

Associated Injuries with Facial Trauma - A Study

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ABSTRACT

OBJECTIVES: The objectives of the study were to determine the incidence of associated injuries with maxillofacial fractures and to enlist the age and gender distribution of maxillofacial trauma and also to find out cause, bone most frequently affected with it.

MATERIAL AND METHODS: History was taken from patients affected with facial trauma along with 2 diagnostic radiographs. Age, gender, cause, type of injury and fractures elsewhere in the body were recorded. Study was carried out at Emergency Department of Liaquat University Hospital Hyderabad in a period of 1 year i.e. from 1st January 2011 to 30 December 2011.

RESULTS: Total of 680 patients was included in this study. Out of these males were predominantly affected (72%), mean age was found to be 36.4 years. Road traffic accident (RTA) was the most common cause of injury (51%) and mandible was the most common bone involved (51%). Out of associated injuries tibia (12.35%) and ulna (11.23%) were most common injuries.

CONCLUSION: Our study showed a high frequency of trauma in males in 3rd decade of life. Road traffic accident (RTA) was the most common cause and mandible the most common bone affected. Tibia and ulna were common associated injuries with facial trauma.

KEY WORDS: Associated injuries, Facial trauma, Road traffic accident, Mandible.

INTRODUCTION

Facial skeleton injuries may present alone or as poly trauma at the emergency department of the hospitals.¹ Facial skeleton injuries may include upper third, middle third, lower third of the face, with or without soft tissues involvement and majority of the times dentition may also have injuries like intrusion, extrusion, luxation or tooth crown fractured.^{1,2} Among facial skeleton injuries most frequent site of fracture is mandible followed by maxilla, isolated zygomatic bone and nasal bone. The reason for mandible fracture to be most common is due to its position, prominence and mobility.³ Facial skeleton injuries are hardly ever fatal, but these injuries definitely cause physical/ psychological distress to the patient.²

According to several previous studies it is highlighted that facial injuries occur alone or in combination with other fractures e.g. upper and lower limb injuries, hip bone injuries and chest injuries; these injuries occur due to high and low force of impacts like from road traffic accidents (RTA), assaults, gunshot, blasts, sports, fall, etc, and mostly all age groups are affected.⁴⁻⁷ More than 1 million peoples died and around 15 to 20 million peoples are affected in road traffic accidents (RTA) annually according to the statistics of World Health Organization (WHO).⁸

The initial assessment of a person who is injured significantly from poly trauma is a challenging task and each minute makes a difference between life and death. So immediate diagnosis and intelligent cooperation between anesthetist, general surgeon, or-

thopedic surgeon, plastic surgeon, maxillofacial and neurosurgeon may greatly affect the outcome and hence lessen the mortality and morbidity in poly trauma patients.^{2,9-12}

The purpose of this study was to evaluate the rate of associated injuries with maxillofacial fractures and most common bone involved with poly trauma patients. This study is first ever done in Sindh province, will help to develop a better diagnosis, management and better development of poly trauma team.

METHODOLOGY

This descriptive cross sectional study was conducted at Liaquat University Hospital Hyderabad which is tertiary care and busiest hospital of the Hyderabad division catering to a population of 4 to 5 million with having good management team for poly trauma patients. The duration of study was from 1st Jan 2011 to 30th Dec 2011. All the patients presenting in emergency department with trauma were examined by team of Oral & Maxillofacial Surgery Department. Facial fractures alone or in addition to other body fractures were included in this study. A written informed consent was obtained from the patient or attendant. A comprehensive history was taken from the patient or the attendant and questionnaire filled for each patient. At least two diagnostic radiographs (Plane X-rays like orthopantomogram (OPG), postero-anterior view face, paranasal sinus view (PNS), right and left lateral oblique view of the mandible) were taken for every case and advance imaging like computed tomography (CT scan) was done where needed.

Data were analyzed in SPSS version 16.0. The frequency and percentage was computed for qualitative variables, like gender, causes, and associated injuries. Mean± standard deviation was computed for qualitative variables, like age. No inferential test was applied due to descriptive statistics.

RESULTS

A total of 670 cases registered in emergency department during the study period; out of those 72 cases were included in this study and out of these patients 189 fractures were diagnosed with ploy trauma. The age range of the patient was from 10 years to 70 years with the mean age of 36.4 years. Males were predominantly affected 52 (72.22%) and females 20 (27.78%) in such injuries and with a male to female ratio of 5:1 as shown in **Table I**. The most commonly encountered cause of polytrauma observed was road traffic accident (RTA) 37 (51%) followed by assault 22 (30.55%), falls 08 (11.11%), fire arms injuries 04 (05.55%) and sports injuries 01 (01.38) respectively as shown in **Table II**. Mandible was the most common bone involved in such injuries 51 (70.83%) followed by Maxillary region 20 (27.78%), isolated zygomatic complex 18 (25%) and Dentoalveolar injuries 11 (15.28%). Associated injuries include i.e. tibia 11 (12.35%) and ulna 10 (11.23%) as shown in **Table III**.

TABLE I: AGE & GENDER DISTRIBUTION OF THE PATIENTS

| Age | Frequency (n=72) | Males (n=52) | Females (n=20) | % |
|-----------|------------------|--------------|----------------|-------|
| 11-20 yrs | 08 | 05 | 03 | 11.11 |
| 21-30 yrs | 21 | 16 | 05 | 29.16 |
| 31-40 yrs | 16 | 12 | 04 | 22.22 |
| 41-50 yrs | 11 | 06 | 05 | 15.27 |
| 51-60 yrs | 09 | 07 | 02 | 12.50 |
| 61-70 yrs | 07 | 06 | 01 | 09.72 |

TABLE II: ETIOLOGY OF INJURIES (n=72)

| Etiology | Frequency | % |
|-----------------------------|-----------|-------|
| Road traffic accident (RTA) | 37 | 51.00 |
| Assult | 22 | 30.55 |
| Fall | 08 | 11.11 |
| Fire Arm injuries | 04 | 05.55 |
| Sports Injuries | 01 | 01.38 |

TABLE II: ASSOCIATED INJURIES

| Body region Bone involved | Frequency | % |
|---------------------------|-----------|-------|
| Tibia | 11 | 12.35 |
| Ulna | 10 | 11.23 |
| Humerous | 09 | 10.11 |
| Radius | 09 | 10.11 |
| Femoral | 09 | 10.11 |
| Fibula | 09 | 10.11 |
| Clavicle | 08 | 8.98 |
| Patella | 06 | 6.74 |
| Metacarpel | 05 | 5.61 |
| Pelvic bone | 04 | 4.49 |
| Cervical Spine | 03 | 3.37 |
| Skull bone | 02 | 2.24 |
| Rib | 02 | 2.24 |
| Metatarsal | 02 | 2.24 |

DISCUSSION

The factors and concomitant injuries associated with maxillofacial trauma are diverse and vary from area to area depending on age, gender, ethnicity, culture and socio economic status. A wide age range was included in this study but the mean age was found to be in 3rd decade. This correlates with other studies done in Israel¹³ and Poland.¹⁴ Similar results were also obtained in Pakistan.¹⁵ Reason may be due to the fact that people in young age are relatively more energetic and involved in activities, also this age group is mostly involved in violence and careless in following rules of traffic.

In this study males were found to be the main victims of maxillofacial trauma. This fact correlates well with other studies done in Austria,¹⁶ Brazil,¹⁷ Iran,¹⁸ and pakistan.¹⁹ Reason may be that specially in our male dominated society males are more actively engaged in outdoor activities as compared with females.

In the present study the most common cause of facial injury was found to be road traffic accident (RTA) followed by assaults while sports was associated least with facial fractures. This finding has been proven consistently by many other studies done in Malaysia,²⁰ Brazil²¹, and Middle East.²² Similarly in many studies in Pakistan also road traffic accident (RTA) was found to be the main cause of facial injuries.^{23,24,25} Our results are however in contradiction to study done in

USA where road traffic accident (RTA) was second frequent cause after assaults.²⁶ This is a significant point and shows the poor condition of traffic legislation in our part of the country. Majority of drivers are famous for their driving and fatigue is another significant factor specially related to long distance drives.

In this study Mandible was the most common bone involved in fracture. Though the pattern of fracture varies with type of injury mandible being a mobile bone is implicated more often in injuries as compared to more strongly supported middle 3rd of face. Our result is in accordance with studies done in Iran,²⁷ Australia,²⁸ Middle East,²⁹ and Pakistan.³⁰

Another finding in this study was the association of lower limb fractures which as compared to upper limb were more often involved. similar results were obtained by Thorein et al³¹ and Khan M.³² This however is not supported by various other international studies which show that limb fractures are less commonly associated with facial trauma.³³ This points to the fact that type of associated injury varies with difference in impact and cause of trauma.

CONCLUSION

Young adult males were more frequently involved in facial trauma. Accidents was the most common cause of injury in our part of the country which necessitates use of proper implementation of traffic legislation. Mandible was fractured in majority of cases with facial trauma. Limb fractures was the most common associated injury with facial trauma.

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