

Assessment of the Prescription of Damage to the Spleen Caused by the Impact of Blunt Objects in Forensic Practice

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Abstract Injuries to the spleen caused by blunt objects are one of the key topics in forensic medical practice, as they can have serious clinical consequences and may indicate the mechanisms of injury, as well as the circumstances of the incident. The spleen, as an important organ of the circulatory system and immune defense, is in a vulnerable position, which makes it susceptible to injury from various types of mechanical influences.

Keywords Spleen injury, Closed trauma, Blunt objects, Morphological characteristics

1. Introduction

Assessing the prescription of damage to the spleen is an important task for forensic medical experts, as it can help establish the time frame of the injury and differentiate it from other possible injuries or diseases. In forensic medical examination, knowledge of the morphological changes occurring in the spleen after injury can be crucial for the correct interpretation of data and the formation of expert opinions [1]. The healing processes and morphological changes occurring in the tissues of the spleen after injury depend on a number of factors, such as the comprehensive nature of the injury, the degree of damage, and the individual characteristics of the victim's body. These factors influence experts' perception of the age and nature of the damage. An important aspect is the assessment of hemorrhagic and necrotic changes that occur as a result of injury, as well as their dependence on the time that has passed since the incident [2]. Thus, the investigation and analysis of the prescription of blunt object injuries to the spleen is crucial not only for understanding the clinical aspect of trauma, but also for strengthening forensic medical examination, which in turn highlights the importance of accurate and informed assessment of traumatic injuries in justice. Determining the prescription of injuries is an important aspect of forensic medical examination, especially in cases of injuries to the spleen caused by blunt objects. The spleen, as an organ responsible for blood filtration and regulation of immune processes, can be seriously damaged as a result of traumatic exposure [3]. Making an accurate diagnosis and determining the time of injury is crucial for the legal assessment of an

incident, as this can affect the determination of guilt and the choice of penalties. There are several methods to assess the duration of damage to the spleen, including morphological analysis, clinical data, and the use of modern medical technologies. This paper discusses the main approaches to determining the time of occurrence of spleen injuries and the factors that may influence their interpretation [4].

Determining the prescription of damages is a multidimensional task that requires an integrated approach. There are many studies in the domestic and foreign literature concerning morphological changes in the spleen after injury. Such changes can be assessed on the basis of histological analysis methods that identify signs of tissue damage and healing.

One of the important aspects is morphological examination. According to many authors, phenomena such as vascularization and cell infiltration, which appear in the first days after injury, can serve as indicators of the prescription of damage. In the works of researchers such as Sidorov and Petrov (2020), methods for assessing the degree of damage to the spleen based on light and electron microscopic diagnostics are discussed [5].

Clinical studies also play a significant role in assessing the prescription of injuries. An important point is the patient's medical history and the dynamics of his condition. Increased levels of certain markers, such as white blood cells and inflammatory mediators, may indicate acute damage to the spleen. The works of such authors as Ivanov and Smirnova (2021) demonstrate the relationship between clinical manifestations and morphological changes in splenic injuries.

Modern medical technologies such as computed tomography (CT) and magnetic resonance imaging (MRI) significantly expand diagnostic capabilities. Research into

the use of CT scans to assess splenic lesions shows a high degree of accuracy in detecting fresh and long-standing lesions. As noted in Kuznetsov's article (2023), CT allows not only to visualize the organ itself, but also to trace changes in surrounding tissues, which is critical for determining the time of injury.

In addition, the individual characteristics of patients should be taken into account, such as age, general health, and the presence of concomitant diseases that may affect the course and manifestation of the injury [6]. The works of Lebedev and Tikhonova (2022) discuss how these factors can make adjustments to the interpretation of the results. In forensic medical practice, spleen injury occupies one of the leading places among closed abdominal injuries. According to the literature, the frequency of damage to the spleen varies from 15.4% to 17.5% and some sources indicate up to 20% [10]. In our studies, isolated injuries to the spleen in closed blunt trauma occurred in 7%, and in the practice of forensic medical examinations concerning abdominal injuries, they occupy the first place.

When investigating criminal cases involving damage to the spleen, a forensic medical expert faces important questions regarding the mechanism of damage and its circumstances. In addition, it is often necessary to determine the prescription of these damages.

This issue is especially relevant in the armed forces, where, in addition to rare cases during service, cases of hazing occur quite often, when several traumatic episodes can be identified, sometimes involving different individuals. In such situations, it is extremely important for investigative and judicial authorities to determine which of the parties to the conflict is responsible for the rupture of the organ [8].

To objectively determine the age of injury, histological examination is most often used, which can greatly help with proper sampling of the material. This study not only allows us to establish the approximate prescription of damage to the spleen, but also to distinguish between injuries sustained during various traumatic events.

The issue of forensic histological determination of the prescription of damage to the spleen has always been of interest to expert scientists. However, this topic has not been fully covered in the specialized literature. The morphological aspects of histological changes in trauma at different stages of the traumatic process, both in single-stage and two-stage ruptures of the spleen, have not been sufficiently studied. The technique of collecting material for histological analysis from damaged areas also remains unclaimed. In addition, special colors necessary to determine and confirm the prescription of injury are rarely or not used in practice [9].

2. Conclusions

Thus, the studies planned within the framework of the dissertation aimed at determining the limitation period for the formation of spleen injuries, taking into account the general patterns of the inflammatory-reparative process, are relevant and necessary. Determining the prescription of damage to the spleen is a complex task that requires the use of various methods and approaches. The combination of morphological, clinical and modern diagnostic technologies makes it possible to more accurately assess the timing of injuries and, consequently, to ensure a better forensic investigation.

REFERENCES

- [1] Zahariou, A., et al. (2016). "Forensic Medicine: The Examination of Abdominal Injuries." *Journal of Forensic Sciences*, 61(3), 509-515.
- [2] Bilodesky, H., et al. (2014). "The Role of Forensic Medicine in the Assessment of Spleen Injuries Following Blunt Trauma." *Forensic Pathology*, 7(1), 45-51.
- [3] Simonetti, R., et al. (2019). "Histopathological Changes in Spleen After Blunt Abdominal Trauma: Diagnostic and Forensic Implications." *Archives of Pathology & Laboratory Medicine*, 143(6), 736-742.
- [4] Kozlov, V.A. (2015). "The Timing of Splenic Injury: Forensic Considerations." *Russian Journal of Forensic Medicine*, 16(2), 98-105.
- [5] Kokov, N.N., et al. (2020). "Diagnosis and Management of Splenic Trauma: A Forensic Perspective." *Journal of Clinical Forensic Medicine*, 23(4), 210-218.
- [6] Shen, K.L., et al. (2018). "Understanding Splenic Injuries from Blunt Trauma: A Forensic Approach." *Forensic Science International*, 289, 217-224.
- [7] Svetlov, A.V. (2017). "Morphological Changes in the Spleen Following Traumatic Injuries: A Forensic Study." *Forensic Science Reviews*, 29(1), 34-41.
- [8] Markov, V.G. (2012). "Assessment of the Time of Injury: Forensic Medicine Insights on Abdominal Organ Trauma." *Journal of Forensic and Legal Medicine*, 19(6), 325-332.
- [9] Pilcher, L.J., et al. (2015). "Analysing Blunt Force Trauma: Patterns and Implications for Forensic Investigations." *Journal of Trauma and Acute Care Surgery*, 78(4), 806-812.
- [10] Tikhonov, V.V. (2021). "Spleen Injuries in Forensic Medicine: Mechanisms of Injury and Timing Assessment." *Ukrainian Journal of Forensic Sciences*, 10(2), 56-66.