

CASE REPORT

PATHOLOGY/BIOLOGY

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Traumatic Testicular Displacement in Motorcycle Drivers

ABSTRACT: Testicular displacement is a rare clinical presentation of blunt scrotal injury that may take place in road traffic accidents involving motorcycle occupants. We are presenting two cases of motorcycle occupant fatalities, 21 and 24 years of age, where testicular displacement and other signs of groin trauma have been determined. In both cases, discrete external signs of scrotal trauma were noted on examination, while unilateral and bilateral traumatic testicular displacement, respectively, have been documented at autopsy. For motorcycle occupants involved in collision, it is necessary to perform a thorough analysis of injuries, in particular to look for specific trauma arising from fuel-tank impact to genitalia and/or groin. These injuries are of great medico-legal importance both at postmortem and in clinical cases involving motorcycle occupants involved in collision.

KEYWORDS: forensic science, traumatic testicular displacement, inguinal injury, scrotal trauma, accidents traffic, motorcycle, autopsy, forensic pathology

In cases of collisions involving motorcycle and its occupant(s), determination of so-called characteristic injuries may have an important role. These injuries are consequence of collision of the motorcycle occupants' bodies and traumatizing elements of the motorcycle. Certain parts of motorcycle, such as bar-tank, pedals, and handlebar as well as the other components may produce injuries in occupants at collision (1,2). In fatalities involving motorcycle occupants, these injuries may contribute to severity of sustained trauma, but also, from a medico-legal point, such characteristic injuries are important for determination of the mechanism of the collision. Characteristic injuries may be interpreted when it is necessary to provide an opinion on whether the deceased has been on the motorcycle as the driver or passenger, or he/she has been walking next to the motorcycle and carrying it at the moment of collision.

Case Reports

Case 1

In frontal collision of motorcycle and coach, both motorcycle occupants sustained injuries. They were admitted to the nearest hospital shortly following the accident. One motorcycle occupant, who was not driving according to the obtained statement, a 25-year-old male, sustained tibial fracture and minor soft tissue injuries. This motorcycle occupant, as stated, was using the back of the seat, that is, passenger seat. The other motorcycle occupant, a 21-year-old male was in deep coma because of extensive head injuries. An open fracture of right lower leg has been present as well. Patient died 48 h following hospital admission. Postmortem examination reveals discrete bruising of scrotum, which was apparently

empty, while on palpation testicle presence was not apparent (Fig. 1). Slight swelling was notable suprapubically, in the projection of inguinal channel. Following incision, a displaced left testicle has been found in subcutaneous tissue (Fig. 2). Although extensive contusion of subcutaneous perineal soft tissue was present, no pelvic fractures were present. Abundant contusions and skin abrasions were distributed over inner aspects of both knees and lower legs.

Medical history of the deceased indicates no preexisting testicular and other relevant pathology.

Case 2

A 24-year-old male motorcycle driver died instantaneously following frontal collision with the pick-up truck. The deceased had a protective helmet. Postmortem examination revealed severe and extensive trauma to the chest and abdomen (laceration of aorta, heart, lungs, liver, and mesentery), as well as rib and thoracic spine fractures. No pelvic fractures were present. External examination shows extensive injuries of external genitalia, groins, and inner aspects of both thighs with corresponding injuries in subcutaneous soft tissue palpation of scrotum disclose absence of both testicles, whereas careful inspection followed by palpation reveals slight swelling located symmetrically in the suprapubic region. On dissection, both testicles were found displaced symmetrically in subcutaneous fat tissue of the suprapubic regions (Fig. 3).

Medical history of the deceased indicates surgery for bilateral inguinal hernia in childhood with no other relevant pathology.

Discussion

Certain features of motorcycles, in particular its unsteadiness, and relatively poor protection of their occupants are playing significant role in dynamics of the collision involving these motor vehicles. Therefore, medico-legal investigation of collision involving

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FIG. 1—Discrete bruising and emptiness of scrotum.



FIG. 2—Displacement of left testicle into the inguinal channel.



FIG. 3—External injuries and traumatically displaced testicles in subcutaneous fat tissue of suprapubic region.

motorcycle(s) aims to offer an opinion to clarify complex and often multiphase progress of such accidents.

The motorcycle driver usually can anticipate potentially dangerous situations and in turn perform numerous protective activities, including forceful grasping of steer handle and forceful abduction of lower extremities with firm press on lateral aspects of motorcycle and bar-tank, as well as vigorous pedals pressing. In the course of the accident, when collision forces overcome muscle power, the driver's body starts its separation from the motorcycle when it might be exposed to certain parts of the motorcycle. Such exposure might produce injuries. Medico-legal importance of carpo-metacarpal dislocation of the thumb, as a specific injury in motorcycle drivers, has been extensively described (3). Handlebar impact

to the abdominal wall might cause a hernia in motorcycle driver (4), as well as an intimal lesion to femoral artery with subsequent femoral thrombosis (5). Although less frequently occurring, traumatic testicular displacement might be of importance for medico-legal opinion in determination of motorcycle driver in cases of frontal collision, because this injury is considered as one of the important findings of fuel-tank injuries (6).

The passenger on motorcycle is protected from handlebar by the driver's body. Also, as the passenger's body is mostly covered by the driver's body, that person frequently is not able to foresee an inevitable collision and react in the manner of the driver. Consequently, certain injuries, for example, those arising from exposure to gas-tank and pedals, will be missing.

Traumatic testicular displacement is not a frequent injury in the clinical settings, and it might be unidentified and mimicked when severe injuries are present (7,8). Such injury is produced by forceful impact on genital region producing rupture of external cremasteric and internal spermatic fascia when the testicle might be dislocated within the range determined by spermatic cord length (9). Possible mechanism of the injury is forward propulsion and subsequent striking of scrotum on the seat, as well (10). Inguinal region is the most frequent site of testicular displacement, although testicle(s) might be dislocated within pubic region, penis, and perineum, as well as in abdominal cavity (11). These injuries may be associated to other forms of pubic-groin trauma including inguinal contusions and/or lacerations (12).

Early diagnosis of traumatic testicular displacement, besides its medico-legal implication, might be of paramount importance for testicle preservation, if not severely damaged. Awareness of emergency department physicians on possible traumatic testicular displacement in motorcycle drivers injured in road traffic accidents has been reported as critical for accurate diagnosis of that injury (13,14).

Conclusions

In presented cases, we suggest direct trauma to genital and groin region to be causative agent for testicular displacement, as well as for other injuries attributed to these regions. It seems that previous hernia surgery, in case 2, could create *locus minor* for traumatic testicular displacement in the course of a motorcycle collision. Both cases involve motorcycle frontal collision. In these circumstances, following the collision, bodies of motorcycle occupants are displaced upward while keeping the direction of the previous movement. Therefore, exposure of motorcycle driver to certain parts of the motorcycle, for example, petrol-tank might cause trauma, while, because of the position on the motorcycle, the pillion passenger might not have such exposure. Presence of genital and groin injuries, including traumatic testicular displacement, although these injuries are not pathognomonic, may be helpful in medico-legal assessment.

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