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## **THE NATURE OF THE DESTRUCTIVE, COMPENSATORY AND REGENERATIVE PROCESSES IN THE BRAIN OF RATS AFTER EXPERIMENTAL MODERATE TRAUMATIC BRAIN INJURY AND THE POSSIBILITY OF THEIR PHARMACOLOGICAL CORRECTION**

**ABSTRACT. Background.** The most important task of intensive care patients with traumatic brain injury is prevention and treatment of secondary brain injury, including cerebral ischemia secondary, and neuroprotection, which reduces the impact of secondary damaging factors and allows the nerve cells to escape death. One of the most promising ways of neuroprotection in traumatic brain injury can be neurotrophic therapy. Among the drugs used as neuroprotective agents cerebrolysin occupies a special place. **Objective.** The aim of this work was to study the effect of the drug cerebrolysin on the morphological changes of brain structures in the early posttraumatic period. **Methods.** To simulate a traumatic brain injury spring drummer was used, it was experimentally calibrated to apply rats moderate injury. At the time of injury animals were briefly pressed to the foam lining, achieved than horizontal arrangement surface of the cranial vault. In the first subgroup of the main group of animals applied injury secondary to severe without further therapy cerebrolysin. In the second subgroup of the main group after the application of the medium-heavy injury in an experimental neuroprotective therapy used Cerebrolysin (0.1 ml once within 10 days). Calculated absolute number or percentage of 100 cells observed in 10 fields of view of the microscope intact pathologically altered neurons and glial cells. **Results.** Under the recovery and regeneration (day 21) due to the neuroprotective therapy after traumatic brain injury modeling moderate severity in both hemispheres an increase of normal neurons was observed, it was expressed in the absence of significant differences in this indicator when compared with the control. The same trend was observed on the 14<sup>th</sup> day after the injury, but occurs only in the damaged hemisphere. On day 21 compared to control a decline of the total number of neurons changed, the values of this index approaches the value 1 day after the injury. Morphometric analysis showed a reduction in the bulk density of the nucleus is 7, and 21 days of experimental traumatic brain injury in the group without treatment. In Cerebrolysin group on day 14 and 21, the bulk density of the nucleus closer to the control parameters. The same trend was observed in relation to the bulk density of ribosomes and neurofibrillary. In case of injury of moderate severity in the group without a neuroprotectant during the entire study period there is a diffuse lesion of the brain studied departments mostly damaged hemisphere, which appeared resistant dystrophic and destructive changes of the neurons without significant signs of pronounced reparative regeneration in the regenerative posttraumatic period. **Conclusion.** When using a neuroprotectant cerebrolysin marked increase in intact neurons, which was celebrated not only in the injured, but also in the contralateral hemisphere on the day 21<sup>st</sup> of the experiment. In this case an increase amount of glial cells was also seen.

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