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## **MODERN ASPECTS OF FORENSIC MEDICAL ASSESSMENT OF MORPHOFUNCTIONAL CHANGES IN THE LIVER IN CLOSED WOUNDS OF THE ABDOMINAL CAVITY**

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The formation of injuries to the parenchymal organs of the abdomen with blunt objects is a closed blunt trauma of the abdomen, which, according to the current definition, constitutes a complex of injuries to the internal organs of the abdomen and retroperitoneal space in the absence of signs of disruption of the integrity of the skin of the abdomen, lower chest and lumbar region [1, 3].

Injury to the parenchymal organs of the abdomen is associated with transport accidents, cases of falling from a height and exposure to blunt objects with a limited impact surface. A frequent complication of these injuries is the rapid development of massive blood loss and hemorrhagic shock, and in a later period - peritonitis. Mortality from injuries to the parenchymal organs of the abdomen in cases of combined body trauma ranges from 55.5 to 81.5% of cases [24]. With isolated trauma to the parenchymal organ of the abdomen, deaths account for up to 20% [14].

The first place in the frequency of injuries to the abdominal organs is occupied by parenchymal organs - liver, spleen, kidneys [18]. In case of injury by blunt objects with an unlimited impact surface, when the mechanism of injury, along with the impact action, involves compression of the body, the formation of multiple ruptures of parenchymal organs located in the projection of the impact of the traumatic object is characteristic. In cases where severe compression prevails, the formation of multiple ruptures of the entire organ in combination with its fragmentation and crushing is noted. With this mechanism, pronounced damage to adjacent organs and tissues is observed.

In the few works devoted to the issues of forensic medical diagnosis of liver injury, the authors describe such morphological features of damage as the nature, localization, number, shape, size, depth of damage, the presence of cracks extending from the damage, the nature of the edges and walls of damage, while many questions of expert the assessments are mostly of a stating descriptive nature. Most authors agree that the main type of traumatic effect in the mechanism of formation of closed liver injuries is a blow. Along with direct, fast and strong impact on a limited area of the organ, leading to its damage, a slow-acting traumatic effect with a wide area of

application is possible. In the formation of liver damage, the authors recommend taking into account the impact resistance exerted by the spine, ribs, and flexion of the liver through the spine, as well as inertial displacement of the organ, which occurs, for example, when falling from a height, accompanied by damage to the ligamentous apparatus of the organ [9–12, 19].

An informative morphological sign in the form of multiple arcuate ruptures of the liver, which allows one to determine the direction of movement of a vehicle when a car wheel passes through the human body [3, 4]. During a microscopic examination to establish the lifetime and duration of formation of liver damage, one should take into account changes in the formed elements in hemorrhages, the appearance of fibrin and plasma filaments in them, the detection of neutrophil granulocytes along the periphery, and the severity of the vascular reaction in the area of injury. The age of formation of liver damage is indicated by the progression of necrotic changes in the parenchyma, the appearance of signs of hepatocyte regeneration in the form of nuclear hyperchromia and an increase in the number of binucleate cells [2]. When determining the age of liver damage, one should take into account the pronounced regenerative capabilities of the liver in response to alteration [26].

The study of the complex of injuries accompanying closed blunt abdominal trauma is a topical problem not only in the practice of clinical healthcare (surgery, traumatology, resuscitation), but also among morphologists during autopsy examination of material discovered during the forensic medical examination of corpses.

Promising in solving the forensic medical determination of the circumstances of blunt trauma (type of impact, direction, force and area of the traumatic surface) based on the morphology of liver injuries is an in-depth study of the issues of the formation mechanism and the establishment of the morphological characteristics of local and distant liver injuries.

## Literature

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