



Medical weather forecast as the risk management facilities of meteopathia with population

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Frequent cases of extreme deviations of weather conditions and anthropogenic press on the Earth atmosphere are external stressors and provoke the development of meteopathic reactions (DMR) with people suffering from dysadaptation (DA). [EGU2011-6740-3; EGU2012-6103].

The influence of weather factors on the person is multivariate which complicates the search of physiological indicators of this exposure. The results of long-term researches of meteodependence and risks development of weather-conditional pathologic reactions with people suffering from DA (1640 observed people) in various systems and human body subsystems (thermal control, cardiovascular, respiratory, vegetative and central nervous systems) were taken as a principle of calculation methodology of estimation of weather pathogenicity (EWP). This estimation is used in the system of medical weather forecast (MWF) in the resorts of Caucasian Mineral Waters and is marked as an organized structure in prevention of DMR risks.

Nowadays MWF efficiency is from 78% to 95% as it depends not only on the performance of models of dynamic, synoptic, heliogeophysical forecasts, but also on the underestimation of environmental factors which often act as dominating stressors. The program of atmospheric global system monitoring and real-time forecasts doesn't include atmospheric electricity factors, ionization factors, range and chemistry factors of aerosol particles and organic volatile plant matters in atmospheric boundary layer.

New fractality researches of control mechanisms processes providing adaptation to external and internal environmental conditions with patients suffering from DA allowed us to understand the meaning of the phenomenon of structural similarity and similarity of physiological response processes to the influence of weather types with similar dominating environmental factors. Particularly, atmospheric conditions should be regarded as stressor natural factors that create deionization conditions of the surface atmosphere. The correlation of the results of the research of external respiration function, cardiovascular and central nervous systems with people suffering from DA (187 people) made in days with favorable weathers, but different in natural anion quantity in the surface atmosphere, allowed us to develop similar physiological processes at the phenomena of natural deionization. When the anions amount reduces from 1255 ± 38 ion/cm³ to 190 ± 13 ion/cm³, we have detected the increase of tension of vegetative index (from 458 ± 24 to 802 ± 44), the decrease in efficiency of neurohumoral regulation (from $0,25 \pm 0,08$ to $0,06 \pm 0,02$), the increase of spectrum excitability of cortical activity in the wave range of delta 0-0.4 Hz by 29%, the decrease in cortical activity in the wave range of theta 4...8 Hz, alpha 8...13 Hz beta 13...19 Hz, gamma 19...25 Hz by 4-10%; the decrease in organism adaptation layer by 14% and integrated health indicator by 18%. We have also detected similar processes in cardiovascular and respiratory systems.

So the problem of creation of high-quality system of medical weather forecast for the population demands the performance of interdisciplinary researches in the field of medicine, biology, meteorology and the development of DMR risk management programs at various natural and anthropogenic stressors.

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