

MIMICKING INJURIES AND CONDITIONS IN THE FORENSIC PRACTICE

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ABSTRACT:

Introduction: The correct interpretation of the morphological appearance of traumatic injuries during a forensic medical autopsy is the basis for defining the mechanism of their origin and the objects they were caused by, respectively the proper completion of the forensic medical examination that will lead to a correct diagnosis of the cause of death. This is of utmost importance not only for in the forensic practice but also for the investigations carried out by the police. In some cases, it is possible that the appearance of one injury is largely imitated by another one, which carries the risk of leading the investigation in a wrong direction. **Materials and methods:** We performed complete forensic medical autopsies with toxicological analysis of blood, urine samples, internal organ parts, and histological examination of tissue samples. **Results:** We present cases in which we observed injuries during the external examination and forensic autopsy of deceased imitating in their morphological appearance other injuries. **Discussion and conclusion:** The proper recognition and interpretation of traumatic injuries is relevant to any forensic medical expert in order to avoid misleading the police investigation.

Key words: *Mimicking injuries, forensic medicine, proper investigation*

Introduction:

The correct interpretation of the morphological appearance of traumatic injuries during a forensic medical autopsy is the basis for defining the mechanism of their origin and the objects they were caused by, respectively the proper completion of the forensic medical examination that will lead to a correct diagnosis of the cause of death [1,2]. This is of utmost importance not only for in the forensic practice but also for the investigations carried out by the police. In some cases it is possible that the appearance of one injury is largely imitated by another one, which carries the risk of leading the investigation in a wrong direction [3].

Materials and methods:

We performed complete forensic medical autopsies with toxicological analysis of blood, urine samples, internal organ parts, and histological examination of tissue samples.

Results:

We present cases in which we observed injuries during the external examination and forensic autopsy of deceased imitating in their morphological appearance other injuries and conditions.

Case presentation 1:

A 25-year-old man was found dead in a car. On the front right side of his neck in the upper third, at 174 cm from the heels a transversely located wound with smooth edges and sharp angles was observed (Photo №1).



Photo №1

There were two additional cuttings in its left corner with 5-6 mm length and three in the right corner with a length of 2 mm. The total length of the wound was 4.5 cm. The walls were fairly smooth and beveled in depth, where a circular defect with a diameter of around 10mm was present in the neck muscles. The characteristics of this wound correspond to those of a stab wound, which was the first presumption of the forensic pathologist at the crime scene. During the forensic autopsy, performed in the Department of Forensic medicine and deontology, Medical University of Sofia, intensive bruises of the soft tissues of the neck were observed beneath the skin wound, as well as multiple fractures of the hyoid bone and ruptures of the epiglottis. On the posterior pharyngeal wall, to the right, there was a lesion of 2 cm in length. The surrounding soft tissues was extensively bruised. The body of the fourth cervical vertebra had a rounded defect with a width of 3-4 mm and bruises of the surrounding bone substance, and its right transversal process was fractured. Upon opening of the spinal canal, the spinal cord at this level was completely ruptured. On the inner surface of the vertebral canal there was a rounded defect with a diameter of about 1 cm. Additional cuts were made on the back of the body and in the upper right part of the thorax a massive bruised area of the soft tissues was present as well as a wound canal starting from the fractured cervical vertebra and ending in the soft tissues of the upper outer corner of the right scapula, where a projectile was discovered (Photo №2 and Photo №3).



Photo №2



Photo №3

The conclusion of the forensic report was that the wound on the neck of the deceased was the entrance wound of a blind gunshot injury with a wound channel passing through the soft tissues of the larynx and the epiglottis, the posterior wall of the pharynx, entering the spinal canal through the fourth cervical vertebra, rupturing completely the spinal cord at this level, changing its direction by sliding along the lateral and posterior inner surface of the spinal canal, exiting the vertebra, continuing through the soft tissues of the neck and back and ending in the soft tissues of the right scapula where the projectile was found.

Case presentation 2

A 46 year-old man was found dead lying on the back seat of his car parked in his backyard Photos №4 and Photo №5.



Photo №4



Photo №5

The crime scene investigation showed that a tool shed was located near the parked car, and the roof of that shed was the actual porch in front of the house door of the deceased, situated about two meters from the ground and not secured with a parapet. Right next to the door a trace

of liquid was found, which subsequently was proved urine. The deceased was transported to the Department of Forensic medicine and deontology, Medical University of Sofia, for a forensic autopsy. During autopsy lots of suffusions and excoriation were found on the body. On the parietal part of the head we discovered bruises and superficial wounds with total rounded shape arranged in rows side by side Photo №6.



Photo №6

The morphological characteristics of the trauma showed that the object that caused them had a very characteristic surface with rounded elements, which created the concern that the case could be homicide. A careful analysis of the photos from the scene, however, indicates a doormat with a specific surface. The photo superimposition of the surface of the doormat and the traumatic injuries on the head of the victim showed full compliance (Photo №7 and Photo №8).



Photo №7



Photo №8

Analysis of the entire surface of the doormat was conducted, and traces of blood were found at one of the ends. The chemical analysis of blood and urine showed highly elevated levels of ethyl alcohol in the blood of the deceased. Reconstruction of event: the deceased, after alcohol abuse, reached his front door, urinated in front of it and, because of loss of balance, fell from about 2 meters height hitting his head on the doormat located below, then he got up and walked by himself to the car parked nearby. Death occurred due to intracranial hemorrhages, after a brief "bright" period.

Case presentations 3 and 4

In some cases of falling from height on the skin of the deceased, it is possible to see positive and/or negative imprints of the surface on which the body landed [4]. Some of these imprints mimic the traces left from motor vehicle tires in cases of run over [5]. We present two cases with such imprints on the skin of deceased found closer to the road than the near building. The joint work of police and forensic experts lead to the conclusion that the cases were suicides due to fall from height (Photo №9 Photo №10). In the upper quadrant of each picture, we present a similar trace left from tires.



Photo №9. Case 3



Photo №10. Case 4

Imprints left from ground pavement can mimic the appearance of those left by the tires of motor vehicles. On photo 11 we present the characteristics of the pavement that left the imprint in case 3.



Photo 11. Pavement

DISCUSSION AND CONCLUSION:

In some cases due to the particular morphology of the inflicted wound and the absence of eyewitnesses, it is hard to give a definite conclusion on the type of injury and the kind of object that caused it. There is a wide spectrum of antemortem patterned injuries and defects in forensic pathology that under certain specific circumstances may mimic other injuries. The proper recognition and interpretation of traumatic injuries is relevant to any forensic medical expert in order to avoid misleading the police investigation.

Statement for Potential Conflicts of Interest: There is no potential conflict of interest.

References:

1. Prahlow JA, McClain JL. Lesions that simulate gunshot wounds. *J Clin Forensic Med* 1997;4:121–5.
2. Prahlow JA, McClain JL. Lesions that simulate gunshot wounds—further examples II. *J Clin Forensic Med* 2001;8:206–13.
3. Wang, Ying-Wei. (2003) A Distance-base Matching Model for Classifying the Tire-marks at Accident Scene, *Journal of the Eastern Asia for Transportation Studies*, Vol . 5, 2003, 2708-2721.
4. Rozycki G, Maull K (1991) Injuries sustained by falls. *Arch Emerg Med* 8: 245-252.
5. Baltov M., Hadzhieva K., Tsranchev I., Nizamova I. Forensic analysis of death cases in road traffic accidents in Plovdiv district, Republic of Bulgaria. Сборник New Forensic- medical Approaches for solving the mechanic trauma problems. Materials of International Practical-Scientific Conference 2017. 43-47