volumetric images is a process of calculation that is used to define 3D structure according to two-dimensional sectors. Using intensity of grey for each pixel of two-dimensional image a corresponding voxel – volumetric element of three-dimensional image is defined. An algorithm of forming an image defines a method of visualizing three-dimensional structure.

To increase a quality of three-dimensional reconstruction it is necessary to adjust contrast of the selected structures in 2D mode and set a lower limit value. A clear image from the border of inquiry window to a certain surface can be provided vie removing noise in case values of grey surface are lower than values of surface. An upper limit should be selected of value no more than 255. In case values of surface reconstruction algorithm exceed a limit value, surface borders should be marked and adjusted with a scroll box of the upper limit value.

A regime of multiplane reconstruction of three-dimensional image provides for an observing frontal, sagittal, and axial sectors of volumetric image.

– plane A: frontal sector;
– plane B: sagittal sector;
– plane C: axial sector.

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CARDIOVASCULAR ACCIDENTS AND NERVOUS BREAKDOWNS AS THE RESPONSE TO THE GEOPHYSICAL CONDITIONS

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The heliobiological communications research draws the attention of the scientists for a long time [Chizhevsky A.L.1934, Novikova K.F., Ryvkin B.A.1971]. This problem has the big urgency in the connection with the advancement of the persons in a space. The ionospheric spherical waveguide (the walls are formed by an ionosphere and a surface of the Earth) is a source of five resonant frequencies theoretically calculated by Schuman [Balser M. and Wagner C. 1960]. The ionospheric waveguide is excited by thunder-storms in the low geomagnetic latitudes. The waveguide frequencies of 8 and 14 Hz are close to frequencies of one of the rhythms of the biopotentials of a brain of the person (an alpha a rhythm: 8–13 Hz), measured by the German doctor of the psychiatry G. Berg in 1924. In my opinion, the ionospheric a waveguide is not the unique natural resonator. The excitation sources can have the various physical nature. According to the geophysical researches presented by [Sterlikova I.V., Ivanov A.P. of 1997], the plasmosphere (one of the structural areas located higher than the ionosphere) can be the amplifier of the high-frequency geomagnetic pulsations. It is necessary to notice the American researchers have registered the Shuman's resonant frequencies by the sputnik on the distances from the Earth above an ionosphere [Simoes F. et.al., 2011] – 450–800 km that corresponds for the plasmosphere. The plasmosphere is dynamical, its dynamics depends on the geomagnetic activity. According to the geophysical net of the stations on the ground surface, the region of the projection plasmopause on the ground surface is displaced to the south with growth of the geomagnetic activity that testifies to approach of the boundary of the plasmosphere to the Earth. The plasmosphere decreases in sizes. The above geomagnetic activity, the above strengthening high-frequency a component of the geomagnetic pulsations in the plasmosphere. According to photo from the American automatic space vehicle IMAGE (NASA) for 31.01.2001 [www. astronet.ru/db/msg/1167179], the configuration of the plasmopause becomes complicated in the indignant geomagnetic conditions, there is a tail towards the Sun in evening sector.

Murom located in region of the middle-latitude geomagnetic can test whims of the space weather on itself under defined geophysical conditions developing in the plasmosphere. The article purpose is to check concept of the heliobiological communications in the middle-latitude region removed from so-called auroral geophysical zones of the intrusion of the plasma of a solar wind up on a statistical material. The researches of the interrelation of the sudden death from the cardiovascular illnesses and from the nervous breakdowns and the presence or the absence of the geomagnetic pulsations are conducted in the article. The data of the station of the first medical aid and the data of the middle-latitude geophysical observatory in Borok of Yaroslavl region are used in the article. The geomagnetic pulsations have been chosen with the frequency range close to biorhythms: PC1(regular pulsations, pearls), IPDP (irregular pulsations with the decreasing period), Pi1 (irregular pulsations with the period from 1 to 40 s). Sudden death was observed in most cases at a long absence of the high-frequency geomagnetic pulsations in a frequency range close to the basic biorhythms of the person.. The conclusions in the article coordinate by [Sterlikova I.V.,1990 and 2012] and with results of the Australian scientists [Buxton J.R. et.al., 1987] who have achieved simplification of a syndrome of Parkinson on the rabbits irradiated by artificial pulsations of the electric and magnetic fields with the frequency of 8 Hz and with the amplitude 0,7 V and 1000 нTl, accordingly. As

it is known, an alpha rhythms of biopotentials of a brain of the person, a cat and a rabbit coincide.

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SOME CEREBRAL FEATURES OF METABOLISM IN PATIENTS WITH COGNITIVE DISORDERS WITH BACKGROUND PSYCHO-VEGETATIVE SYNDROME

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In the environment of intense rhythm of modern life, emotional and information overload the cognitive disorders develop in background of psycho-vegetative syndrome (PVS) not infrequently in frames of anxiety or anxiety depressive disorders. Usually, cognitive deficit presents with mild to moderate disorders. Accordingly to statistics, more than 25% of patients of the somatic network have PVS [1]. In some patients the vegetative symptoms are leading in clinical presentation, in others the mental disorders come to the fore [2]. Cognitive disorders coexist with anxiety and depressive conditions, and later they can aggravate resulting in professional and social disadaptation. These studies of cerebral metabolism in pre-dement impairments with background PVS will allow to make patient's complaints objective, and to improve the treatment and prevention of cognitive disorders.

Purpose of the study: to investigate cerebral metabolism in patients with PVS to improve the treatment and prevention of cognitive disorders.

Materials and method. To study cerebral metabolism, 29 patients with age under 55 with mild to moderate pre-dement cognitive disorders and 20 healthy volunteers without signs of cognitive disorders as a control were examined. Cerebral metabolism was estimated with help of neuroenergy mapping (NEM), the electrophysiological method based on the detection of level of constant potentials (LCP), slowly varying potential of millivolt range reflecting membrane potentials of neurons, glia and hematoencephalic barrier.

Results. Normal results of LCP were obtained in 17,2% (5 of 29) patients. Increased metabolism was observed in 58,6% (17 of 29) patients with PVS. Decreased metabolism was seen in 24% (7 of 29) patients. Background metabolism in patients with PVS significantly differed from the reference values. In control group of healthy volunteers the background metabolism didn't differ from the reference values.

Discussion. NEM method estimates glucose metabolism in the brain [4]. Unlike PET, NEM reflects the state of backup pathways, i.e. anaerobic glycolysis, catabolism of ketone bodies, amino acids. With chronic or severe stress the anxiety or anxiety depressive disorders develop resulting in increase of functional cerebral activity, activating of anaerobic glycolysis, and developing of acidosis. The lower pH, the higher the level of constant potential [5].

Increase of metabolism corresponds to the first stage of stress by Selye (increase of adaptation), and decrease of metabolism corresponds to the third stage of stress (exhaustion of adaptation). Thus the most profound impairments of cerebral functional activity appeared in the group of patients with decreased metabolism.

Conclusions. Assuming all the data on increased metabolic processes in 58,6% of the examined subjects that indicate to the activation of backup pathways, it is reasonable to recommend sedation in combination with antioxidants and non-stimulating neurometabolic drugs to the patients with pre-dement impairments with background PVS.

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