

Demographic Study of Maxillofacial Injury in Multiple Trauma Patients

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Abstract

Introduction: Maxillofacial injuries may appear to be minor and small, can quickly progress and become life-threatening and lead to brain damage. Incidence, etiology and epidemiology of maxillofacial injuries and facial fractures are different in various areas with different cultures, socio-economic states. The aim of this study is to investigate the etiology, location, and severity of damage and demography of patients with facial fractures and injuries (maxillofacial) in multiple trauma patients.

Material and Method: In this cross-sectional study, all of the patients with maxillofacial fractures who were admitted to Imam Reza trauma centre of Tabriz enrolled between April 2015-2016 were evaluated. All fractures were identified, and demographic information, including age, gender, type of injury, the presence or absence of safety data were collected and analysed by the IBM® SPSS® software release 16.0.0.

Results: 83 patients of our study (75.9%) were male (M: F=3:1). The average age of patients was 34.1 ± 5.83 years. Most of the events took place in August (21.7%) and in summer (42.16%). The average numbers of fractures in patients were 1.73. Car collision accounts for 33.7%, falling trauma for 21.7% and car to motorcycle for 15.7% of accidents. Only 3 of the patients in the present study had the safety factors.

In the study of fracture types in the target population, orbital rim fracture was in 55.42% of patients and zygoma fracture was in 34.93% of them. Le Fort fracture type II was the most common one with a frequency of 7.22%.

Conclusion: The results of this study indicate further relation between maxillofacial fractures and traffic accidents especially during the holiday season and lack of safety equipment.

Keywords: Maxillofacial injuries; Alcohol; Trauma

Introduction

An ATLS (Advanced Trauma Life Support) protocol was published in 1987 for the first time and was accepted as a gold standard method of dealing with traumatic patients in the emergency. However it lacks the protocols for the method and location of maxillofacial injuries. Although injuries related to superior of clavicle seem minor and small but they are progressive and life-threatening [1-4]. Maxillofacial injuries are usually happening with brain injuries simultaneously [4]. Incidence and etiology of maxillofacial injuries and fractures of different regions of face bones are different. Culture, socioeconomic differences and awareness of driving rules and drinking alcohol are very important. A report from various parts of Turkey declares several etiologies [5-8]. According to the studies from developed countries, injuries leading to maxillofacial fracture are usually due to car accidents, pedestrian accident, sports, and work accidents. This epidemiology in developing countries is mostly related to road accidents, violence, and fighting [9-15]. Maxillofacial injuries can also occur isolated, but most of the time it comes with high energy trauma. These injuries could also be severe and life threatening and sometimes needing multiple services approach [16]. Several reports from different countries have been published based on maxillofacial fractures with analysis and discussion on various occasions [17-26]. Kind of trauma,

its severity, and injuries with maxillofacial fractures help us to deal and handle them the best way. There are only a few general studies discussing this important [10,27-32]. In this study, we want to investigate etiology, area and severity of injuries and demographic characteristics of fractures and maxillofacial fractures in multi-traumatic patients.

Methods and Materials

All patients from March 2014 till March 2015 with complain of multi trauma referred to trauma centre in the north west of Iran (Imam Reza Hospital In Tabriz) with diagnosis of maxillofacial fractures are studied. In radiology and CT scan, type of fracture is detected and age, sex, kind of trauma, existence of safety, factor are inserted to data collection form which are designed. Patients whose information was not available, uncompleted, lack of patients consent were not investigated in our study.

Results

The average age of the patients in our study is 31.4 ± 15.83 years. 63 patients (75.9%) were male and 20 cases (24.1%) were female. 42.16% of the patients (35 cases) in the summer, 23 cases (27.71%) in the spring, 222 cases (26.5%) in the autumn and only 3 cases (3.61%) in the winter were referred to the hospital.

According to the reasons of maxillofacial injuries, 28 cases of our study (33.7%) with car crash with car, 18 cases (21.7%) falling from height, 13 cases (15.7%) car crash with motorcycle accident, 10 cases (12%) overturning motorcycle (or) bike, 7 cases (8.4%) car crash with pedestrian, 5 cases (6%) car overturning, 2 cases (2.4%) with car crash with motorcycle accident were arrived at the hospital (Figure 1).

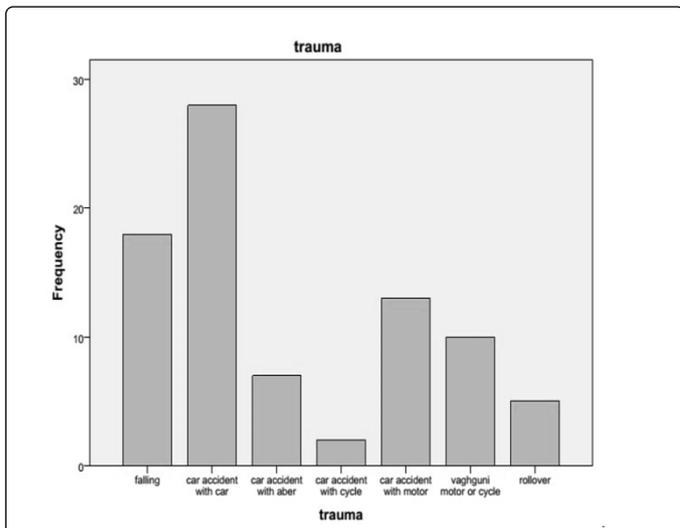


Figure 1: According to the reasons of maxillofacial injuries.

The amount of fractures of traumatic patients in 43 cases one fracture, in 21 cases (25%) two fractures, in 14 cases (17%) three fractures, in 4 cases (5%) four fractures and in one of them five fractures has been reported. The average amount of fractures in each patient was 1.73.

Type of trauma in the patients of our study were respectively in 46 cases (55.42%) fracture in rime of orbit, in 29 cases (34.93%) fracture in zygoma, in 27 cases (32.53%) fracture in maxilla, in 26 cases (31.32%) fracture in nasal bone, 11 cases (13.25%) fracture in mandible and 8 cases (9.63%) Le Fort fractures were reported. The most common type of Le Fort fracture was type 2 with frequency of 7.22%. Le Fort fracture type 1 and 3 both with the frequency of 1.2% were the least frequent types of fracture (Figures 2 and 3).

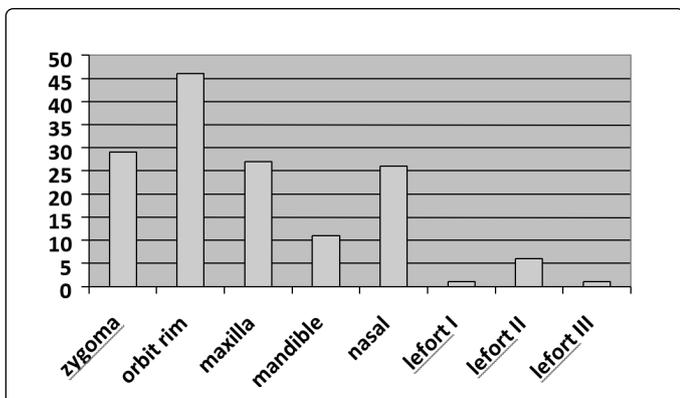


Figure 2: Type of trauma in the patients of our study was respectively in 46 cases.

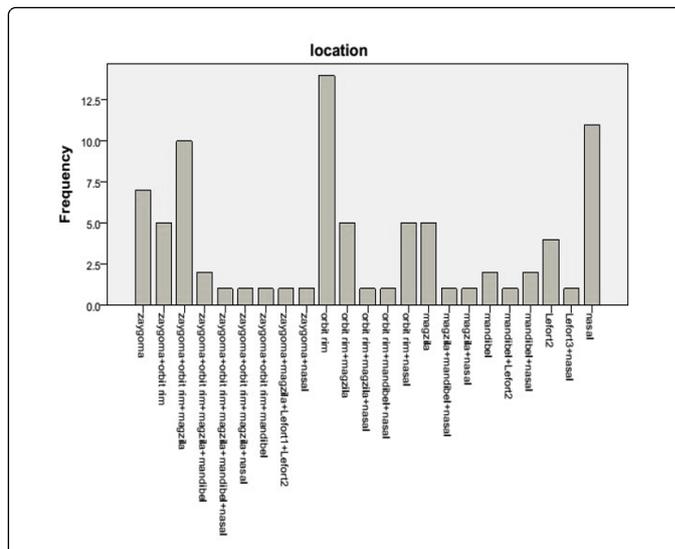


Figure 3: Location of trauma.

Discussion

In Gassner et al. [10] study the average age was 25.8 years. In Hogg et al. [33] study 2969 patients were studied with the average age of 25 years. In Alvi et al. [1] study the average age of the patients with maxillofacial injuries was 35.4 years. Shahim et al. [34] study determind the average age was 15-24 years. The most common age range in Ogundare et al. [35] study was 25-34 years. In fact the most common prevalence of age in maxillofacial fracture was in third decade of life.

75.9% of cases in our study were male whereas 24.1% were female (sex ratio: 3:1). Gassner et al. [10] study from 1990 till 2000 with the sex ratio of 2:1, Hogg et al. [33] study from 1991 till 1997 in Ontario Canada sex ratio was 3:1. Although almost in all studies dominant sex of maxillofacial fracture patients are male but there are significantly different from some other studies.

Most of maxillofacial fractures happen in the summer (42.16%) and spring (27.7%) in our study. These results reflect the increase of accidents in holiday seasons of the year. In Gassner et al. [10] study frequency of maxillofacial fracture was higher in the summer. In Hogg et al. [33] study fractures happened at the weekends (51%) in the summer most often. In Ogundare et al. [35] in a 10 year study most fractures were in the summer (31%). These studies are representing that most of the maxillofacial fractures are happening in the summer, this is because of increasing using of automobile transportation in holidays.

In evaluation of the etiology of maxillofacial fracture, 33.7% car crash, 21.7% falling from height, 15.75% car accident with motorcycle, 12% motorcycle or bike rollover, 8.4% car accident with pedestrian, 6% car rollover and 2.4% car crash with bike were reported. None of the fractures was reported because of violence or sports trauma. In Gassner et al. [10] study daily activities (38%), sports (31%), car accidents (12%), fighting (12%), in Hogg et al. [33] study vehicle accidents (70%), falling (12%), in Ogundare et al. [35] study from 1990 to 2000 in Colombia hospital, fighting (79%) were reported.

Car accidents are the most important reason of maxillofacial fractures. Although in developed countries by increasing safety of roads and vehicles, and compliance of traffic rules, by reducing traffic accidents, violence and sports are mostly leading to fracture. Type of trauma in the patients 55.4% fracture in rime of orbit, 34.93% in zygoma, 32.53% in maxilla, 31.32% in nasal bone, 13.25% in mandible, 9.63% Le Fort fracture were reported. The most common type of Le Fort fracture was type 2 (72.2%). In a ten years study of Gassner et al. [10] most fractures were included of fracture of mid face (72.5%), mandible (24.3%). Fracture of orbit in 22.3% was in the floor of it, and common Le Fort fracture was type 2 (45). Maximum fracture of Hogg et al. [33] study in maxilla (23%), and in orbit (22%), in Bakardjiev et al. [12] study in Bulgaria fracture of mandible (74%), and zygoma (16%), in Alvi et al. [1] study orbit fracture (24.2%) and maxilla fracture (22%), in Shahim et al. [34] study fracture of maxilla (22.3%) and orbit (21.4%) and in Ogundare et al. [35] study from 1990 to 1000 in Colombia hospital, fracture of mandible (36%) were reported. In our study similar to others, fracture of maxilla, superior orbit and mandible were reported the most common fractures in maxillofacial traumatic patients [36].

Unfortunately head and neck is the most damaged organ in trauma after limbs in multiple trauma [37] specially in motorcycle riders who is young and male and most of the time did not obey to use protective instruments has head and face trauma [38].

By using ultrasonography for finding free fluid in abdomen and pneumothorax and hemotorax in chest, may be it can useful for midface bones to use it in bedside [39-41].

Conclusion

The most common age of maxillofacial injury is the third decade of life. The sex ratio of male to female is 3:1. It happens in holiday seasons of the year most often (spring and summer). Car accident is the most common reason for facial injuries and fractures. There were not cases of violence and trauma due to sports activity. Regarding to the type of trauma, the most common regions of fracture are respectively rime of orbit fracture and zygoma fracture. The most common type of Le Fort fracture was type 2. Many patients of our study with maxillofacial fractures have not complied safety tips like using helmet and safety belts.

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