



Research Article

Incidence of Maxillofacial Injuries reported in Al-Qurayyat General Hospital Over a Period of 3 Years

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Abstract

Background: Hippocrates described an array of facial injuries as long ago as 400 BC. The maxillofacial region is most prone to the fracture owing to its prominent position. The incidence and epidemiology of maxillofacial (MF) injuries varies widely in different regions of the world due to social, economic, cultural consequence and awareness of traffic regulations. The main causes worldwide are traffic accidents, assaults, falls, sport-related injuries, and civilian warfare.

Objective: The present study, carried out at oral and maxillofacial surgery/oral medicine department, Al-Qurayyat General Hospital, Al-Qurayyat, Saudi Arabia, was aimed at highlighting the incidence and frequency and nature of maxillofacial injuries. The study also aimed to demonstrate the importance of prevention of such injuries, implementation of traffic rules and regulations and awareness programs for the parents, care takers and especially children at school and college students.

Study Design: Department of Oral and Maxillofacial Surgery/ Oral Medicine, Al-Qurayyat General Hospital, Specialized Dental Center, Al-Qurayyat, from January 2012 to January 2015 including 6 months follow up.

Methodology: This study was conducted on 2160 patients with maxillofacial injuries with or without polytrauma. All patients had isolated soft or hard tissue or concomitant hard and soft tissues injuries. Patients ranged in age from 1 to 65 years with a mean age of 15.73 + 12.97 years. There were 1490 males in the study and 670 females.

Results: Patients presenting to the outpatient, inpatient and emergency rooms with maxillofacial injuries were mostly aged <12 years, n=1417 (65.6%). The cause of the injury was mainly fall from bicycles and heights, n=942 (43.61%), followed by road traffic accident n=512 (23.70%), sports injury n=356 (16.49%) and assaults n=350 (16.20%). Nine hundred and sixty nine (44.86%) patients suffered from isolated soft tissue injuries, 387 (17.92%) suffered from isolated hard tissue

injuries and 804 (37.22%) suffered from concomitant hard and soft tissue injuries. Among the isolated and concomitant hard tissue injuries the distribution of site of involvement revealed that mandible was the most commonly fractured bone n=452 (38%), followed by dentoalveolar fracture n=308 (25.93%), zygomatic bone fracture n=157 (13.07%), maxillary bone fracture n=143 (12%), naso-orbito-ethmoid complex fracture n=95 (8%) and frontal bone fracture n=36 (3%).

Conclusion: The patients suffering from maxillofacial injuries with or without polytrauma in this study were mostly aged <12 years. Mandibular trauma was far more commonly encountered than injury to any other in the maxillofacial region. Isolated soft tissue trauma-like lacerations were more common than isolated hard tissue and concomitant hard and soft tissue injuries.

Keywords: Maxillofacial injuries; Incidence; Hard tissue; Falls

Introduction

The first point of contact in trauma often is the face and usually is a target for blows in interpersonal violence. Maxillofacial injuries are thus a common presentation in the trauma and emergency departments of hospitals. They can present as an isolated injury or in combination with multiple injuries to the rest of the body. These injuries may cause functional, psychological and aesthetic disabilities [1].

Maxillofacial injuries can result in superficial or deep lacerations or abrasions of soft tissues of the head and neck region or they may involve multiple fractures of the facial bones with simultaneous systemic involvement. Fractures of the middle third of the facial skeleton and / or mandible are known as maxillofacial injuries.

The incidence and causes of maxillofacial injuries varies widely in different regions of the world due to social, economic, cultural consequences and violation of traffic rules and regulations. Studies show that, in developed countries, assault and interpersonal violence are the leading causes of facial fractures followed mostly by motor vehicle accidents, falls from heights, sports, pedestrian collisions, stumbling and industrial accidents; however, in underdeveloped or developing areas of the world the leading cause shifts to road traffic accidents followed by assaults, falls and other reasons including gunshots and warfare [2-5]

There is not enough data regarding the incidence and nature of maxillofacial injuries in Saudi Arabia. To our knowledge, there are only three studies focusing this topic. An earlier study from this department was the first from Gurayyat city (located in Northern Saudi Arabia, Al-Jouf region) and which provided useful information as far as maxillofacial injuries were concerned [6].

Al-Jawf (Al-Jouf) is a region of Saudi Arabia located in the north of the country on the border with Jordan. The area of the region is 100,212 km² and it has a population of 440,009. The region has three governorships Sakakah, Qurayyat and Dumat Al-Jandal [7].

Methodology

The results of patients with maxillofacial injuries reported in the Department of Oral and Maxillofacial Surgery/ Oral Medicine of Al-

Qurayyat General Hospital, Specialized Dental Center, from year 2012 to 2015, were assessed.

2160 patients formed the study group. The data was collected from the outpatient, inpatient & emergency rooms of Oral and Maxillofacial Surgery/Oral Medicine department of Gurayat General Hospital, Specialized Dental Center, Gurayat. Informed consent was obtained from the patients or their parents/guardians. Demographic information such as name, age, sex and address was recorded, as well as the nature of the injuries, and the clinical course. Routine investigations and radiographs like Orthopantomogram (OPG), Posteroanterior (PA) view of mandible and computer tomographic scans were undertaken.

Ethical approval for this retrospective and descriptive study was obtained from the local institutional review board. All of the protocols for this study were performed in accordance with the Declaration of Helsinki. None of the authors had any conflicts of interest related to this study. The charts of all outpatients, inpatients, and emergency department patients were reviewed. All pertinent data to examine the causality and severity of maxillofacial injuries, including the patient's age, gender, cause of injury and type of injury were recorded on specially designed Proforma. Qualitative analysis was done by applying one sample T test ($P < 0.05$). All patients were followed up for 6 months.

Results

Patients presenting to our outpatient, inpatient and emergency room with maxillofacial injuries were mostly aged <12 years, $n=1417$ (65.6%) (Table 1). The cause of the injury was mainly fall from bicycles and heights, $n=942$ (43.61%), followed by road traffic accident $n=512$ (23.70%), sports injury $n=356$ (16.49%) and assaults $n=350$ (16.20%) (Table 2). Nine hundred and sixty nine patients (44.86%) suffered from isolated soft tissue injuries, $n=387$ (17.92%) suffered from isolated hard tissue injuries and $n=804$ (37.22%) suffered from both hard and soft tissue injuries (Table 3). Among the hard tissue injuries, isolated and in combination with the soft tissues, the distribution of site of involvement revealed that mandible was the most commonly fractured bone $n=452$ (38%), followed by dentoalveolar fracture $n=308$ (25.93%), zygomatic bone fracture $n=157$ (13.07%), maxillary bone fracture $n=143$ (12%), naso-orbito-ethmoid complex fracture $n=95$ (8%) and frontal bone fracture $n=36$ (3%). All patients suffered from maxillofacial injuries with or without polytrauma. All patients suffered from soft or hard tissue injuries or both (Table 4).

Gender	Number	Percentage (%)
Female	670	31
Male	1490	69
Total	2160	100

Table 1: Distribution of patient by gender

Causes	Number	Percentage (%)
Falls	942	43.6
RTA	512	23.7
Sports	356	16.5

Assault	350	16.2
Total	2160	100

Table 2: Distribution of patients by the causes of injury

Type of the tissue involved in the injury	Number	Percentage (%)
Hard tissue	387	17.92
Soft tissue	969	44.86
Both	804	37.22
Total	2160	100

Table 3: Distribution of patients by type of the tissue involved in the injury

Fractured bone	Number	Percentage (%)
Mandible fracture	452	38
Dento-Alveolar fracture	308	25.93
Zygomatic bone fracture	157	13.07
Maxillary bone fracture	143	12
NOE fracture	95	8
Frontal bone fracture	36	3
Total	1191	100

Table 4: Distribution of the patients by the pattern of the hard tissue injury

Discussion

Trauma is the main cause of death in the first four decades of life and maxillofacial injuries frequently occur in polytrauma victims. The maxillofacial region has both esthetic and functional importance. Sense of smell and vision, assisting in respiration and swallowing, promoting absorption and metabolism, and chewing and mastication are primary functions of this region, and can be disrupted through trauma, requiring special attention for management of the nature of the injury. All the principles of ATLS should be applied when initial assessment of such patients is undertaken [8].

The present study focused on assessment and discussion of the epidemiology of maxillofacial injuries presenting in various settings in our hospital. In the present study, there were far more males (1490; 69%) than females (670; 31%), a finding consistent with other studies related to this topic worldwide [9,10]

This study revealed that most of the patients who suffered from maxillofacial injuries were aged <12 years $n=1417$ (65.6%). This was consistent with a study conducted by Arsalan et al. [11] which showed that the patients suffering from maxillofacial injuries were of a younger age group.

Many authors have stated in their findings that road traffic accidents are the leading cause of maxillofacial injuries followed by assaults [12,13]. This study conflicts with this finding and shows that the

leading cause of maxillofacial injuries in our hospital is falls n=942 (43.6%), from bicycle or heights, followed by road traffic accidents n=512 (23.7%). The reason for this discrepancy is that children suffer from falls more than any other age group (and <12 years was the age group which suffered from maxillofacial injuries the most in this study).

This study showed that the mandible was the most common bone fractured amongst hard tissues in the maxillofacial region, n=452 (38%). This was consistent with the study conducted by Khan et al. [14] which found that 159/300 (53%) patients suffered from mandibular fractures. Also, one study conducted by Zahoor et al. [15] showed that mandible was the bone most commonly fractured n=712 (75.6%).

Isolated soft tissue lacerations and injuries were the most common in this study since most of the patients were children and the cause was fall from a bicycle or heights, n=969 (44.86%). These findings were supported by a study conducted by Zahoor et al. [15] in which he documented that 43% of the patients suffered from soft tissue injuries alone. Studies conducted by Gassner et al. [16] and Le et al. [17] also found a high frequency of soft tissue injuries in their studies. We observed that lacerations (when present) were mainly intraoral, especially on the dorsal surface of tongue followed by floor of the mouth and upper and lower lips.

We also noticed during the collection of the data that most patients (64%) suffered from maxillofacial injuries in the evening hours between 6 pm-12 am and the least number of cases were reported in the morning between 6 am-12 pm. This finding is consistent with those of Potter et al. [18]. We also noted that most of the cases presented on weekends i.e. Fridays and Saturdays. It was also seen that during the summer and winter holidays the number of children presenting to emergency department with maxillofacial injuries dramatically increased.

Conclusion

We found that patients presented to our department, suffering from maxillofacial injuries with or without polytrauma, were mostly of the age <12 years. We also observed that these patients were suffering from mandibular trauma more than any other bone in maxillofacial region. Soft tissue traumas like lacerations were more common than hard tissue injuries.

These results indicate that maxillofacial injuries are a substantial threat for the community of Al-Qurayyat and Al-Jouf region. The magnitude and the severity of these preventable injuries indicate that they are a major threat to the community and health care system in terms of hospital resources, time, and cost, as well as the impact on the patients themselves, and their families. Strict supervision by parents is required to prevent their children from these devastating consequences. Use of helmets and seat belts during driving can be made mandatory by the authorities. Young drivers, speeding over the limit, and other careless driving, are the reason for majority of road traffic accidents. Strict implementation of legislation should be considered by the community and the government departments concerned. Rapid action by rules enforcement and transportation related authorities will go a long way to decreasing the morbidity and mortality associated with road traffic accidents. Awareness programs to educate the parents and their children should be conducted, and followed up diligently. The awareness campaigns should spread both to school and college levels. Various studies support the importance of

correction of malocclusion and use of a mouth guard during contact sports to prevent these devastating injuries. These preventable measures can be implemented worldwide.

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