Analysis and epidemiologic characteristics of 106 patients with cervical vertebral fracture caused by traffic injury

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Objectives   Through investigating the epidemiology characteristics and injury mechanisms of cervical frature caused by traffic accidents, to guide clinicians better diagnosis and treatment with cervical injury.

Methods   Car accident injury patients were selected from the 287 hospital with cervical fractures between January 2009 and November 2010. Through extracted their cases and imaging data retrospectively, all the patients' age, gender, possible injury mechanisms, injury segment, fracture type, neurological condition and treatment after admission were analyzed and discussed. To summarize the susceptible group of cervical fracture, sensitive segment, common type of frature, as well as the rule of age, gender, injury mechanism for the type of cervical fracture, segmental, neurological influencing. In this study, upper cervical spine fracture contains the anterior arch of atlas types, posterior arch, lateral mass and jefferson fracture, axis odontoid fracture, hangman fractures. However, the fratures of lower cervical spine fracture rely on AO type classification, neurological evaluation depends on Frankel grading standards.

Results   Totally 106 traffic patients with cervical spine fractures were admitted during two years, with mean age of 38 years (15-17 years), male to female ratio of 3.24:1. The age peak of injured persons were in the 20-30 and 40-50 years; including 23 motorized/electric car drivers or passengers (21.7%), 15 pedestrians or riding bike patients (14.1%), and 68 automobile driver or passenger (64.2%). A total of 71 patients (67%) were with spinal cord injury. Different mechanisms of injury, age factors on spinal cord injury showed no significant relationship and 34 patients (32%) were multi-segment cervical fractures. Cervical spine fracture caused by traffic accidents usually occurred in the C5 (24.8%) and C2 (17.0%), among these upper cervical spine fracture patients the odontoid fracture is B-type (68/116 cases). Including 62 patients treated conservatively and 44 patients with surgica treatment, the neurological function recovery of petients treated by surgery is superior to that by conservative treatment, besides, the extent of neurological function with the time between injury and surgery is inversely proportional.

Conclusions   The cervical spine fractures caused by traffic accdents results in a high risk of spinal cord injury, and these patients are mostly young crowd, which caused such a high rate of diability. Traffic injuries in newly diagnosed patients with medical treatment received special attention is required if cervical spine injury, these patients of the fracture in the cervical spine with spinal cord injury having clear surgical ppinter, should be actively and timely arrangements for surgery to increase recovery of nerve function possible. In the area of prevention, increasing motor vehicle and pedestrian road management and protection were without delay. ■

Analysis on the basic characteristics of mountainous expressway fatal traffic accidents and coutermeasure

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The fatal traffic accidents on Mountainous Expressway was analyzed, so did the characteristics and causes regarding to the accident modality, traffic environment, accident time, type of vehicle technology and vehicle types, based on which the prevention and reduction measures are suggested.

1. Accident characteristics

1) Accident modality   It is similar to that of the rearend impact in the plain highway, besides there are a large portion of the single vehicle accidents and the pedestrian accident, which resulted in a higher casualty rate. The restriction of mountain geographical conditions, with more up-and-down ramps, corners and tunnels, and then the car in front is too fast or too slow and distance control is not good, it would lead to rearend accident easily; the poor safety consciousness of pedestrian made them across the highway, which often led the crash happen; poor vehicle condition, not familiar with the road, and speeding are the chief causes for the single vehicle accidents.

2) Traffic Environment   The indexes in sunny weather conditions, such as the number of accidents, the number of deaths and injuries are much higher than the indexes in other weather conditions. Main reasons: weather is good; drivers are more likely to let down their guard, illegal drive more easily, leading to accidents. Under different lighting conditions, the accident statistics circumstances show that, the number of accidents and deaths during the day and other indices are higher than the index of the night.

3) The time of the accident occurred   The most accidents happened in 7:00 to 9:00, and 18:00 to 21:00. Reason: at the stage of time change between day and night, the driver's psychological state is excite or fatigue, line of sight is vague, along with more pedestrian haunted. During 11:00 - 14:00 the number of accidents is the least because of the less vehicle flow.

4) The technical performance of vehicles and the types of vehicles   From the accident vehicles' technical performance, 71.56% of the accident vehicles meets GB72582004 requirements, 28.44% can not reach the relevant national standards. Trucks account for 53.61% of total accidents vehicles in serious traffic accident, cars account for 30.41%, passenger cars accounted for 11.86%. The poor vehicle condition and the bad habits of the truck drivers made trucks the largest proportion.

2. The Countermeasure

1) Human factors: education and publicity, elimination highway butt accidents; strict drivers' examination system, acceleration in the training of highway traffic management expertises.

2) To further enhance the technical performance of the vehicle testing.

3) On the basis of ensuring the highway alignment design and the quality of construction of the building to enhance