

UDK: 612.436:613.016./612-07-054

**COMPARATIVE ANALYSIS OF MORPHOLOGICAL CHANGES IN THE  
LIVER IN COVID -19.**

Bukhara State Medical Institute

**Fayzillayeva Gulnara Ibragimovna**

**Nurilloeva Shakhodat Nurillo kizi.**

[shakhodatnurilloeva92@gmail.com](mailto:shakhodatnurilloeva92@gmail.com)

**Annotation:**

Liver injuries have been documented in patients affected by COVID-19, and commonly have mild increasing liver enzymes range from 14% to 53%. Patients with severe disease, especially those hospitalized in ICU, have shown a higher increase in transaminase enzymes than patients with mild to moderate severity. In the experiments, 43 white thoroughbred rats aged 1,3,6 months were used. These are white non-breeding rats of both sexes weighing on average about 250-300 g. The rats were fixed on a self-propelled vehicle with manual control, and in the moving vehicle, the experimental rats approached the wooden barrier and hit them on the forehead, which led to brain injury. The speed of the car was 6.7 km per hour. In the course of experiments on a traffic accident, 30 rats survived and 4 rats died. In general, i.e. macroscopic view of the liver of 1,3,6-month-old white rats, changes are observed depending on the month, varying degrees of morphological changes in the state of fatty metamorphosis in the liver cortex, consisting of lymphoid cells (hepatocytes), blood cells and epithelial cells.

**Key words:** Covid-19; the immune system; autoimmune reactions; Gassali cells; inflammation; liver disease.

In the last 10-15 years, research in the field of immunology, new information about the structure of the immune system, the functions and mechanisms of innate and acquired immune cells, the development of immunopathological effects on the brain and the protective effect of immunity, connective tissue repair in general. The mechanism of development of the immune response to injury (TMS) neurotrauma is considered: These include: 1) primary activation of innate immune cells immunity, ie microglia in the brain, 2) synthesis of cytokines by microglia and involvement of peripheral immune cells in the parenchyma 3) systemic specific immunity and the development of inflammation are reactions in the body [21,22,23,24,25,26,27,28,29,30,31,32,33,34,35].

The development of immune reactions after a given TMS can have a two-way effect over time: 1) an attempt to clear the brain of dead cells and stimulate the recovery of neurons, 2) an immunopathological effect at the time of injury, which can lead to early or delayed neurodegeneration after TMS. With this in mind, further study of immune processes has led to the development of targeted immunomodulatory methods for TMS, which are the consequences of acute TMS and its long-term treatment outcomes [1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20].

Separate groups of liver lobules are located around or in the thickness of thyroid tissue, in the soft tissues of the neck, in the fatty tissue of the anterior, rarely posterior mediastinum of the tonsils. Aberrant liver detection rate reaches 25%. Such anomalies are most often observed in women, mainly on the left side of the neck and mediastinum. The literature contains specific data on ectopic liver tissue in infants. Such pathologies are accompanied by shortness of breath, dysphagia and respiratory failure. P. According to Novak et al, cervical localization is detected on

the left side in 76 out of 91 cases of liver ectopia, mainly in men. Liver ectopy is also associated with congenital heart defects in 71% of cases.

**Research materials and methods:**

We used 43 1.3.6-month-old white pedigree rats in the experiments. They are white non-breeding rats of both sexes weighing an average of around 250-300 g. The rats were fixed to a hand-wheeled self-propelled vehicle, and in a moving vehicle, the experimental rats came to a wooden barrier and hit them on the forehead, resulting in a brain injury. The speed of the vehicle was 6.7 km per hour. During the experiments of the road traffic accident, 39 rats survived and four rats died. In the general, ie macroscopic view of the liver of 1.3.6-month-old white rats, changes depending on the month are observed, different levels of morphological changes in the state of fat metamorphosis in the cortex of the liver, consisting of lymphoid cells (hepatocytes) were noted.

Growing neurotraumatic conditions worldwide, increasing disability and increasing mortality rates require constant study of the medical and social aspects of the problem.

It should also be noted that traumatic brain injury accounts for 30-40% of injuries and is the leading cause of permanent and temporary disability in the population, as well as cardiovascular and oncological diseases among the causes of death in middle-aged people [4,6].

Against the background of traumatic brain injury in the immune system of the body, respectively, broncho-pulmonary complications and autosensitization of the body, in particular, the emergence of autoantibodies to antigens of brain structures, leads to disruption of the range of action of all T-lymphocytes and V-lymphocytes [1,5]. The effect of various factors on the body of origin may be manifested by hypofunction or hyperfunction of the liver. The attenuating effect (e.g., stress, ionizing radiation, severe pathological conditions of the body and the influence of other environmental factors on the outside) is manifested by increased proliferation and orientation of cells responsible for the immunological state, increased delimitation, apoptosis and decreased macrophage activity. [6,7,8]

To date, detailed studies on the effects of traumatic brain injury on the liver structure have been virtually non-existent. At the same time, the research will help to understand the effects of exogenous factors and the mechanisms of immune response that occur after traumatic brain injury and to study in more depth the impact of traumatic brain injury on changes in morphofunctional parameters in the liver.

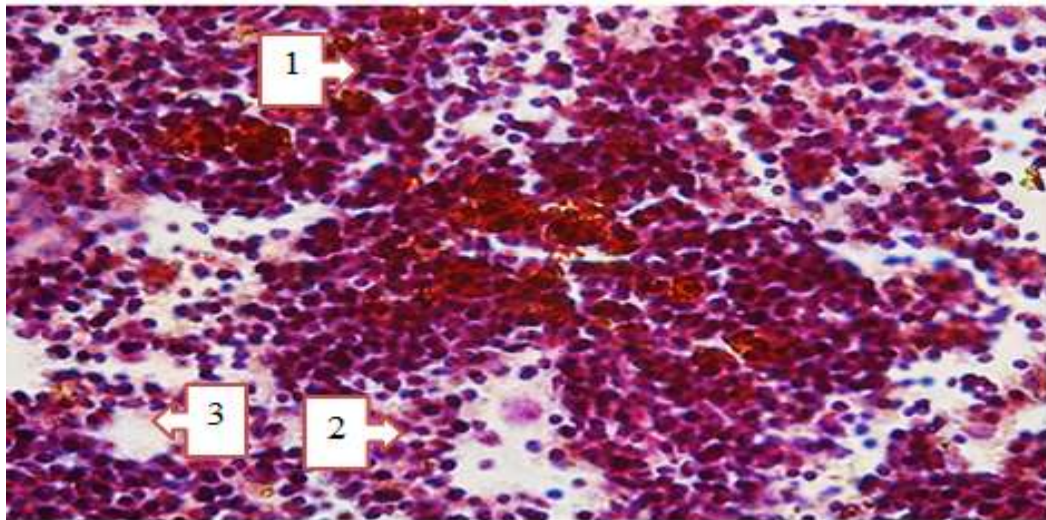
**Materials and methods.** The experiment was performed on 43 white-bred rats aged 1.3.6 months. Rats were composed of representatives of both sexes and their average weight was 250-300 grams. The animals were immobilized on a hand-held device, i.e. a wheeled vehicle, then the laboratory rats were accelerated in the vehicle (speed - 6.7 km / h) and hit a wooden barrier with the forehead of the head. As a result of this experiment, 4 white rats died on the spot. Prior to injury, all rats were trained for 4 days in the Morris water labyrinth to develop cognitive memory retention and water survival skills, which were evaluated by time and area mobility indicators. After receiving a traumatic brain injury, the rats were again retested to determine movement patterns in time and area, as a result of which all experimental animals were divided into three subgroups according to the results of the last indicators, depending on the degree of injury. (For mild, moderate, and severe injuries). This article presented the results of animals with only mild traumatic brain injury. Different levels of complications were observed in the rats after the injury (tremors, nosebleeds, bleeding from the mouth, short-term fainting, etc.). All 43 laboratory rats were decapitated in place immediately after the experiment by removing their heads from the body.

## THE MULTIDISCIPLINARY JOURNAL OF SCIENCE AND TECHNOLOGY

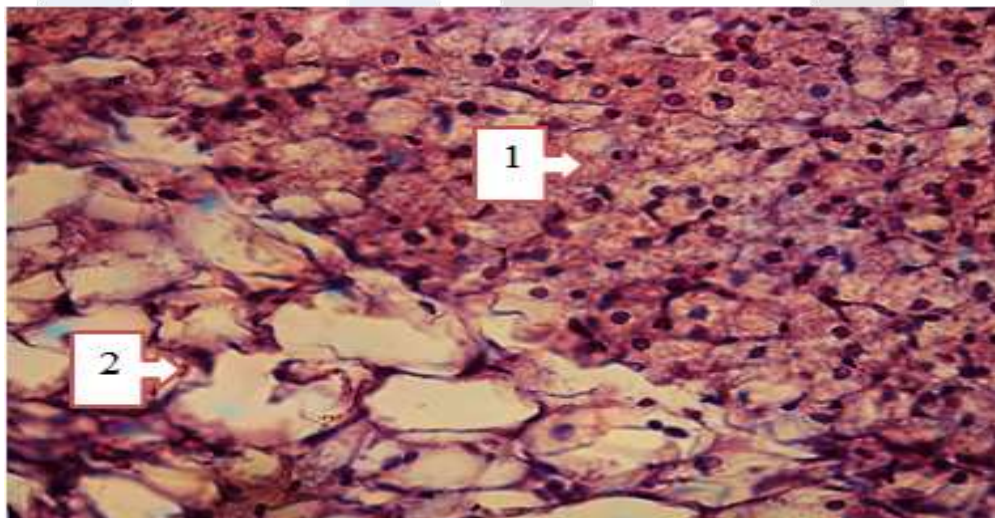
### VOLUME-3, ISSUE-5

After the chest was opened, the liver was removed for examination. All experiments on laboratory animals were performed in accordance with the 1964 Helsinki Declaration of the International Medical Association. The removed liver and its parts were immersed in Buena solution and placed in paraffin. It was then prepared and stained in hematoxylin-eosin solutions in sections 6–7  $\mu\text{m}$  in size. Morphometric studies were performed under the NLCD NOVEL-307B (China) microscope.

**Research results.** Changes in the liver of 1.3.6-month-old white rats after minor brain injuries vary with age. Examination of lymphoid cells (hepatocytes) in 1-month-old rat liver 3 days after brain injury showed a decrease in the number of hepatocytes (20-30%), narrowing of local blood vessels, dilation of the barrier separating the cortex and core layers (15-20%). until the state of fatty metamorphosis is enlarged (25-35%), it can be seen that the shape of Gassali cells is almost unchanged. (Figure 1.2).



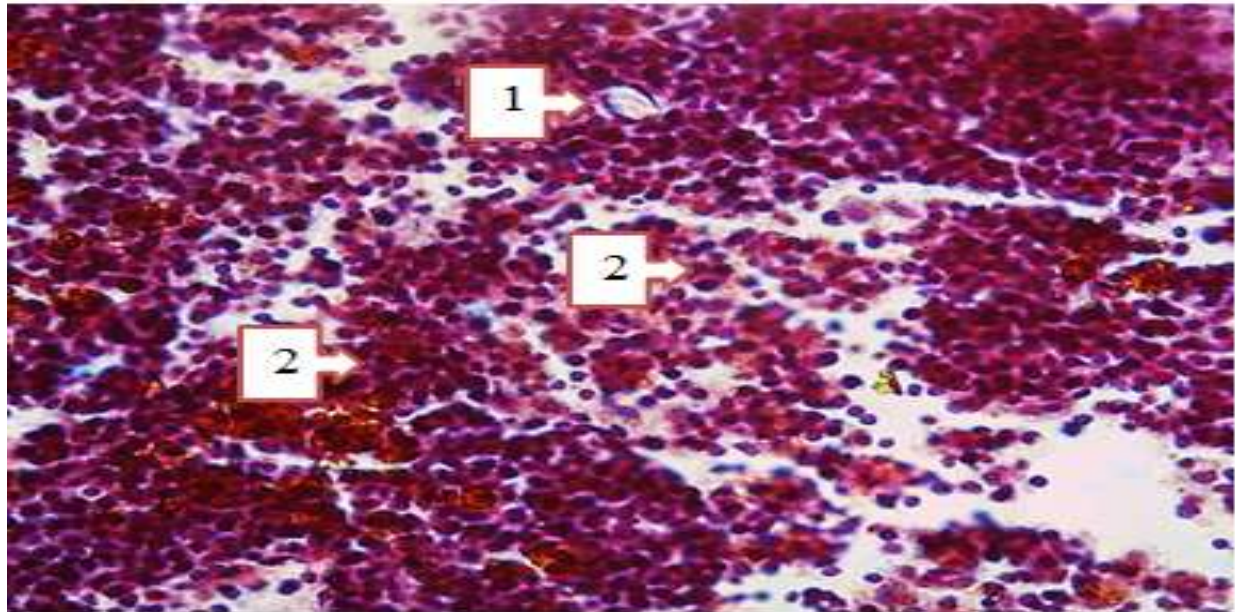
1- Picture. 3-month-old rat. 1. Rare lymphocytes. 2. Local blood vessels are dilated. 3. Dilated blood vessels



2- picture. 3-month-old rat. 1. Decreased number of lymphocytes 2. Areas of fat metamorphosis have increased

Changes in the liver of 3.6-month-old white rats after minor brain injuries vary with age. When the lymphoid cells (hepatocytes) were examined in the 3.6-month-old rat liver 3 days after

brain injury after TMS, the number of hepatocytes decreased to 50-60%, the local blood vessels there narrowed, and the barrier separating the cortex and core layers widened (30-50%)., until the state of fatty metamorphosis is enlarged (60-70%), it is possible to see the unevenness of the boundaries of the deformed cells of Gassali. (Figure 3.4)



3- picture. 1. Dilated blood vessels 2. Decreased lymphocyte count

The size of organ lobules in the liver was determined by their length and diameter, total area of lobules, area of arbitrary units of cortical and medulla zones, as well as large-scale composition, decreased number of medium and small lymphocytes in cortical and medulla lobules, and widened interval. [9,10]

**Conclusions.** Studies have shown that in cases of traumatic brain injury in animals, i.e. 3 days after a mild injury in rats, some changes in the structure of the liver, i.e. decreased lymphocyte count and dilation, increased fatty metamorphosis areas, dilated blood vessels. Changes are also observed in the Gassali cells of the liver.

#### Literature:

1. Kalinina N. M. Trauma: inflammation and immunity / N. M. Kalinina, A. E. Sosyukin, D. A. Vologjanin // *Tsitokiny i vospalenie*. -2005. - T.4, № 1.-S.28-35.
2. Konovalov A. N., Lixterman L. B., Potapov A. A. *Klinicheskoe rukovodstvo po cherepno-mozgovoy travme*. -M.: Antidor, 2002. - T.1. - 550 s.
3. Rybakina E.G., Shanin S.N., Fomicheva E.E., Filatenkova T.A., Dmitrienko E.V. *Kletochno-molekulyarnye mekhanizmy izmeneniya zashchitnyx funktsiy organizma pri cherepno-mozgovoy travme i popytka lecheniya* // *Meditinskiy akademicheskij zhurnal*, 2014. T. 14, №4. S. 55- 62.
4. Salamov V.B., Tshaev Sh.J., Bafoev U.V. Modeling of cerebral palsy trauma. // *Problems of biology and medicine* 2021, № 2 (127). S. 214-219
5. Tshaev Sh.J., Turdiev M.R., Soxibova Z.R. Morphometric parameters of histological structural sele-zenki belyx kryis in postnatal ontogenesis // *Problems of biology and medicine* 2019, №4.2 (115). S. 187-189

## THE MULTIDISCIPLINARY JOURNAL OF SCIENCE AND TECHNOLOGY

### VOLUME-3, ISSUE-5

6. Petrenko VM. Early stages of liver organogenesis. Intern J Appl and Fund Research. 2012; 12: 19-22. Русский (Petrenko V.M. Nachalnye etapy organogenesis timusa // Mezhdunarodnyy zhurnal prikladnyx i fundamentnyx issledovaniy. 2012. № 12. P. 19-22)
7. Akhmedova Shakhlo Malikovna "Age-Related Features of Changes in the Liverland in Children" Central Asian Studies // s Special Issue on COVID-19: Yesterday, Today, and Tomorrow ISSN: 2660-4159 <http://cajms.centralasianstudies.org> 271-275
8. Matkovskaya T.V. Enlarge the timus in the details. Tomsk, 1991. 152 p. Russkiy (Matkovskaya T.V. Uvelichenie timusa u detey. Tomsk: TGU, 1991. 152 p.)
9. Akhmedova Sh. M.// Morphometric changes in age-related signs of the liver // Special Issue: Applying Foreign Experience In Distance Education To The Education System-2022 Issn: 2181-2594
10. Kuzmenko L.G., Kiseleva N.M., Simonova AV. Training in the liver. Journal nauchnyx statey Zdorove i obrazovanie v XXI veke. 2013; 15 (1-4): 170-175. Russkiy (Kuzmenko L.G., Kiseleva N.M., Simonova A.V. Starenie i timus // Jurnal nauchnyx sostoyaniy zdorovya i obrazovaniya v XXI veke. 2013. T. 15, № 1-4. P. 170-175 )
11. Орзиев З. М., Нуриллоева Ш. Н. Компетентность количественных показателей ведущих клинических признаков холестаза в дифференциации его градаций //Биология и интегративная медицина. – 2018. – №. 4. – С. 62-73.
12. qizi Nurilloeva, S. N. (2022). OBSTRUCTIVE PULMONARY DISEASE AND CHANGES IN MENTAL STATUS IN PATIENTS WITH COVID-19. *THE ROLE OF SCIENCE AND INNOVATION IN THE MODERN WORLD*, 1(3), 91-97.
13. qizi Nurilloeva, Shahodat Nurillo. "OBSTRUCTIVE PULMONARY DISEASE AND CHANGES IN MENTAL STATUS IN PATIENTS WITH COVID-19." *THE ROLE OF SCIENCE AND INNOVATION IN THE MODERN WORLD* 1.3 (2022): 91-97.
14. Nurillokizi N. S. Metabolic Syndrome: Methods of Prevention and Treatment //BARQARORLIK VA YETAKCHI TADQIQOTLAR ONLAYN ILMIIY JURNALI. – 2021. – Т. 1. – №. 6. – С. 475-482.
15. qizi Nurilloeva S. N. OBSTRUCTIVE PULMONARY DISEASE AND CHANGES IN MENTAL STATUS IN PATIENTS WITH COVID-19 //THE ROLE OF SCIENCE AND INNOVATION IN THE MODERN WORLD. – 2022. – Т. 1. – №. 3. – С. 91-97.
16. Nurilloeva Shakhodat Nurillo kizi. Diagnosis of Tubuloglomerular Relationship in Patients with Metabolic Syndrome // Journal of advanced research and stability (JARS) Volume: 01 Issue: 06 | 2021 ISSN: 2181-2608. –P. 469-474.
17. Хамдамов И.Б. Клиническая оценка эффективности традиционного подхода лечения грыж передней брюшной стенки у женщин фертильного возраста // Вестник врача. –Самарканд 2022. № 2.2 (104).-С.65-70.
18. Khamdamov I.B., Khamdamov A.B. Differentiated approach to the choice of hernioplasty method in women of fertile age (Clinical and experimental study) // Тиббиётда янги кун. – Бухоро, 2021.-№ 6 (38/1).-С. 112-114.
19. Хамдамов И.Б., Хамдамов А.Б. Фертил ёшдаги аёлларда эндовидеохирургик герниопластика // Тиббиётда янги кун. Бухоро, 2021.-№6 (38/1) -С. 25-27.
20. Хамдамов И.Б. Experimental determination of the extensibility of the anterior abdominal wall tissues at different times of pregnancy using various approaches to hernioplasty//

Academicia: An International Multidisciplinary Research Journal Vol. 12, Issue 04, April 2022  
SJIF 2022 = 8.252 P.193-201

21. Хамдамов И.Б. Совершенствование тактических подходов в лечении грыж передней брюшной стенки у женщин фертильного возраста // Тиббиётда янги кун. Бухоро, 2022.-№10(48)- С. 338-342.

22. Хамдамов И.Б. Морфофункциональные особенности брюшного пресса у женщин репродуктивного возраста // Тиббиётда янги кун. Бухоро, 2022.-№3(41)- С. 223-227.

23. Khamdamova M.T. Ultrasound features of three-dimensional echography in assessing the condition of the endometrium and uterine cavity in women of the first period of middle age using intrauterine contraceptives // Biology va tibbyot muammolari. - Samarkand, 2020. - No. 2 (118). - P.127-131.

24. Khamdamova M. T. Ultrasound assessment of changes in the endometrium of the uterus in women of the first and second period of middle age when using intrauterine and oral contraceptives // Биомедицина ва амалиёт журнали. – Ташкент, 2020. - №2. - 8 часть. - С.79-85.

25. Khamdamova M. T. Anthropometric characteristics of the physical status of women in the first and second period of middle age // A new day in medicine. Tashkent, 2020. - № 1 (29). - С.98-100.

26. Khamdamova M.T. Age-related and individual variability of the shape and size of the uterus according to morphological and ultrasound studies // News of dermatovenereology and reproductive health. - Tashkent, 2020. - No. 1-2 (88-80). - P.49-52.

27. Khamdamova M. T. Anthropometric characteristics of the physical status of women in the first and second period of middle age // Тиббиётда янги кун. Ташкент, 2020. - № 1 (29). - С.98-100.

28. Хамдамова М.Т. Возрастная и индивидуальная изменчивость формы и размеров матки по данным морфологического и ультразвукового исследований // Новости дерматовенерологии и репродуктивного здоровья. - Ташкент, 2020. - № 1-2 (88-80). - С.49-52.

29. Хамдамова М.Т. Ультразвуковые особенности трехмерной эхографии в оценке состояния эндометрия и полости матки у женщин первого периода среднего возраста применяющие внутриматочные контрацептивные средства // Биология ва тиббиёт муаммолари. - Самарканд, 2020. - №2 (118). - С.127-131.

30. Khamdamova M. T. Ultrasound assessment of changes in the endometrium of the uterus in women of the first and second period of middle age when using intrauterine and oral contraceptives // Биомедицина ва амалиёт журнали. – Ташкент, 2020. - №2. - 8 часть. - С.79-85.

31. Хамдамова М.Т. Особенности ультразвуковых параметров матки у женщин первого и второго периода среднего возраста применяющие инъекционные контрацептивные средства // Тиббиётда янги кун. - Ташкент, 2020. - № 2/1 (29/1). - С.154-156.

32. Хамдамова М.Т. Особенности ультразвукового изображения матки и яичников у женщин второго периода среднего возраста применяющие комбинированные

оральные контрацептивные средства // Тиббиётда янги кун. - Ташкент, 2020. - № 2 (30). - С. 258-261.

33. Хамдамова М.Т. Индивидуальная изменчивость матки и яичников у женщин применяющие и не использующие различные виды контрацептивные средства // Тиббиётда янги кун. - Ташкент, 2020. - № 3 (31). - С. 519-526.

34. Khamdamova M. T. Echographic features variability in the size and shape of the uterus and ovaries in women of the second period of adulthood using various contraceptives // Asian Journal of Multidimensional Research - 2020. – N9 (5). - P.259-263.

35. Khamdamova M. T. Somatometric characteristics of women of the first and second period of adulthood using different contraceptives with different body types // The american journal of medical sciences and pharmaceutical research - 2020. – N8 (2). - P.69-76.

