changes were fluctuating in nature and did not return to normal position until the 30th day: 67% and 87% in the 2nd and 3rd groups respectively, 130% - in the 1st group. There was a decrease in the content of MDA in the 1st group, 24% increase in the 3rd experimental group. In group 2, MDA content differed a little from the control. In dynamics MDA content in the 1st group increased, in the 2nd and 3rdgroups changes were fluctuating. In 30 days, MDA content in all experimental groups remained below the control values.

Laser irradiation in all the experimental groups led to decrease in the activity of SOD, which did not return to normal level 30 days later. Ten days of laser irradiation caused decrease in catalase and GPO activity and increase in GSH content. Twenty and thirty days of irradiation led to increase in catalase activity and a decrease in the content of reduced glutathione. The dynamics of change were fluctuating. By day 30, catalase and GPO activity were higher than those of the controls in group 1 and decreased in groups 2 and 3. The content of reduced glutathione decreased in all the experimental groups.

Thus, laser radiation affects the redox state of the liver of rats, the changes are fluctuating in dynamics and depend on the duration of laser radiation.

Kysylytsia S.O.

THE MECHANISM OF BIOCHEMICAL CHANGES IN THE BRAIN CELLS AFTER ISCHEMIA-REPERFUSION ON THE DEVELOPMENT OF GLIOMA

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Glioma is a heterogeneous group of brain tumors of neuroectodermal origin.

The relevance of our research is in theoretical studying of the interrelation between brain ischemia-reperfusion syndrome (BIRS) and the development of glioma in patients. It may help to predict the course of the disease and to determine ways to prevent the growth of brain tumors as well as their treatment. In addition, our research may help to establish the methods of the correct management of the post-ischemic period.

According to statistics, about five thousand people find out that they have glioma in Ukraine annually. Every year, this disease takes the lives of near 2 thousand Ukrainians. In the world, the incidence of different types of this tumor is about 15 cases per 100 000 of the population.

Yen-Tsung Huang and al. in their research "Genotype-based gene signature of glioma risk" established that glioma develops from the glia cells of the white brain matter. The main cause of these changes is genetic abnormalities. In most cases, there are mutations of the genes TP53 and BCL2 that encode p53 and Bcl-2 respectively. The protein p53 is the antioncogene, and the protein Bcl-2 is the protooncogene. Bcl-2 is involved in the regulation of cell death by inhibiting apoptosis. The tumor suppressor p53 is involved in the induction of apoptosis. The mistakes of regulation of Bcl-2 play the main role in the malignant transformation of tissues. The damage of the TP53 gene “turns it off”, so uncontrolled cell division begins causing the development of tumors.

It was experimentally determined (Kmet T. I., Tkachuk S. S. “Dynamics of changes in the morphofunctional state of p53-positive cells of the cortex of the temporal lobe of rat cerebral hemispheres under the influence of carotid ischemia-reperfusion”), that bilateral BIRS reduces the percentage of p53-positive gliocytes in the late post-ischemic period (more than 30%), due to that, the concentration of p53 in glia cells extremely decreases.

In the work of Ibragimov U. K. “Morphological changes in brain tissues during the experimental ischemia-reperfusion” has been found that after six hours of reperfusion the reaction of rosette formation of monoclonal Bcl-2 gliocytes begins. With time there are manifested the chaotic arrangement of a large number of Bcl-2 cells, which increases the likelihood of the formation of glioma with the reduced density of p53-positive gliocytes.

Therefore, the BIRS can provoke the development of glioma in the post-ischemic period by reducing the concentration of p53 and increasing Bcl-2 in glia cells of the white brain matter.