



Journal Website:
<https://theusajournals.com/index.php/ijmscr>

Copyright: Original content from this work may be used under the terms of the creative commons attributes 4.0 licence.



PECULIARITIES OF FORENSIC MEDICAL ASSESSMENT OF LIVER, SPLEEN AND KIDNEY DAMAGE DURING A FALL FROM HEIGHT

Submission Date: February 17, 2023, Accepted Date: February 22, 2023,

Published Date: February 27, 2023

Crossref doi: <https://doi.org/10.37547/ijmscr/Volume03Issue02-06>

O.I. Khvan

Republican Scientific And Practical Center Of Forensic Medical Examination Of The Ministry Of Health Of The Republic Of Uzbekistan

A.N. Don

Tashkent State Dental Institute, Uzbekistan

Kh.Kh. Yakubov

Tashkent Pediatric Medical Institute, Uzbekistan

T.K. Nasyrov

Tashkent Pediatric Medical Institute, Uzbekistan

ABSTRACT

The article reflects the data of an expert assessment of blunt abdominal trauma in a fall from a height. It is especially important to find out the circumstances of the injury in order to have an idea of possible damage to the hollow and parenchymal organs of the abdominal cavity. According to the conducted studies, when falling from a height, characteristic damage was established, depending on the height of the fall.

KEYWORDS

Blunt, trauma, abdomen, organs, abdominal, cavity

INTRODUCTION

From the standpoint of forensic science and practice, a fall from a height is one of the most difficult types of injury. A fall from a height and the resulting damage in forensic medicine are considered as a kind of impact of hard blunt objects. This is primarily due to the variety of types of falls, circumstances and conditions of injury, that form numerous polymorphic injuries [1,2,3].

According to statistics, a fall from a height has firmly taken the second place in the structure of fatal injuries after a car injury (up to 40% of all cases of fatal injury) and has held this position to date [4,5,6].

From the point of view of forensic medical examination, one of the most complex and difficult to diagnose types of injuries are injuries resulting from a fall from a height. At the same time, it should be noted that the biomechanical aspects of injury in a fall from a height, in comparison with other injuries, have not been studied enough from a forensic medical point of view [2,7,8]. Until now, many aspects of this problem remain unexplored [9, 10, 11].

In connection with all of the above, expert practice requires a number of issues to be resolved, which

indicates the need to develop differential diagnostic criteria for the forensic medical assessment of injuries resulting from a fall from a height [12,13,14].

The purpose of the study: to investigate the nature of damage to the liver, spleen and kidneys when falling from a height.

Material and methods of research : we analyzed the injury as a result of a fall from a height based on the data of 417 expert opinions of the Tashkent city bureau of the SME of the State Healthcare Institution of the Khokimiyat of Tashkent and 176 case histories of patients who were promptly and conservatively treated in hospitals in Tashkent. Of 593 cases of injuries to the abdominal organs, retroperitoneal space and anterior abdominal wall, 85 underwent a forensic examination due to a fall from a height, which accounted for 14.3% of all examinations (593).

The age gradation of the victims varied in a wide range from 5 to 88 years.

The distribution of cases of falls from a height depending on the type is presented in Table 1.

Table 1

Quantitative characteristics of falling from a height depending on the type

Kind of fall	Quantity	
	Abs .	%
On the feet	19	22.4
On the head	5	5.9

On the side surface	22	25.9
To the back surface	9	10.6
To the front surface	19	22.4
On the flight of stairs	5	5.9
Not indicated	6	7.1
Total	85	100

It follows from the table that most often contact with the impact surface occurred in a horizontal position (flat) - 58.8 % (50) of cases, much less often - on the legs and extremely rarely - on the head.

The fall occurred from various levels, both from residential premises and other structures.

By season, the largest number of cases of falling from a height was noted in the summer period - 35 observations (41.2%); somewhat less - in autumn 25 (29.4%), in spring - 16 people (18.8%); in winter - 9 (10.6%).

By the time of day, the following picture was revealed. Most often, the fall was recorded in the daytime (13-18 hours) - 24 cases (28.2%). 22 cases (25.9%) fell in the evening (19-24 hours). Approximately the same fall occurred at night (0-6 hours) - 12 (14.1%) and morning hours (7-12 hours) - 11 (12.9%). It should be noted that in 16 cases (18.8%), even the approximate time of the fall was not recorded in the directions and decisions of the investigating authorities.

Among the identified injuries, abrasions were noted in 49 cases (73.1%), the form of which was indicated in 46 cases (93.9%), the presence of a crust - in 3 (6.1%), the condition of the bottom - in 45 (91.8%), exfoliation of epidermal scales - in 5 (10.2%); bruises - in 46 (68.7%), wounds - in 34 (50.7%), of which the nature of the edges and ends was indicated in 31 observations (91.2%), walls - in 4 (11.8%), bottom condition - in 27 (79.4%); fractures were detected in 61 cases (91.0%), of which in 58 (95%) they were noncomminuted, in 4 (6.5%) - comminuted, in 7 (11.4%) - fragmentary, in 23 (37%) - comminuted-fragmentary, while the nature of the edges is indicated in 55 cases (60.4%), the plane - in 34 (37.4%). Only in 6 cases (9%) damaged bones were removed for additional examination.

On the part of the internal organs, lung damage was detected in 48 victims (56.5%), heart - in 8 (9.4%), brain - in 43 (50.6%), liver - in 8 (9.4%), kidneys - in 11 (12.9%), spleen - in 10 (11.8%), intestines - in 5 (5.9%), large blood vessels - in 9 (10.6%), torn ligamentous apparatus - in 45 (52.9%). Signs of general concussion of the body were found in 61 people (71.8%).

The nature of the impact surface was reflected in 15 cases (37.5%), of which the ground cover was in 9 cases (60%), asphalt - in 4 cases (26.6%), snow cover - in 1 (6.7%), and on frozen soil - in 1 (6.7%). The presence of protruding parts on the impact surface was noted in 3 cases (7.5%).

At a further stage of the study, we analyzed 29 cases of falling from a height and damage to the kidneys, liver and spleen.

When falling from a small height to 1 meter 11 victims, kidney injury was characterized by kidney bruises (8 victims, 72.7%) accompanied by subcapsular hemorrhages (3 victims, 27.3%), ruptures of the kidney parenchyma (1 victim, 9.1%), hemorrhages into the perirenal tissue (2 victims, 18.2%) and detachment of the upper pole of the kidney (1 victim, 9.1%).

In cases of falling from a great height, more than 1 m 11 victims among 11 suffered a kidney contusion based on the presence of erythrocytes in the urine (hematuria), in 3 victims, subcapsular hematoma was detected during ultrasound studies. Also, among this category of victims, ruptures (2 victims) and rupture of the kidneys (1 victim) were recorded.

To hemorrhages under the capsule were often focal, and the ruptures rarely had a large extent (sometimes up to 5 cm and up to a depth 1.5 cm). In one case, there were several breaks.

For example, when falling from a height, 3 multiple ruptures of the parenchyma at the hilum of the right kidney with the presence of an extensive retroperitoneal hematoma were noted.

A more severe injury to the kidneys (combined with signs of concussion of the body) occurred in cases of hitting the rear surface and torso (back) on hard ground after a fall from a height of 3 meters. Later it

was found that the kidney was torn into 3 parts, there was also a transverse rupture of the kidney in the region of the hilum in the middle segment.

For concussion of the body (with indirect exposure to a traumatic factor), the following kidney damage is characteristic: subcapsular hemorrhages and ruptures, ruptures of the capsule and parenchyma (from single to multiple), extending radially from the gate area, usually of moderate size. A severe injury to the kidneys during a fall from a height occurred in cases of hitting the hard ground with the back surface of the body.

I would like to note that in the presence of pathological changes in the kidney (hydronephrosis, pyonephrosis, kidney anomalies, chronic pyelonephritis) preceding the injury, damage to the kidney occurs with minor impacts - the so-called spontaneous rupture of the kidney.

In 8 (17.0%) cases, when falling from a height, liver damage was characterized by the presence of subcapsular hemorrhages without violating the integrity of the capsule in this place, ranging in size from 3.0 x 1.0 cm to 8.0 x 1 cm, but, as a rule, with pronounced ruptures of the parenchyma in the underlying layers.

The next stage of our work was the study of damage to the spleen when falling from a height, which occurred among 10 victims.

The morphology of damage to the spleen during a fall from a height depends on the conditions of the fall, the place of the initial landing, and the height of the fall. In the majority (80%) of the cases we studied, the predominant mechanism for the formation of damage to the spleen was concussion of the body, without direct impact of the traumatic object on the spleen. In these cases, the study of the spleen in 2 victims

revealed subcapsular hemorrhages with subsequent rupture of the capsule in the area of the gate, more often in severity and volume inadequate to the general trauma of the body. Patients applied at different periods of time after injury (from 7 to 30 days).

The mechanism of formation of damage to the spleen in - inertial. At the moment the body hits hard ground, the spleen continues to move by inertia, which leads to a sharp stretching of its ligamentous apparatus, which prevents further displacement of the spleen and damage in the area of the gate.

When falling from a height on parts of the body in the projection of the spleen, the surface of solid ground acts as a blunt object with an unlimited impact surface.

When falling from a height in persons without a fatal outcome, breaks of varying severity are formed on the diaphragmatic surface of the spleen (hit by the left side surface of the body), on the visceral surface, or multiple cracks on both surfaces of the spleen, randomly located, usually superficial (due to the hydrodynamic effect).

Thus, when falling from a height in persons without a fatal outcome, the severity of spleen damage does not always depend on the height of the fall. It should be noted that according to the literature data in lethal cases, there is a dependence of the degree of damage to the spleen on the height of the fall.

Based on the foregoing, it can be concluded that it was revealed that when falling from a height, concomitant injuries with fractures of the upper and lower extremities, chest, and pelvic bones are often observed. Of all cases of falling from a height, 34.1% had some kind of damage to the liver, spleen and kidneys.

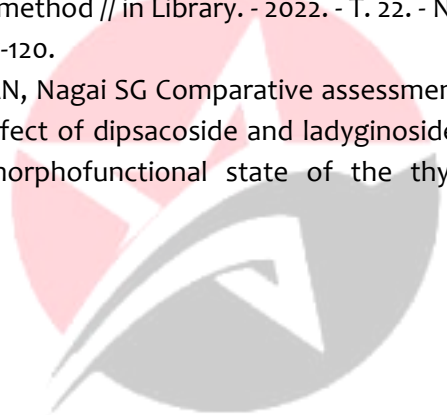
When falling from a height, characteristic damage was established, depending on the height of the fall. The

nature of damage to the kidneys, liver and spleen reflects the type of deformation that the organ experienced at the time of a fall from a height, and the resulting zones of compression and stretching of the parenchyma. Therefore, the morphological features of lesions may indicate a specific mechanism of their formation.

REFERENCES

1. Ernenko S. V., Lukin M. V., Korzhuk M. S. Features of the injury received when falling from a height // Indelible tablets: Sepsis et Cetera. - 2020. - S. 630-632.
2. Zarubina S.V. Experimental modeling of the fall of the human body // Healthcare of the Far East, 2003.-№6.-P.23-25.
3. Sablin S.S., Zhdanov V.V., Filippov M.P., Sarkisyan B.A. Analysis of fatal injury from a fall from a height in Barnaul for 2009-2010. // Topical issues of forensic medicine and expert practice, Barnaul-Novosibirsk 2011 Issue. 17.
4. Solokhin Yu.A. On the classification of a fall from a height// Forensic Medical Examination. - 2003. -T. 46, N2. - S. 9-11.
5. Farkhutdinova A. I., Shakirova R. R., Styazhkina S. N. Combined injury as a result of a fall from a height // Modern Science. – 2021. – no. 4-2. - S. 151-153.
6. Khvan O.I. Injuries to the organs of the abdominal cavity and kidneys in blunt trauma // Doctor-graduate student. - 2012. - v. 50. - No. 1.3. - S. 461 - -465.
7. Alexandrov N. G. et al. On the mechanism of action of triterpene glycosides // Sat. scientific tr. " Rep . scientific and practical . conf . pathologists of Uzbekistan. Tashkent. - 1995. - S. 69-70.

8. Don A. N., Kakharov Z. A. Morphometric characteristics of the thyroid gland and pathomorphism of experimental atherosclerosis under the influence of ladygynocide // Re-health journal. – 2022. – no. 1 (13). - S. _ 72-76.
9. Khvan OI, Don AN About closed liver injury in automobile traumas with lethal outcome. - International Scientific Journal "Education News: Research in the Twenty-First Century " education : research in the XXI century /. – 2023. - No. 6 (100), Part 1. - P. 236-241.
10. Don A. et al. Studying the morphometric aspects of the thyroid gland using the test-point method // in Library. - 2022. - T. 22. - No. 1. - S. 117-120.
11. Don AN, Nagai SG Comparative assessment of the effect of dipsacoside and ladyginoside on the morphofunctional state of the thyroid gland // Journal "Medicine and Innovations", 2022, no. 3, pp. 427-441.
12. Khvan O.I. Injuries to the organs of the abdominal cavity and kidneys in blunt trauma // Doctor-graduate student. - 2012. - v. 50. - No. 1.3. – S. 461-465.
13. Khvan O.I. Injuries to the liver, spleen and kidneys in blunt trauma and their forensic medical assessment // Problems of expertise in medicine. - 2016. - v. 16. - No. 1-2. - S. 20 - 24.
14. Khvan O. I., Abdukarimov B. A. Characteristics of damage to the organs of the abdominal cavity and retroperitoneal space //XVIII International Conference on Science and Technology Russia-Korea-CIS. - 2018. - S. 153-160.



OSCAR
PUBLISHING SERVICES