



CONSERVATIVE TREATMENT OF DAMAGE TO THE SPLEN DURING CLOSED ABDOMINAL TRAUMA

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ABSTRACT

The spleen has a number of important functions, the main of which are participation in hematopoiesis, the immune status of the body and an important role in the hemostasis system [2, 5, 13, 18, 24]. In particular, after splenectomy there is a change in the main indicators of the vascular-platelet component of hemostasis: an increase in the number of platelets and their functional activity, including adhesive ability, the reaction of release of platelet factors is disrupted, and the retraction index decreases [7, 21]. Changes can also be traced in the coagulation link of the hemostasis system: the activated partial thromboplastin time is shortened, the concentration of fibrinogen increases, and fibrinolysis is inhibited. All this leads to the development of thrombotic complications [8, 14, 19, 26].

The participation of the spleen in the immune status of the body has been proven. The spleen belongs to the peripheral lymphoid organs [3, 4]. Suppressor and helper lymphocytes and some effector cells are concentrated in it, as well as the process of active antibody formation and the production of humoral mediators of immunity [4]. The spleen contains approximately 35% T lymphocytes and about 65% B lymphocytes [3, 6, 15, 20]. Both stages of differentiation of antibody-forming cells from bone marrow precursors occur in it, while for T lymphocytes the antigen-independent stage of differentiation from bone marrow precursors occurs in the thymus, and the antigen-dependent stage in the spleen [10, 16, 21, 27]. The complex structure of the lymphatic follicles of the spleen, including thymus-dependent, thymus-independent and macrophage elements, creates favorable conditions in the organ for the cooperation of cells in the immune response [1, 6, 17, 22]. There is no doubt that removal of the spleen leads to a change in the immune status of the body and the development of infectious complications, especially those caused by opportunistic microflora.

In addition, splenectomy leads to the development of severe purulent-septic complications, both in the immediate and late postoperative period. It is known that in the immediate postoperative period after splenectomy, the number of postoperative complications reaches 30% [12, 18, 25]. In this case, the mortality rate is 16-30% [11].



In order to prevent the development of complications and preserve the main functions of the organ, various types of organ-preserving operations are currently proposed; if their use is impossible, autologous transplantation of fragments of the damaged spleen is proposed [9, 27]. Currently, with the development and improvement of laparoscopic technology and visualization equipment, a new opportunity has emerged in the diagnosis and conservative treatment of spleen injuries. But the paucity of works in the periodical literature devoted to the study of non-operative treatment of spleen injuries to preserve the organ urgently requires scientific research in this direction. In hemodynamically stable patients with blunt spleen injuries, conservative management is becoming the standard of care. As the spleen is a common organ injured by blunt abdominal trauma, splenectomy is usually carried out to prevent hemorrhagic shock. Due to the immune functions of the spleen, infections like post-splenectomy sepsis, malaria, and pneumonia can occur after a splenectomy [1]. Conservative treatment of splenic injury and other abdominal organs has become increasingly popular in recent decades [2]. Conservative management achieved good results in 80-90% of cases, and it is currently considered the primary treatment for spleen injuries in most centers, but there is no uniform protocol for this [3]. Arterial embolization in non-operative management of splenic trauma has been found and reported even after 8 hours of the injury. Conservative treatment has a success rate exceeding 90% and a failure rate as low as 8%, according to the literature [4,5]. As an important part of our immune system, the spleen filters and captures macrophages and cellular and non-cellular material such as pneumococcus, other bacteria, and red blood cells from the blood and plasma. A spleen should be salvaged because septicemia, opportunistic post-splenectomy infections, and malaria can occur after a splenectomy [1,6]. In blunt abdominal trauma, the physical examination and laboratory data are not specific for splenic injury [7]. A CT scan is important in this situation [8]. This study sought to determine the outcome and success rate of conservative management of splenic injury in blunt abdominal trauma.

The purpose of the study. There was an improvement in the results of complex treatment for injuries of the spleen due to closed abdominal trauma.

Material and methods. We observed 25 patients with spleen damage due to concomitant abdominal trauma, who underwent conservative hemostatic therapy. They were combined with trauma to the skull in 8 (32.0%) cases, chest – in 10 (40.0%), pelvis and limbs – in 7 (28.0%) cases. Of these, there were 19 (76.0) men, 6 (24.0) women, the average age was 29.5 ± 1.5 years. The causes of combined splenic injury were: a fall from a height – in 13 (52.0%) patients, a car injury – in 12 (48.0%) patients. Duration of hospitalization of patients with spleen injury from the moment of injury: up to 1 hour - 18 (72.0%), from 1 to 3 hours - 7 (28%) victims.

The main criterion for choosing conservative treatment of patients was the presence of stable hemodynamics. Upon admission, in addition to clinical examination, all patients underwent dynamic ultrasound every 6-8 hours, multislice computed tomography (MSCT) of the abdominal cavity, a plain radiograph of the abdominal cavity and other anatomical areas by localization, a general blood and urine test, and a coagulogram.



When looking for fluid, ultrasound examined the most low-lying areas of the abdomen in all projections. The fluid was visualized as an anechoic zone. Small amounts of fluid collected in women in the retrouterine space (in the space of Douglas), in men - in the hepatorenal recess (in Morrison's pouch).

Subsequently, management tactics were determined depending on the severity of the patient's condition, the volume of hemoperitoneum, the intensity of blood loss (BBL), hemodynamic parameters (CVP, heart rate, diuresis).

Results. All patients with splenic injury upon admission to the hospital showed clear signs of intraperitoneal bleeding: abdominal pain, collapse, positive symptoms of Kerr, Elekera "Vanka-Vstanka", Kulenkamf. During an ultrasound examination, the volume of hemoperitoneum was from 200 to 350 ml in 15 patients, from 350 ml to 500 ml in 9, and more than 1200 ml in 1. The latter underwent video laparoscopic blood removal with a favorable outcome.

All patients required a transfusion of cryoprecipitate of the corresponding blood group on average 3.5 ± 0.3 doses, 16 patients - fresh frozen plasma 350.0 ± 55.8 ml for each patient and 9 patients - 250 ± 35.0 ml of donor red blood cells. By the 7th day of treatment, ultrasound and MSCT revealed no free fluid in the abdominal cavity. As we gained experience, we determined the criteria for conservative treatment: absence of signs of ongoing intraperitoneal bleeding; stable hemodynamic parameters (BP, CVP, heart rate) against the background of ongoing infusion and hemostatic therapy; the amount of blood spilled into the abdominal cavity is up to 400-500 ml (<10% of the bcc); absence of signs of peritonitis and damage to other abdominal organs.

Our methods of conservative adequate hemostasis for spleen injuries were effective in 93.3% of cases. There were no complications or deaths associated with the use of conservative therapy and video laparoscopic techniques.

Conclusions.

Non-operative treatment of spleen injuries is a risky undertaking and requires a medical institution to be well equipped with imaging equipment, as well as the possibility of constant monitoring of the patient. Therapeutic video laparoscopy can become an alternative to laparotomy, which can reduce the incidence of postoperative complications.

References:

1. З ЖД. АКТУАЛЬНОСТЬ ПРОБЛЕМЫ ИЗМЕНЕНИЙ ГЛАЗНОГО ДНА ПРИ АРТЕРИАЛЬНОЙ ГИПЕРТЕНЗИИ. *SCIENTIFIC JOURNAL OF APPLIED AND MEDICAL SCIENCES*. 2024;3(3):316-319.
2. З ЖД, С КН, Ш СД. Диабетическая Ретинопатия: История, Диагностика, Профилактика, Лечение. *Miasto Przyszłości*. 2024;46:497-509.
3. А.х С, И.б М, Б.п Н, М.э Б. ДИАГНОСТИКА И ЛЕЧЕНИЕ ТЕРМОИНГАЛЯЦИОННОЙ ТРАВМЫ. *Research Focus*. 2024;3(3):120-129.
4. Эшмаматович КА, Нуриддин НА, Жамолидиновна ЭЗ, Ашрафовна СФ, Фархадовна ИУ. ЗНАЧЕНИЕ ГЕНОВ В ВЫБОРЕ ЛЕЧЕНИЯ ЗАБОЛЕВАНИЙ ЩИТОВИДНОЙ ЖЕЛЕЗЫ:



Yangi O'zbekiston taraqqiyotida tadqiqotlar o'rni va rivojlanish omillari. *Yangi O'zbekiston taraqqiyotida tadqiqotlarni o'rni va rivojlanish omillari*. 2024;4(1):9-15.

5. З ЖД, Ж ИЖ. КЛАССИФИКАЦИЯ ГИПЕРТОНИЧЕСКОЙ РЕТИНОПАТИИ НА ОСНОВЕ ДАННЫХ ОПТИЧЕСКОЙ КОГЕРЕНТНОЙ ТОМОГРАФИИ. *SCIENTIFIC JOURNAL OF APPLIED AND MEDICAL SCIENCES*. 2024;3(3):336-342.

6. З ЖД, Ж ИЖ. КЛИНИКО-ФУНКЦИОНАЛЬНЫЕ ПОКАЗАТЕЛИ ОРГАНА ЗРЕНИЯ У ПАЦИЕНТОВ С ИШЕМИЧЕСКИМИ ИЗМЕНЕНИЯМИ СОСУДОВ СЕТЧАТКИ. *SCIENTIFIC JOURNAL OF APPLIED AND MEDICAL SCIENCES*. 2024;3(3):286-293.

7. З ЖД, С КН, Ш СД. Мониторинг Диабетической Ретинопатии У Детей С Инсулинзависимым Сахарным Диабетом. *Research Journal of Trauma and Disability Studies*. 2024;3(3):173-177.

8. А.к Х, С.б Ш, С.д К, И.б М. НЕРЕШЕННЫЕ ПРОБЛЕМЫ ЛЕЧЕНИЕ БОЛЬНЫХ С ИНГАЛЯЦИОННЫМИ ТРАВМАМИ. *Boffin Academy*. 2024;2(1):64-74.

9. А.к Х, С.б Ш, Н.к С, И.б М. ОПТИМИЗАЦИЯ СОВРЕМЕННЫХ МЕТОДОВ ИНТЕНСИВНОЙ ТЕРАПИИ ПРИ ОЖОГОВОМ ШОКЕ. *JTCOS*. 2024;6(1):27-39.

10. З ЖД. ОЦЕНКА КАЧЕСТВЕННЫХ ПОКАЗАТЕЛЕЙ ОПТИКОКОГЕРЕНТНОЙ ТОМОГРАФИИ У ПАЦИЕНТОВ С АРТЕРИАЛЬНОЙ ГИПЕРТЕНЗИЕЙ. *SCIENTIFIC JOURNAL OF APPLIED AND MEDICAL SCIENCES*. 2024;3(3):327-329.

11. З ЖД. ОЦЕНКА КЛИНИЧЕСКИХ И ФУНКЦИОНАЛЬНЫХ ПОКАЗАТЕЛЕЙ ЭНДОТЕЛИАЛЬНОЙ ДИСФУНКЦИИ В СЛЕЗНОЙ ЖИДКОСТИ У ПАЦИЕНТОВ С АРТЕРИАЛЬНОЙ ГИПЕРТЕНЗИЕЙ. *SCIENTIFIC JOURNAL OF APPLIED AND MEDICAL SCIENCES*. 2024;3(3):330-335.

12. А.т А, Ж.а Р, А.а Ю, И.н Я. ОЦЕНКА ЭПИДЕМИОЛОГИЧЕСКОЙ СИТУАЦИИ С ДИАБЕТИЧЕСКОЙ РЕТИНОПАТИЕЙ В ГОРОДЕ САМАРКАНД. *Экономика и социум*. 2024;(4-1 (119)):758-761.

13. З ЖД, Ж ИЖ. ПАТОГЕНЕТИЧЕСКИЕ АСПЕКТЫ ИЗМЕНЕНИЙ ГЛАЗНОГО ДНА ПРИ АРТЕРИАЛЬНОЙ ГИПЕРТЕНЗИИ. *SCIENTIFIC JOURNAL OF APPLIED AND MEDICAL SCIENCES*. 2024;3(3):277-285.

14. А.к Х, С.б Ш, И.а Т, И.б М. ПОВРЕЖДЕНИЯ КИШЕЧНИКА ПРИ СОЧЕТАННОЙ ТРАВМЕ ЖИВОТА (Обзор литературы). *Science and innovation*. 2024;4(1):24-35.

15. З ЖД, А БС. РЕЗУЛЬТАТЫ ОЦЕНКИ УРОВНЯ ЭНДОТЕЛИНА-1 И Д-ДИМЕРОВ В СЛЕЗНОЙ ЖИДКОСТИ У ПАЦИЕНТОВ С АРТЕРИАЛЬНОЙ ГИПЕРТЕНЗИЕЙ. *SCIENTIFIC JOURNAL OF APPLIED AND MEDICAL SCIENCES*. 2024;3(3):300-307.

16. З ЖД, А БС. РЕЗУЛЬТАТЫ ОЦЕНКИ ЭФФЕКТИВНОСТИ КОМПЛЕКСНОГО ЛЕЧЕНИЯ У ПАЦИЕНТОВ С 3-4 СТАДИЯМИ ГИПЕРТОНИЧЕСКОЙ АНГИОРЕТИНОПАТИИ. *SCIENTIFIC JOURNAL OF APPLIED AND MEDICAL SCIENCES*. 2024;3(3):308-315.

17. З ЖД, Ж ИЖ. СОВРЕМЕННЫЕ КОНЦЕПЦИИ В ОЦЕНКЕ ИЗМЕНЕНИЙ ГЛАЗНОГО ДНА ПРИ АРТЕРИАЛЬНОЙ ГИПЕРТЕНЗИИ. *SCIENTIFIC JOURNAL OF APPLIED AND MEDICAL SCIENCES*. 2024;3(3):267-276.

18. З ЖД. СОВРЕМЕННЫЕ ПОДХОДЫ К ЛЕЧЕНИЮ ХОРИОРЕТИНОПАТИЙ ПРИ АРТЕРИАЛЬНОЙ ГИПЕРТЕНЗИИ. *SCIENTIFIC JOURNAL OF APPLIED AND MEDICAL SCIENCES*. 2024;3(3):320-326.



19. З ЖД, Ж ИЖ. ТЕОРЕТИЧЕСКОЕ ОБОСНОВАНИЕ ИССЛЕДОВАНИЯ ЭНДОТЕЛИНА-1 И Д-ДИМЕРОВ В КРОВИ И СЛЕЗНОЙ ЖИДКОСТИ ПАЦИЕНТОВ С ГИПЕРТОНИЧЕСКОЙ АНГИОРЕТИНОПАТИЕЙ. *SCIENTIFIC JOURNAL OF APPLIED AND MEDICAL SCIENCES*. 2024;3(3):294-299.
20. Т АА, А РЖ, А ЮА. ЧАСТОТА ВСТРЕЧАЕМОСТИ ДИАБЕТИЧЕСКОЙ РЕТИНОПАТИИ У НАСЕЛЕНИЯ г. САМАРКАНДА. *Advanced Ophthalmology*. 2024;8(2):123-125. doi:10.57231/j.ao.2024.8.2.024
21. Saadh MJ, Mustafa MA, Kumar S, et al. Advancing therapeutic efficacy: nanovesicular delivery systems for medicinal plant-based therapeutics. *Naunyn-Schmiedeberg's Arch Pharmacol*. Published online May 3, 2024. doi:10.1007/s00210-024-03104-9
22. Saadh MJ, Mustafa MA, Kumar S, et al. Advancing therapeutic efficacy: nanovesicular delivery systems for medicinal plant-based therapeutics. *Naunyn-Schmiedeberg's Arch Pharmacol*. Published online May 3, 2024. doi:10.1007/s00210-024-03104-9
23. Allayarov A, Rizaev J, Yusupov A. ADVANTAGES OF LASER TREATMENT OF DIABETIC RETINOPATHY: ANALYSIS OF CLINICAL DATA. *Science and innovation*. 2024;3(D4):142-145.
24. Patel AA, Mohamed AH, Rizaev J, et al. Application of mesenchymal stem cells derived from the umbilical cord or Wharton's jelly and their extracellular vesicles in the treatment of various diseases. *Tissue and Cell*. 2024;89:102415. doi:10.1016/j.tice.2024.102415
25. Siddikovna TG, Davranovna A, Shuxratovna NG. Basic Mechanisms of Development, Diagnosis and Treatment of Acromegaly. *International Journal of Alternative and Contemporary Therapy*. 2024;2(4):26-29.
26. Ризаев Ж, Ергашева М. Болalarda neyroinfektsiyadan keyin kelib chiqadigan nogironlikning tibbiy jihatlarini tahlil qilish. *САПАПКИ*. 2024;1(1):32-33.
27. А.х С, И.б М, Б.п Н, М.э Б, Ж.а Р, Б.а Я. СОВРЕМЕННЫЕ ТЕХНОЛОГИИ В ХИРУРГИЧЕСКОМ ЛЕЧЕНИИ ОСТРОГО КАЛЬКУЛЕЗНОГО ХОЛЕЦИСТИТА. *Research Focus*. 2024;3(3):130-138.
28. Allayarov A, Rizaev J, Yusupov A. CLINICAL EFFICACY OF LASER TREATMENT OF DIABETIC RETINOPATHY. *Science and innovation*. 2024;3(D4):138-141.
29. S.e M, S.i B, I.b M, et al. Comprehensive study of labor landscape automation, economic dynamics and the role of tourism. *International Journal of Science and Research Archive*. 2024;11(1):996-1000. doi:10.30574/ijsra.2024.11.1.0013
30. Eshmatovich KA, Nigina K, Shahzoda M, Temurbek S, Charos P. CONTRIBUTION OF CENTRAL REGULATORS OF THE IMMUNE RESPONSE TO THE DEVELOPMENT OF THYROID DISEASES. *Research and implementation*. 2024;2(3):289-297.
31. Alieva D, Rizaev J, Sadikov A. COVID-19 PANDEMIC AND ANALYSIS OF THE CURRENT EPIDEMIOLOGICAL SITUATION IN UZBEKISTAN AND NEIGHBOURING COUNTRIES OF CENTRAL ASIA AND THE WORLD (Analytical review). *Young Scholar's Academic Journal*. 2024;3(2):16-29.
32. Saadh MJ, Pallathadka H, Abed HS, et al. Detailed role of SR-A1 and SR-E3 in tumor biology, progression, and therapy. *Cell Biochem Biophys*. Published online June 17, 2024. doi:10.1007/s12013-024-01350-5



33. Aramovna DZ, Samariddin A, Bobir A, Abbos B, Ravza D. DIAGNOSIS AND INTENSIVE TREATMENT OF TYPE 2 DIABETES TO ACHIEVE THE TARGET LEVEL OF GLYCED HEMOGLOBIN AND REDUCE THE RISK OF VASCULAR COMPLICATIONS. *Research and implementation*. 2024;2(4):26-35.
34. Aramovna DZ, Suhrob R, Zuhaxon O, Dilovar Z, Muxlisa X, Dilorom O. DIAGNOSTIC AND TREATMENT METHODS OF HYPERPARATHYROIDIS. *FAN, TA'LIM, MADANIYAT VA INNOVATSIYA JURNALI | JOURNAL OF SCIENCE, EDUCATION, CULTURE AND INNOVATION*. 2024;3(6):1-9.
35. Sabirdjanovna KN, O'g'li RST, O'g'li XHA, Qizi QMM, O'g'li XBU, Qizi TSR. Diagnostic Aspects and Comparative Diagnostics of Thyroid Disease. *JSML*. 2024;2(5):99-106.
36. Alimdjanovich RJ, Shakirdjanovich KO, Isamiddinovich KA, Kizi RMA. Dynamics of Local Immunity of the Oral Cavity at the Stages of Treatment. *NATURALISTA CAMPANO*. 2024;28(1):2335-2337.
37. Erkinovna SD, Mamadiorova MM, Kazakova NB, Kadirova MK, Omonova DO. EARLIER DIAGNOSIS OF ACROMEGALY. *PEDAGOGIKA, PSIXOLOGIYA VA IJTIMOY TADQIQOTLAR | JOURNAL OF PEDAGOGY, PSYCHOLOGY AND SOCIAL RESEARCH*. 2024;3(5):346-352.
38. Alieva DA, Rizaev JA, Sadikov AA. EPIDEMIOLOGICAL ASSESSMENT OF THE COVID-19 SITUATION AMONG THE SPORTS COMMUNITY. *EPRA International Journal of Research and Development (IJRD)*. 2024;9(5):376-379.
39. Eshmamatovich KA, Nazokat S, Muzaffar T, Saodat S, Taxmina I. FEATURES OF CROHN'S DISEASE IN A CHILD WITH CONGENITAL SOMATOTROPIC INSUFFICIENCY. *Research and implementation*. 2024;2(3):298-306.
40. Sobirdjanovna KN, Yusufbek J, Suhrob O, Jamshid O, Dilorom O. Features of Use of Combined Glow-Lowing Therapy in Patients with Type 2 Diabetes and IHD. *JSML*. 2024;2(4):40-44.
41. Blagonravova AS, A BC, Rizaev ZA, A PЖ, Gileva OS, C FO. Horizons of international cooperation: medical science, practice and education. *Perm Medical Journal*. 2024;41(1):168-170. doi:10.17816/pmj411168-170
42. Aramovna DZ, Ehson I, Javohir E, Dilfuza S, Mamatkul S. IGG4-RELATED DISEASES IN THE BACKGROUND OF DIABETES MELLITUS. *Research and implementation*. 2024;2(4):36-44.
43. Aramovna DZ, Sevinch U, Nigina S, Umidjon M, Maqsud I, Dilorom O. MODERN APPROACH TO THE TREATMENT OF TYPE 2 DIABETES MELLITUS. *PEDAGOGIKA, PSIXOLOGIYA VA IJTIMOY TADQIQOTLAR | JOURNAL OF PEDAGOGY, PSYCHOLOGY AND SOCIAL RESEARCH*. 2024;3(5):307-317.