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AGE FEATURES OF CHILDREN'S CAR INJURY IN THE PASSENGER

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Abstract: The purpose of the study was to establish the age-related characteristics of injuries that occur in children in road traffic accidents inside a car. The research material included medical documents of 144 children who were injured as a result of a road traffic injury in a car between 2012 and 2022.

Keywords: Children, car injury, age, salon.

INTRODUCTION

To ensure a reduction in the level of car accidents, the number of deaths and injuries as a result of road accidents, active work is being carried out to find and implement measures of a technical, legal, administrative, financial, and medical nature [1].

MATERIALS AND METHODS

Issues of transport trauma in forensic medicine have long been studied exclusively on the material of dead and wounded adults, and often expert questions about the mechanism of injury in a car injury in cases of forensic medical examination of children have to be resolved using analysis methods and algorithms. designed for adults. However, children of different age groups are characterized by different morphological features of organs and tissues with constantly changing strength-elastic properties, which are subject to deformation in different ways under different types of influences. Therefore, considering the problem of road traffic accidents in the context of childhood injuries, in forensic medicine there is a need to distinguish the child as an independent object of forensic medical examination [2]. An assessment of the conditions and characteristics of trauma in children, the mechanisms of damage, and the speed of regeneration processes should be carried out individually, taking into account age.

RESULTS AND DISCUSSION

Some of the key issues that determine the properties and characteristics of injuries are the age of the child and the type of automobile injury. In recent years, there has been an increase in the proportion of road traffic accidents involving child passengers. In 2022, among all road traffic accidents, car injuries in the passenger compartment amounted to 45.4%, of all children killed as a result of car injuries, 62.1% were passengers, and among those injured, 48.4%. However, the age-related characteristics of this type of injury in children are not sufficiently covered in the scientific literature.

The distribution of children by age groups in the structure of the studied material was almost uniform. Children of the first age group made up 21.9%, the second group – 24.5%, the third group – 30.7%, the fourth – 22.8%.

When analyzing head trauma, the following age characteristics were established. As the age of children increases, there is a decrease in the frequency of external injuries to the soft tissues of the head (abrasions, bruises, wounds): in children under three years of age such injuries were observed in 88%, in children 3–6 years old – in 85.7%, in in the age group 6–10 years old – in 68.5%, in children 10–15 years old – in 53.8%. Moreover, cut wounds on the face were found only in children under three years of age and amounted to 8%; in other age groups such injuries

were not noted. In addition, with age, the proportion of external injuries with diverse localization decreases. In the first two age groups, injuries located on different surfaces of the head occurred in half of the cases, in the third age group - in 33.3%, in the fourth - in 28.5%. This, in our opinion, may be due to the greater likelihood of movement in the car in younger children due to their small body size, which causes repeated impacts on the internal parts of the car; in older children, the ability to move in the car is limited. When assessing fractures of the skull bones and bruises of the brain, attention is drawn to the sharp predominance of these injuries in children under three years of age (fractures were found in 32% of victims, cerebral contusions – in 36%). This may be due to the anatomical and physiological characteristics of small children, namely the relatively large size of the head compared to the body, a wider subarachnoid space, weak ligamentous-muscular apparatus of the neck, which practically excludes controlled retention of the head during inertial movement in conditions of a traffic accident. In the next three age groups, no clear age relationship was observed: skull fractures and brain contusions ranged from 7 to 11%.

Table 1

Structure of the material under study

0–3 years		3–6 years		6–10 years		10–15 years	
Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
14	9	14	14	14	21	12	14
25		28		35		26	

It should be noted that the clinical diagnosis of concussion, which was made in more than 70% of the cases we studied, was not subjected to detailed analysis, since it is functional and is not always based on objective symptoms, and therefore does not allow us to exclude cases of overdiagnosis in the clinic.

When analyzing injuries to the chest and abdomen, the absence of chest fractures and injuries to internal organs was noted in the first age group; in the second group, these injuries occurred in isolated cases (3.6%). The highest frequency of injuries to the chest and abdomen was observed in the third age group (thoracic fractures were noted in 28.5% of cases); in the fourth group, fractures were 11.5%. Injuries to the soft tissues of the pelvic region and fractures of the pelvic bones were also more common in the third and fourth age groups and amounted to 7.7 and 11.4%, respectively, in the first and second age groups their frequency was 3.5 and 4.0 %. The less frequent damage to the bones of the chest, pelvis and internal organs of the chest and abdomen in the first two age groups may be due to the greater elasticity of bone tissue at this age, which prevents both bone fractures and damage to internal organs.

Among the injuries to the lower extremities, injuries to the thighs and legs were analyzed separately. Thus, injuries to the soft tissues of the hips and fractures of the femur were more often observed in the age group up to 3 years (fractures amounted to 16%) and the group 3–6 years (fractures amounted to 14.2%), while in children 6 –10 years of age, femur fractures occurred in 2.8%, and at 10–15 years of age – in 10%. The frequency of injuries to the legs was characterized by the opposite pattern: in children under 3 years of age there were no injuries to soft tissues and fractures of the bones of the legs, in the group of 6–10 years old, fractures were observed in isolated cases (7%), they were 2 times more likely to occur in children 6–10 years old (14.2%), in children 10–15 years old – in 8.7%. The established differences in the level of

injuries to the lower extremities can be explained by the different growth indices of children, which determine the location of the extremities when sitting on a car seat.

CONCLUSION

The established age-related characteristics of injuries that occur in conditions of a car injury in child passengers can be used to solve clinical problems in organizing medical care at various stages and optimizing specialized medical care, when, under certain circumstances of the injury and the age of the child, it is possible assume the presence of certain damages and carry out targeted diagnostics.

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