirming the rises of the IM, BPS and SD numbers during geomagnetic disturbances, which have maximum in occurrence near equinox, not in winter. In order to explain this contradiction we suggested that one of critical factors which affect a human cardiovascular system could be geomagnetic Pc1 pulsations having the frequency comparable with frequency of heart rate beatings and winter maximum in wave events occurrence. The results of comparative analysis of Moscow ambulance IM and SD call data and the catalog of Pc1 pulsation occurrence at the geophysical Borok observatory are presented. It is shown that $\sim 70\%$ of days with anomalously large ambulance calls number IM(A) have been registered simultaneously with Pc1 pulsations appearance. Any relationship between Pc1 amplitude and IM(A) was found. The probability of simultaneous occurrence of IM(A) and Pc1 in the winter season was 1.5 time greater then their accidentally coincidence. Moreover, it was found that in winter the effects of magnetic storms and Pc1 in IM(A) were much higher then in summer. We suggested that one of the possible IM(A) seasonal variations reason could be a season variation of the production of the pineal hormone melatonin which leads to winter unstable state of a human

organism. That increases the sensitivity of the sick IM patients to the negative influence of Pc1 geomagnetic pulsations in the winter season. This work was supported by the Program "Fundamental sciences to medicine".