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Maxillofacial injuries resulting from road traffic accidents

Summary

Recently forensic dentistry, as a field of forensic medicine, has started to develop.

For the reason of excessive increase of types and number of vehicles, and poor compliance of both drivers and pedestrians with traffic laws an acute increase of car accidents and related traumas is observed.

In this regard, according to average statistic indicators approximately 16 % of traffic related traumas are accompanied with maxillofacial injuries.

In more than 50 % of cases these are mandibular fractures, 16–17 % are maxillary fractures and 17 % are combined fractures.

XX–XXI century is the era of rapid development of transport vehicles and their technical capabilities. This, in turn, causes progressive increase in the incidence of different traumas. Investigating them, identifying their causes, as well as investigation of death cases is the direct responsibility of forensic medicine science.

Key words: traffic accidents, maxillofacial traumas, examination of traumas

Topical issues of clinical and forensic traumatology are studying the traumas caused by different traumatic agents, clinical and morphological peculiarities of such lesions, mechanisms of their appearance, issues of differential diagnostics, etc.

The new field of forensic medicine – forensic stomatology has started developing recently.

The necessity of establishment of the forensic stomatology was reasoned by resolution of some legal issues both in the society and forensic medicine.

Currently forensic dental examination is compulsory as a part of forensic medical examination in the following cases: facial soft tissue traumas, mechanical traumas of bones of maxillofacial region and teeth, fire arm lesions, impact of high and low temperature, electrical and radiation traumas, traumas caused by teeth, identification of personality, determination of age, sex and specialty, determination of prosthetics, examination of professional mistakes in the practice of stomatologists etc. [1, 2, 6]

Due to the growth of number and types of vehicles, along with incomplete compliance with traffic laws by drivers and pedestrians, the number of traffic accidents and traumas has respectively dramatically increased.

The wide dissemination of transport means in the second half of the XX century led to the increase of road traffic injuries. Traffic traumas include lesions caused by parts of vehicles, as well as traumas resulting from falling off the moving vehicle. Depending on a type of vehicles, traffic injuries are classified as:

1. automobile;
2. motorcycle;
3. railway;
4. tractor;
5. aviation;
6. marine transport.

Motor-vehicle accident holds the first place among transport traumas. Such distribution is determined by the peculiarities of lesions, caused by the influence of different transport means on the body of the victim. The requirements of investigation bodies against forensic examination are high and results of such examination are extremely important for the determining the details of the accident. Leading factors, determining the mechanism and peculiarities of the lesions are the mean speed of the transport, shape of traumatizing surfaces, size, heaviness, location of the victim at the moment of trauma and others.

The vast majority of head injuries and maxillofacial regions during traffic accidents happen in drivers [4, 8, 5]. This issue holds one of the most important places among the tasks of forensic medicine. Thus, it was decided that describing the peculiarities of facial trauma as a result of car accidents would be useful for practical experts. Facial trauma resulting from car accident is typical or non-typical and can be specific to that accident.

Injuries of facial soft tissue during car accidents depend on the type of the injury as well as severity of trauma. In case when a moving car hits a pedestrian, parts of the car hit against the face and leave traces and scratches relevant to the size and pattern of the radiator [3, 7, 9]. When body is dropped on the road pavement and moves along it the parallel scratches on the face are observed. Other multiple injuries on the face and body are not typical and appear against the hit of prominent parts of the car, when pedestrian fall on the car or on the pavement of the road. Falling off a moving car causes scratches as a result of friction. Sometimes facial injuries are caused when face repeatedly hits the road pavement after falling on the road. When car drives over the body it leaves typical traces in the shape of wheel protector pattern, as well the friction causes typical scratches. In this case head deformities and secondary facial soft tissue traumas caused by multiple facial skeleton fractures appear. Such traumas are peculiar to specifically maxillary and zygomatic

fractures. Multiple fractures of the skull base lead to flow of the brain tissue out of the skull through mouth, nose and ear. Driver and passengers in the car also get injuries and scratches on the face. The prominent parts of the driver's face – forehead, eyebrows, nose, lips and mental part of mandible get cuts when hitting the front wind glass. Such traumas rarely happen in the buccal area. Small pieces of broken glass can be found in the wounds. Partial separation of the nose tip, lips and auricle can also take place. Hitting against the steering wheel, other driving accessories, car body and handles inside the car cause contusions and lacerations. In many cases mandible, teeth and gums are involved as well.

During railway traumas lubricants, coal, elements of the railway embankment etc. can be found in the skin and soft tissues of the face. In case of railway transport passing over the body extensive head trauma, as well as the separation of skin together with bones, comminuted facial fractures are observed.

With regard to airway transport accidents traumas appear when hitting against solid and blunt objects including cases of airplane crash.

Ignition and explosion of fuel lead to burn traumas on the body. A body becomes unrecognizable making important the review of the dental status.

In this regards, according to average statistic indicators, approximately 16 % of traumas caused by traffic accidents fall within the maxillofacial region.

More than 50 % of them are mandibular fractures, 16–17 % – the fractures of maxillary bone and 17 % – the combined traumas.

Materials for the study were collected at the Department of Oral and Maxillofacial Surgery of the acad. Mir–Kasimov National Clinical Hospital.

Conclusions

XX–XXI century is the time of the rapid development of transport, potentially leading to the growing number of different traumas. The review of such traumas, their causes, reasons of death is the responsibility of the forensic medicine.

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Резюме

Челюстно-лицевые травмы как результат дорожно-транспортных происшествий

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Последнее десятилетие наблюдается развитие судебно-медицинской стоматологии как отрасли судебной медицины.

В настоящее время ввиду увеличения видов и количества транспортных средств и по причине несоблюдения правил дорожного движения как водителями, так и пешеходами, количество дорожно-транспортных происшествий и тесно связанных с ними автодорожных травм резко возросло.

Согласно средне-статистическим показателям примерно 16% автодорожных травм приходится на челюстно-лицевую область. Из них более 50% – это переломы нижней челюсти, 16–17% – переломы верхней челюсти, 17% – сочетанные переломы.

XX–XXI века – период стремительного роста количества транспортных средств и их технических возможностей. А это, в свою очередь является причиной прогрессивного роста различных травм. Проведение их анализа, выявление причин повреждений, изучение смертельных случаев является прямой обязанностью судебно-медицинской экспертизы.

Ключевые слова: дорожно-транспортные происшествия, челюстно-лицевая травма, изучение травм

Резюме

Щелепно-лицьові травми як результат дорожно-транспортних пригод

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Протягом останнього десятиліття спостерігається розвиток судово-медицинської стоматології як галузі судової медицини.

На даний час внаслідок збільшення видів та якості транспортних засобів і у зв'язку з непоодинокими випадками порушення правил дорожнього руху як водіями, так і пішоходами, кількість дорожно-транспортних пригод і тісно пов'язаних з ними автодорожніх травм різко збільшилася. Згідно з середньостатистичними показниками приблизно 16% автодорожніх пригод доводиться на щелепно-лицьову ділянку. З них більше 50% – це переломи нижньої щелепи, 16–17% – переломи верхньої щелепи, 17% – сумісні переломи.

XX–XXI сторіччя – період стрімкого росту кількості транспортних засобів та їх технічних можливостей. А це, у свою чергу, є причиною прогресивного росту кількості різних травм. Проведення їх аналізу, визначення причин ушкоджень, вивчення смертельних випадків є прямим обов'язком судово-медицинської експертизи.

Ключові слова: дорожно-транспортні пригоди, щелепно-лицьова травма, вивчення травм