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MORPHOMETRIC PARAMETERS OF THE LIVER OF WHITE OUTBREED RATS SUFFERING EXPERIMENTAL CRANIO- BRAIN INJURY AFTER MEDICAL CORRECTION

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Annotation The use of certain types of neuroprotectors as therapeutic therapy has a positive effect on the morphometric parameters of all structural units of liver tissue. The results of the study made it possible to determine the level of morphometric changes in the liver structures of experimental animals. This, in turn, serves to improve the quality of early diagnosis, development and selection of scientifically based methods for effective treatment of the consequences of brain damage.

Key words: morphometry, liver, morphology, craniocerebral injury, white outbred rats.

МОРФОМЕТРИЧЕСКИЕ ПАРАМЕТРЫ ПЕЧЕНИ БЕЛЫХ БЕСПОРОДНЫХ КРЫС, ПЕРЕНЕСШИХ ЭКСПЕРИМЕНТАЛЬНУЮ ЧЕРЕПНО-МОЗГОВУЮ ТРАВМУ ПОСЛЕ МЕДИКАМЕНТОЗНОЙ КОРРЕКЦИИ

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Аннотация

Использование некоторых видов нейропротекторов в качестве лечебной терапии оказывает положительное влияние на морфометрические показатели всех структурных единиц ткани печени. Результаты исследования позволили определить уровень морфометрических изменений в структурах печени экспериментальных животных. Это, в свою очередь, служит повышению качества ранней диагностики, разработке и выбору научно обоснованных методов эффективного лечения последствий поражения головного мозга.

Ключевые слова: морфометрия, печень, морфология, черепно-мозговая травма, белые беспородные крысы.

EXPERIMENTAL BOSH MIYA SHIKASTLANISHLARIGA UCHRAGAN OQ ZOTSIZ KALAMUSHLAR JIGARINING DORI VOSITALARI BILAN KORREKSIYADAN KEYINGI MORFOMETRIK PARAMETRLARI

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Buxoro davlat tibbiyot instituti

Annotatsiya Davolovchi terapiya sifatida ayrim turdagi neyroprotektorlardan foydalanish jigar to'qimalarining barcha strukturaviy birliklarining morfometrik parametrlariga ijobiy ta'sir ko'rsatadi. Tadqiqot natijalari eksperimental hayvonlarning jigar tuzilmalarida morfometrik o'zgarishlar darajasini aniqlash imkonini berdi. Bu, o'z navbatida, erta tashxis qo'yish, miya shikastlanishi oqibatlarini samarali davolashning ilmiy asoslangan usullarini ishlab chiqish va tanlash sifatini oshirishga xizmat qiladi.

Kalit so'zlar: morfometriya, jigar, morfologiya, travmatik bosh miya shikastlanishi, oq naslli kalamushlar.

Relevance. Traumatic brain injury is a complex multidisciplinary problem, one of the most significant in healthcare. Traumatic brain injury is one of the dominant causes of mortality among the population under 45 years of age, and has a leading position in disability [V. A. Byvaltsev, 2018].

Signs of parenchymal damage in the liver are observed more often. It has been established that already in the first hours after injury, small focal necrosis of hepatocytes and changes in liver microcirculation are observed [S.V. Tsarenko, 2005]. However, when assessing morphofunctional changes in the liver during traumatic brain injury, the degree of brain damage is often not taken into account, and the characteristics of changes in the microvasculature of the liver are descriptive. Severe microcirculation disorders are accompanied by activation of necrobiotic processes in the liver and serve as a general pathomorphological basis for the development of liver failure in traumatic brain injury, which corresponds to published data [I.V. Fursov et al., 2013].

Purpose of the study to study the morphological and morphometric parameters of the liver of white outbred rats that suffered experimental traumatic brain injury after drug correction.

Materials and methods. Experimental studies were carried out in 3 stages: the first stage - the study of morphometric parameters of the liver of three-month-old white rats of the intact group (n=60). The second stage consists of studying the morphometric parameters of the liver of three-month-old outbred rats (n=60) on the 1st day after TBI using the "road accident" method. The third stage is the study of morphometric parameters

of the liver of three-month-old white rats (n=60) after conservative treatment for 10 days from the first day after traumatic brain injury.

For the purpose of the study, 180 white outbred rats, 3 months old and kept under normal vivarium conditions, who received a traumatic brain injury experimentally, were tested. These conditions for keeping animals included keeping them in separate cages at room temperature, natural light and ventilation. At the initial stages of the scientific experiment, all mature rats were kept in quarantine for seven days, and after eliminating somatic or infectious diseases, they were transferred to the normal vivarium regime. Throughout the experiment, careful monitoring of the physiological state and behavior of animals in the control group and comparison groups was carried out. During this experiment, an imitation of a traffic accident was carried out. That is, all the animals were attached to a hand-made wheeled vehicle, the rats were fixed on the vehicle and accelerated on it at a speed of 6-8 km/h, hitting the frontal part of the head against a wooden barrier. Depending on the speed (6-8 km/h) of the vehicle, the animals received varying degrees of traumatic brain injury. For the purpose of drug correction, L-lysine escinate 1 mg/ml was used, 5 ml was injected intramuscularly, 5 ml of a 25% solution of magnesium sulfate was dissolved in 45 ml of isotonic saline solution and 0.5 ml of the resulting mixture was injected intramuscularly, 4 ml of citicoline solution 125 ml/ mg was administered intramuscularly for 10 days.

For microscopic examination of the liver, pieces of liver tissue were taken and fixed in a 10% neutral formaldehyde solution for 24 hours. After fixation, the sections were washed in running water for an hour. Dehydration of the material was carried out according to the standard method, which consisted of dehydration in alcohols of increasing concentrations, and then the sections were embedded in paraffin blocks. The sections were stained with hematoxylin-eosin after deparaffinization. Morphometric studies of liver tissue sections were carried out using an NLCD-307B microscope eyepiece micrometer from Nobel, (China). The anatomical parameters of the extracted liver were measured using a caliper. All necessary parameters of the liver structure were measured.

results

In a morphometric study of white rats of the first group of the control group, the following results were obtained: the diameter of the central vein is $54.05 \pm 0.88 \mu\text{m}$, the diameter of the interlobular vein is $87.82 \pm 1.85 \mu\text{m}$, the diameter of the interlobular vein of the artery is $25.65 \pm 2.43 \mu\text{m}$, diameter of interlobular bile ducts $13.88 \pm 0.82 \mu\text{m}$, diameter of sinusoidal capillaries $28.38 \pm 0.94 \mu\text{m}$, total area of hepatocytes $487.2 \pm 11.16 \mu\text{m}$, total

area of nuclei $58.91 \pm 1.88 \mu\text{m}$, total the cytoplasmic area was $428.02 \pm 9.20 \mu\text{m}$.

When studying the morphometric parameters of the hemomicrocirculatory system and parenchymal structures of the liver of white outbred rats on the 1st day after TBI of the second group, the following was established: the diameter of the central vein is $56.12 \pm 1.40 \mu\text{m}$, the diameter of the interlobular vein is $89.20 \pm 2.40 \mu\text{m}$, the diameter interlobular artery $27.12 \pm 2.47 \mu\text{m}$, diameter of the interlobular bile duct $14.10 \pm 1.16 \mu\text{m}$, diameter of the sinusoidal capillary $30.46 \pm 1.58 \mu\text{m}$, total area of hepatocytes $493.9 \pm 12.20 \mu\text{m}$, total area the nucleus was $60.10 \pm 2.24 \mu\text{m}$, and the total area of the cytoplasm was $432.10 \pm 1.08 \mu\text{m}$. (Figure 1)

In the third group of experiments, the morphometric parameters of the liver of rats with brain damage after drug therapy: the diameter of the central vein was $55.06 \pm 1.20 \mu\text{m}$, the diameter of the interlobular vein was $89.04 \pm 2.10 \mu\text{m}$, the diameter of the interlobular artery was $26.08 \pm 2.45 \mu\text{m}$, diameter of interlobular bile ducts $13.94 \pm 1.08 \mu\text{m}$, diameter of sinusoidal capillaries $29.14 \pm 1.10 \mu\text{m}$, total area of hepatocytes $490.6 \pm 10.06 \mu\text{m}$, total area of nuclei $59.30 \pm 2.10 \mu\text{m}$, the total area of the cytoplasm was $430.06 \pm 1.02 \mu\text{m}$. (Figure 2)

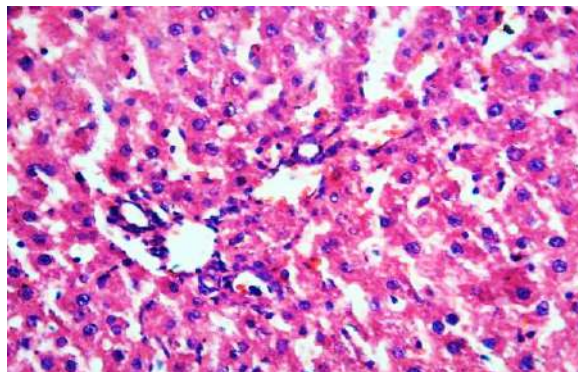


Fig. 1. Morphometric parameters of the liver of white outbred rats on the 1st day after brain injury in the experiment. Expansion of sinusoidal spaces and capillaries, expansion of central venous vessels, focal degenerative changes in hepatocytes are observed. Hematoxylin-eosin dye. Size 10x20.

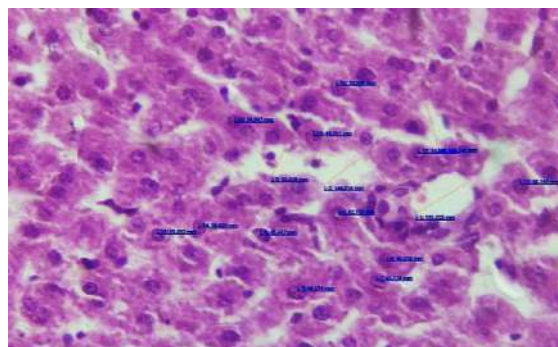


Fig. 2. Morphological and morphometric parameters of the liver of white outbred rats that received brain damage in the experiment after drug therapy. Hematoxylin-eosin staining. Size 20x20.

Conclusions. Experimental experiments have confirmed the fact of the negative impact of TBI on the morphometric indicators of liver parameters, which directly depends on different periods of the injury. Based on the research carried out, the most critical periods were studied and assessed, which is very important for carrying out preventive measures. This reveals the functional and structural mechanisms of changes in the liver of white rats under normal conditions and after traumatic brain injury. Based on the effectiveness of studying morphometric studies of the liver after traumatic brain injury, we can say that the need for these studies is justified. The use of certain types of neuroprotectors as therapeutic therapy has a positive effect on the morphometric parameters of all structural units of liver tissue. The results of the study made it possible to determine the level of morphometric changes in the liver structures of experimental animals. This, in turn, serves to improve the quality of early diagnosis, development and selection of scientifically based methods for effective treatment of the consequences of brain damage.

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СРАВНИТЕЛЬНЫЙ АНАЛИЗ АНТРОПОМЕТРИЧЕСКИХ ПАРАМЕТРОВ ЧЕЛЮСТНО-ЛИЦЕВОЙ ОБЛАСТИ ДЕТЕЙ ДОШКОЛЬНОГО ВОЗРАСТА С ГИПЕРТРОФИЕЙ ГЛОТОЧНОЙ МИНДАЛИНЫ

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Резюме. Рост и развитие человеческого организма от стадии эмбриона до её взрослого состояния – очень сложное явление, состоящее из множества изменений под нервно-гуморальными механизмами регуляции, которые контролируют дифференцировку, развитие и созревание органов и систем. Различные причины как, семейные и патологические могут влиять на параметры роста различных частей человеческого организма. Знания о закономерностях роста и развития лицевых костей помогут предупредить увеличение числа нарушений в челюстно-лицевой области.

Ключевые слова: Антропометрия, челюстно-лицевая область, дети дошкольного возраста,