FEATURES OF LOWER LIMB BONE FRACTURES IN PEDESTRIANS INJURED IN CAR INJURIES

Tuychiev Mansurbek Mukhammadjon ugli

Andijan State Medical Institute

Abstract: The thesis presents the results of studies of the nature and establishment of the mechanism of fractures of the lower limb bones of pedestrians when they collide with moving modern cars. It has been established that the morphology of fractures occurring in pedestrians when they collide with the specified cars has its own characteristics. The presented data can be taken into account when establishing the mechanism of injury.

Keywords: car accident, collision, pedestrians, fractured tibia.

INTRODUCTION

Despite the increase in the number of collisions between moving modern vehicles and pedestrians, and significant changes in the designs and external parts of modern vehicles (mainly passenger cars), the aspects of this type of injury have not been sufficiently studied to solve current forensic problems [1, 2].

MAIN PART

The study of the nature of injuries in pedestrian victims showed that isolated severe traumatic brain injury (TBI) with and without bone fractures was noted in 7 cases, in the remaining 31 cases, combined polytrauma (CT) was detected on the body of the deceased. The most frequently noted were CT of the head, chest and abdomen (6 cases), CT of the head and chest (6 cases), CT of the head, spine, chest and abdomen (6 cases), CT of the head and extremities (5 cases), as well as CT of the head, spine and lower extremities (3 cases). In the remaining observations, CT of the abdomen with fractures of the shin bones (2 cases), spinal cord injury (SCI) (2), CT of the abdomen with SCI (1) were detected. Fractures of the lower extremities - shins were noted in 11 cases (30.5%), which were most often bilateral. The fractures were localized at the level of the middle or lower third of the tibia. The nature of the fractures of the tibia bones depended on the type (brand) of cars.

We provide the following examples from expert practice:

Example -1. It follows from the circumstances of the case that citizen U.O., 45 years old, was hit by a Cobalt car while driving along the right edge of the highway; the victim died on the spot from the injuries he received. A forensic medical examination of the bones of the left tibia from the body of U.O. established:

A bone fragment - the left tibia, 12.77 cm long, was compared from nine fragments measuring from 2.80x0.55 cm to 6.95x2.99x2.69 cm. The fracture on the fragment has a length of 9.71 cm. On the outer surface of the bone there is a fracture line of a four-ray shape, the ends of which are oriented, respectively, like a conventional clock face, at the numbers 1, 4, 8 and 12, the lines of the sides are

sinuous-linear, their edges are uneven, the fracture surfaces are bumpy. From the ray at number 1 in the direction of the interosseous edge of the bone there is a bone fragment of a crescent shape, limited by a sinuous-arcuate fracture line, from the apex of which a fracture line departs in the direction of number 4, and below at number 5, with a bend at number 6, a crack 1.00 cm long; the ray at number 4 with uneven wavy edges and a chip of the compact layer at the anterior edge of the bone measuring 1.20 x 0.55 cm, fusiform, oriented along the axis of the ray, the fracture surfaces are bumpy, vertical and beveled; the beam on the number 8 has a linear direction, along 0.97 cm comparable, uneven, jagged edges, bumpy fracture surfaces of vertical direction (zone of primary fracture, stretching).

On the inner surface of the bone, the fracture line has an angular shape, the sides of which are oriented toward the numbers 1 and 8, in the area of the angle there is a bone tissue defect measuring 1.09 x 1.78 cm, teardrop-shaped, the axis is oriented toward the numbers 2 and 8, the pointed part faces the inner edge of the bone, two fracture lines extend from it, oriented toward the numbers 8 and 10 with uneven wavy edges, tuberculous fracture surfaces of vertical orientation, pointed tops of tubercles of oblique orientation (zone of shear stresses). From the upper edge of the bone tissue defect, almost at the number 12, the fracture line is oriented in a tortuous-linear form with uneven serrated edges, tuberous fracture surfaces of vertical orientation (thrust), gradually approaching the anterior edge of the bone, and then, bending at the number 2, goes to the outer surface of the bone, with uneven serrated edges and a beveled surface of the tuberous fracture surface (bending). On the posterior surface of the bone, the fracture has an irregular diamond shape, the longitudinal diagonal of which is oriented at the numbers 5 and 11, four juxtaposed fragments form three wavy-linear oblique transverse lines, crossed by segments of tortuous oblique longitudinal lines, in the middle of the rhombus there is a chip of the compact layer measuring 0.22x0.24 cm. The edges of the fracture lines are uneven, wavy and jagged, the fracture surfaces are bumpy, vertical in the longitudinal sections and beveled in the transverse sections (breakage zone). Thus, in this case, on the fragment of the tibia, restored from nine fragments, the following was established: a) a complete comminuted fracture with a primary fracture zone (extension) on the outer and inner surfaces at the anterior edge of the bone, and a breakage zone (compression) on the posterior surface; b) a fracture on the inner surface of the bone with signs of expansion, turning into a crack, and a bend in the fracture line with signs of compression. These data allowed us to note that on the fragment of the left tibia, a comminuted fracture in the lower third was formed by the bending mechanism from the action of a blunt hard object - protruding parts (bumper) of a moving car with the application of force along the posterior surface of the bone and the direction of the force from back to front.

CONCLUSION

Injuries that occur to pedestrians when they collide with moving cars are very diverse in nature, volume and localization. In this type of injury, fractures of the shin bones are observed in 30.5% of victims. The nature of the fractures depends on the type (brand) of cars.

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