MAXILLOFACIAL AND ASSOCIATED FRACTURES OF THE SKELETON — A STUDY

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ABSTRACT

The purpose of the present study was to evaluate the incidence of associated skeleton fractures with maxillofacial fractures and to list age gender and bone involved with poly trauma patients. The study is first of its kind in the region and will help to develop a better poly trauma management team.

A Descriptive study was carried out in Oral and Maxillofacial Surgery Department of Khyber College of Dentistry, Peshawar, Pakistan for a period of one year i.e., from 20th June 2009 to 19th June 2010. All the patients presenting with maxillofacial injuries and associated fractures of the skeleton were included in this study. Age, gender distribution, aetiology, associated injuries and treatment modalities undertaken in these patients were recorded.

A total of 505 patients reported to oral and maxillofacial surgery unit of Khyber College of Dentistry, Peshawar, and amongst them 54 (10.6%) had associated fractures of the rest of the skeleton of the body. The most commonly involved bone was mandible (67%) followed by zygomatic complex fractures i.e. 15% in these patients. 50% of the fractures resulted because of Road Traffic Accidents. Upper limb fractures were the most common bone fractures associated with maxillofacial trauma i.e., 53.25% of the cases.

Key words: Khyber College of Dentistry, Maxillofacial injuries, associated fractures, Maxillofacial trauma, Road Traffic Accidents

INTRODUCTION

Maxillofacial fractures cause injuries not only to the skeleton components but also to dentitions as well as soft tissues of the face. Maxillofacial Trauma is presented as isolated injuries or a part of polytrauma in emergency department of the hospitals. The number of injuries in this region are important not only in organization of regional trauma services but also for introducing legislation and measures for prevention. Maxillofacial injuries are rarely fatal, but these injuries are definitely responsible for subjecting tremendous physical/ psychological impact on the patients. Facial bone injuries include the fractures of mandible, zygoma, midfacial, nasal bones. Among facial bones the most common site of injury is mandible due to its position, prominence, and mobility, followed by maxilla, zygoma and nasal bones. They either occur in isolation or in combination with other injuries, which is corroborated by finding from several previous studies. Apart from facial fractures, the occurrence of concomitant fractures of others bones of body is important to be considered e.g. upper and lower limb injuries, hip bone injuries and chest injuries can occur along with facial bone injuries. They are subject to injury from high and low energy impacts from RTAs, assaults, sports, fall etc, and almost all age groups are subjected to it. Multiple fractures pattern serve as neuro protective function, allowing dissipation of force and resulting in transmission of less residual injury to cranial vault. Injuries accounts for 9% of world death
and 12% of world burden of disease in year 2000.\textsuperscript{9} Immediate diagnosis; intelligent co-operation of general surgeon, orthopedic, plastic, maxillofacial and neurosurgeon team has paramount importance to deal with multiple injuries of the body.

**METHODOLOGY**

This descriptive study was conducted at Department of Oral and Maxillofacial Surgery Khyber College of Dentistry Peshawar from 20\textsuperscript{th} June 2009 to 19\textsuperscript{th} June 2010. All the patients presenting with maxillofacial fractures and associated fractures of the rest of the skeleton of the body were included in this study. Patients with isolated facial bone fractures were excluded. The variables of the study i.e., age, gender, maxillofacial bone involvement, associated fractures of the body and aetiology of these fractures were recorded.

Oral and Maxillofacial Surgery unit of Khyber College of Dentistry Peshawar works in a close liaison with all the tertiary care centres in the region like, Khyber Teaching Hospital, Peshawar (KTH), Hayatabad Medical Complex Peshawar (HMC), and Lady Reading Hospital, (LRH) Peshawar for the best management of poly trauma patients. Plane X-rays like orthopentomograme (OPG), postero-anterior view face, paranasal sinus view (PNS), right and left Lateral Oblique view of the mandible and advance imaging like computed tomographs (CT Scans) were used for the diagnosis of the maxillofacial fractures. The oral and maxillofacial surgical Unit of Khyber College of Dentistry is a tertiary care center of Khyber Pakhtunkhwa Province of Pakistan. This unit receives patients from entire region and also from some parts of Afghanistan and federally administered tribe areas (FATA).

**RESULTS**

A total of 54 patients were included in the present study and in these patients 177 fractures were diagnosed. The age range of the patient was from 10 years to 70 years with the mean age of 36.4 years. (Table 1) Males were predominantly affected in such injuries i.e., (83%) with a male to female ratio of 5:1. (Fig1) The most frequent cause of polytrauma patients noticed was road traffic accidents (50%) followed by falls (27.7%), fire arms (11.1%) and bomb blasts 5.5% respectively (Table 2). Mandible was the most common bone involved in such injuries 67% followed by zygomatic complex 15% (Table 3). Both when combined constitute more than 80% of maxillofacial bone fractures. Limbs i.e., upper and lower limbs were the primary victims of polytrauma patients i.e., 53.25% and 29.87% respectively. Cervical spine fractures which cause considerable morbidity and mortality in maxillofacial trauma.

**TABLE 1: AGE DISTRIBUTION OF THE PATIENTS**

<table>
<thead>
<tr>
<th>Age</th>
<th>Number of patients</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-20</td>
<td>11</td>
<td>20.3%</td>
</tr>
<tr>
<td>21-30</td>
<td>17</td>
<td>31.5%</td>
</tr>
<tr>
<td>31-40</td>
<td>15</td>
<td>27.8%</td>
</tr>
<tr>
<td>41-50</td>
<td>3</td>
<td>5.55%</td>
</tr>
<tr>
<td>51-60</td>
<td>7</td>
<td>12.9%</td>
</tr>
<tr>
<td>61-70</td>
<td>1</td>
<td>1.85%</td>
</tr>
<tr>
<td>Total</td>
<td>54</td>
<td>100%</td>
</tr>
</tbody>
</table>

**TABLE 2: AETIOLOGY OF TRAUMA**

<table>
<thead>
<tr>
<th>Causes</th>
<th>Number of patients</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>RTA</td>
<td>27</td>
<td>50%</td>
</tr>
<tr>
<td>Fall</td>
<td>15</td>
<td>27.7%</td>
</tr>
<tr>
<td>Fire Arm injuries</td>
<td>6</td>
<td>11.1%</td>
</tr>
<tr>
<td>Bomb blast</td>
<td>3</td>
<td>5.55%</td>
</tr>
<tr>
<td>Assaults</td>
<td>2</td>
<td>3.7%</td>
</tr>
<tr>
<td>Sport injuries</td>
<td>1</td>
<td>1.85%</td>
</tr>
<tr>
<td>Total</td>
<td>54</td>
<td>100%</td>
</tr>
</tbody>
</table>

Fig 1: Gender distribution of the patients
Maxillofacial and associated fractures of the skeleton – A Study

patients were seen in only 5.19% of the patients and the least commonly involved bone fracture was rib (Table 4)

DISCUSSION

The management of fractures to the maxillofacial complex remains a challenge for oral and maxillofacial surgeons, demanding both skill and a high level of expertise. It has been reported that incidence of maxillofacial fractures varies widely between different countries. Maxillofacial injuries are not uncommon in Pakistan. Maxillofacial injuries vary from soft tissue lacerations to complex fractures of maxillofacial skeleton and their incidence varies with age, region, climatic conditions, socio-economic differences, traffic volume, road traffic accidents and preventive measures taken in different countries.

Pakistan being a male dominant society, where males work out doors and hence are more susceptible to accidents. While most of the females are busy at home because of social and cultural restrictions and thus least exposed to various risk factors. According to the present study 83% of the patients were males while only 17% females with the male to female ratio of 5:1. The same observation was noticed in the study of Ahmad et al. According to the present study the age range of the patients was from 10 years to 70 years with the mean age of 36.4 years and the peak incidence in the second and third decade of life. The present study is consistent with the study conducted by Abbas et al.

World Health Organization (WHO) statistics indicate that one million people die and between 15 and 20 million are injured annually in road traffic accidents. Motor vehicle crashes (MVC) are the second major cause of deaths in the United Arab Emirates (UAE). the death rate from MVC in the Arab Gulf countries is reported to be much higher than that in the United States. The present study also supports the international literature that Road Traffic accident is the leading cause of maxillofacial poly trauma injuries and fractures accounting for 50% of these injuries followed by falls i.e., 27.7%, 16, 17, 20 Majority of the drivers in the region are notorious for their fast driving because of lack of road traffic speeding legislation. Alcoholism is associated with road traffic accident internationally. Fatigue, is another important factor especially among commercial vehicle drivers who drive very long distances. Many of the RTAs in this study were associated with bad roads conditions. Other studies reported more RTAs on well paved and broad roads.

Mandibular fracture was the most common fracture observed according to the present study. The aetiology, type and site of maxillofacial fractures vary depending on many factors. Mandible, being the most prominent bone in face, is often fractured more than the strongly supported middle third of the face. These mandibular fractures account for 35–45% of panfacial trauma.

The most common associated fractures occurring concomitantly with maxillofacial fractures were upper limb fractures (53.25%). This contradicts various international studies, which show that the limb injuries are not very commonly associated with maxillofacial injuries. Accidents in this part of the world are due violation of traffic rules whereas in developed countries, accidents are mostly due to alcoholic intoxication.

CONCLUSION AND RECOMMENDATIONS

- Most of the patients were young adults afflicted with such injuries, which were active members of the society.
• Road Traffic Accident was the main cause of these injuries, which can be prevented by proper implementation of Road Traffic Legislation and Laws.

• Mandibular fracture has been the most common maxillofacial fracture.

• Upper limb fractures were the most common associated injuries in maxillofacial polytrauma patients.

• Proper education of the community, poverty elimination and security provided by the government will reduce Fire Arm and bomb blast injuries.

• Associated injuries with maxillofacial fractures could be life-threatening if not detected quickly and managed expertly. Absence of associated injuries could be due to missed diagnosis

• Maxillofacial poly-trauma patients need a co-ordinated, integrated team approach for the best management and outcome.

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REFERENCES


21 Al Tukhi MH. Road traffic accident statistics and data comprising Gulf countries. and Riyadh area. Ann Saud Med 1988;8:310A


