

Features Revealed During Experiments on Rats When Causing Severe Traumatic Brain Injury in Them

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Abstract: In this experiment, an experiment was conducted on 54 three-month-old white mongrel rats. The experiment was carried out after the animals were fixed on wheeled vehicles, during the experiments, when the vehicle accelerated, when the required speed was reached, the vehicle, together with the animal, hit the wooden barrier with the frontal part. In this way, an imitation of a traffic accident was carried out, which caused craniocerebral trauma of varying severity in animals. The vehicle at the same time developed a speed of about 8 km per hour. The animals participating in the experiment, one by one, passed through the Morris water maze, for the analysis of their ability to remember after the injury.

Keywords: Experiment, motor transport, injury, Morris's water maze, rat.

Relevance. Recently, the consequences of injuries have been gaining relevance with great speed. Huge urbanization and globalization, the development of modern technology and science, leads to a huge increase in automated capacities, mechanized systems and digital technologies. In this connection, all this requires a more thorough consideration of the social and social aspects of this issue. A separate issue belongs to the organization and provision of better and full-fledged medical care for victims [2,7].

In our century – the age of high technology, the increase in mortality and disability rates and as a conclusion arising from here, the increase in the consequence of conditions arising as a consequence of injuries, as well as the increase in general injuries, as well as the increasing problem of neurotrauma, in turn, and in general, bring the above-mentioned area into the category of priority. [1,3,9]. A special role in the study of problems associated with brain damage is played by population epidemiological studies that are conducted in many states, where these digital data mainly depend on gender, age, profession and alcohol consumption, as well as other inseparable conditions. These indicators of traumatic brain injuries really differ in their parameters. [4, 6,10]. It should be noted that, in the general structure of injuries, injuries of the central nervous system account for 30-40% and occupy one of the first places among other injuries as well as causes of permanent and temporary disability among the population, leaving behind such systemic diseases as cardiovascular and oncological, in the general structure of causes of death of active people age [5, 11].

An especially important place is occupied by external factors affecting the body, such as mechanical, chemical or biological factors that cause a change in the structural cellular composition. The response mechanism is so diverse and multifaceted that not all of its parameters have yet been fully studied and science cannot give them an accurate and clear answer. In turn, the body demonstrates changes in blood circulation in organs and the lymphatic apparatus, I model changes in the number of lymph nodes, including certain parts and areas in organs, or mutual fusion of nodes in places [8,13].

All these processes mentioned above prevent the occurrence and possibility of autoimmune stress that can occur in the body under the influence of biological or chemical agents, including cases that can lead to serious consequences. The above-mentioned studies contribute to a more thorough study and understanding of the very processes occurring in the spleen, and will help to become one of the necessary and important indicators for deciphering the multi-legged and complex flow of processes in tissues [12,14].

Materials and methods. The experiment was conducted on 54 three-month-old white mongrel rats. Experimental rats during the experiment were securely attached to vehicles and moving on it at a speed of about 8 km / h, crashed the frontal part of the head on a wooden curb (Fig.1). This the vehicle has been approved and the utility model patent FAP 02271 dated March 31, 2023 was obtained for it.

Although about 54 percent of the rats died on the spot and in the next three days, at the end of this experiment, the rest survived. Before the injury, all the animals passed a test in the Morris water maze to undergo experiments on the preservation of cognitive memory and the acquisition of self-preservation skills in the water. Tests were conducted with them for several days, and this experiment was evaluated on the basis of time indicators and swimming and other movements of experimental animals in a confined space.

As soon as the experimental animals received a traumatic brain injury, the animals were again tested for the presence of criteria for motor activity, where time indicators were taken as a basis, as a result of which experimental rats were divided into three subgroups - in relation to the latest time data, after which the degree of the injury was calculated depending on these data.

The present experiment shows all available data carried out on experimental animals with severe traumatic brain injuries. These animals showed signs of different degrees of severity after receiving TBI. All the animals that received a severe degree of TBI were in critical conditions, some drowned, some barely moved, and only a small part somehow tried to stay afloat and look for the very place where the platform was. Taking into account the same parameters in terms of the time they spent in the water and the fact that the rats behaved accordingly as a test subject, analytical work was carried out and a conclusion was made based on the results of the experiments.



Fig. 1. Experimental experiments of an accident on a vehicle.

The results of the study. During the experiments, when the analysis of the lymphoid apparatus of the spleen was carried out seven days after a severe TBI, it was revealed that when examined, periarterial lymphatic couplings and lymphoid nodules gave the following results. PALM diameter ranges from 76.2 microns to 98.6 microns, with an average of 86.9 ± 1.4 microns. The diameter of the lymph nodes ranges from 303.5 microns to 446.11 microns, on average 321.41 ± 13.8 microns. Lymphoid nodules can be visually divided into primary and secondary, the percentage of which is 11% and 89%, respectively. In secondary LU, the formed germinative centers are determined. The diameter of the germinal centers ranges from 81.6 microns to 112.2 microns, on average 92.4 ± 6.4 microns. Large LU, often merge. The LU of the white pulp of the spleen mainly has a rounded, oval and elongated shape

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