Evaluation of facial skeleton fractures

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ABSTRACT

Background: Fracture of facial bone is most common fracture in humans because of its upper and prominent position. Facial skeleton fractures are classified into various types, nasal bone fractures, maxillary fractures. It affects all age groups and both sexes. The cause to the injury is due to RTA, assault, accidental fall etc. Majority of the times it is associated with the other fractures. Facial skeleton fractures should not be considered as minor injury. They may preclude to serious complications like septal haematoma, orbital injury, brain injury and CSF leak. Majority of them require conservative management. The aim of the study was to assess the prevalence and types of facial skeleton fractures in trauma cases for appropriate investigation and treatment for better outcome and to reduce morbidity.

Methods: Prospective clinical study of patients who attend to casualty and ENT department and referred by other departments with facial skeleton fractures are evaluated for the period of 6 months.

Results: Of 100 patients, 90% were male and 10% female. According to age 1-9 yr: 3%, 10-19 yr: 12%, 30-39 yr: 19%, 40-49 yr: 20%, 50-59 yr: 10%, 60-69 yr: 5% were noted. The most common cause was the road traffic accident (58%) followed by self fall (38%). The most common fracture involved is the nasal bone (54%) in isolation, followed by maxilla (23%) and mandible (12%).

Conclusions: The patients were mostly males in third decade of life, victims of the RTA being the most commonly affected. The most commonly fractured bone being nose.

Keywords: Epidemiology, Maxillofacial injuries, Nasal bone

INTRODUCTION

Facial skeleton injuries occur in a significant proportion of trauma patients requiring prompt diagnosis of fractures and soft tissue injuries, with possible emergency interventions.1 Every year, increasing numbers of both adult and paediatric patients are admitted to the hospital with facial trauma.1 Many studies in the literature have analysed the demographic distribution and factors associated with facial trauma according to various criteria.2,4 The epidemiology survey of facial fractures varies according to injury type, facial bones, severity and cause, depending on the population studied.5 The differences in the populations with regard to the causes of facial fractures may be the result of differences in culture, socioeconomic factors and a variety of risk factors.

The maxilla facial injuries pose serious problem in the clinical setting because of the specificity of its anatomy. Due to the anatomical proximity to important structures like brain, eye, upper aerodigestive tract, injuries to these regions can lead to severe dysfunction and morbidity affecting the quality of life.6 Great emphasis need to be given to the aesthetic disability affecting psychological aspects in the patient.7 That is why special attention is focused on etiological factors and trauma mechanisms for the successful outcome of management of facial trauma.8
A thorough understanding of the cause, severity and temporal distribution of facial trauma can aid in establishing clinical and research priorities for effective treatment and prevention of these injuries. Majority of facial skeleton injuries require conservative management and others requiring intervention. Continuous collection of data regarding the epidemiology of facial fractures are of great interest as to the knowledge of the occurrence and quantity and severity of presentation allowing the adoption of preventive measure that might help reduce the incidence of facial injuries and its management of patients.

In this study, we have investigated the etiology, demographic characteristics, symptoms, type of fractures and severity of injuries in polytrauma patients.

METHODS

It is a prospective clinical study who attended the casualty and ENT department and referred by other departments between January 2018 and June 2018 in Shimogga Institute of Medical Sciences. In radiological evaluation by CT scan, type of fracture is detected. Patient’s age, sex, severity, type of trauma was collected by the case notes. The causes of fractures were studied according to: road traffic accident, self fall, assault, sports injuries. The site of the injuries was classified into: fractures of nasal bone, maxilla, mandible, zygomatic complex, frontal bone, septum, orbital rim and sphenoid. The data were analyzed with the aid of Microsoft office excel 2007

The research project was approved by the ethics committee of the hospital.

RESULTS

During 6 month period 100 patients were treated with maxillofacial injuries with different etiological factors.

It was found that facial fractures were more common in males (90%) compared to females (10%) with peak incidence in the age group of 20–29 yr (31%) followed by males in 40–49 yr (20%).

In 100 patients enrolled into the study, 50% of the patients have isolated fracture. The most affected area is the nasal region. The most common fractures were seen in nasal bone (54%) followed by maxillary bone (23%). The other bones mandible (12%), zygomatic (10%), frontal bone (15%) were also involved.

During the epidemiological survey, the most common cause of maxillofacial fractures were road traffic accidents (54%) followed by self fall (38%), assault (04%). In females the most common was self fall (n=6).

The distribution of facial fractures according to age shows that the nasal bone, maxillary and mandible is most commonly involved in age above 30 yr. Frontal bone is most commonly involved in age between 20-30 yr. Orbital and sphenoid fractures are seen in patients above 30 yr.

Nasal bone fracture is the most commonly involved craniofacial trauma involved in road traffic accident, followed by maxilla and mandible.

Table 1: Distribution of facial fractures according to gender.

| Gender | No of patients | Percentage (%) |
|--------|----------------|----------------|
| Male   | 90             | 90             |
| Female | 10             | 10             |
| Total  | 100            | 100            |

Table 2: Distribution of facial fractures according to age.

| Age (yrs) | No of patients | Percentage (%) |
|-----------|----------------|----------------|
| 0–9       | 3              | 3              |
| 10–19     | 12             | 12             |
| 20–29     | 31             | 31             |
| 30–39     | 19             | 19             |
| 40–49     | 20             | 20             |
| 50–59     | 10             | 10             |
| 60–69     | 5              | 5              |

Table 3: Etiology of facial trauma.

| Cause     | No of patients | Percentage (%) |
|-----------|----------------|----------------|
| RTA       | 58             | 58             |
| Self fall | 38             | 38             |
| Assault   | 04             | 4              |
| total     | 100            | 100            |

Table 4: Types of fractures.

| Types of fracture | Left side | Right side | Both | Total |
|-------------------|-----------|------------|------|-------|
| Nasal bone        | 11        | 03         | 40   | 54    |
| Maxillary         | 03        | 09         | 11   | 23    |
| Mandible          | 02        | 05         | 05   | 12    |
| Zygomatic         | 07        | 04         | 04   | 15    |
| Frontal           | 00        | 00         | 10   | 10    |
| Multiple bones    | -         | -          | -    | -     |
| Lamina papyracea  | -         | -          | -    | -     |
| Septum            | ??        | ??         | ??   | 05    |
| Sphenoid          | 00        | 00         | 02   | 02    |
| NOE complex       | -         | -          | -    | -     |
The face is a very susceptible to variety of possible trauma.

Our study revealed a predominance of male patients with facial fractures corresponding to 90%, compatible with the literature including Palma et al, 78%, Falcao et al, 84%, and Macedo et al, 72.8%. This higher incidence in males may be linked to cultural and socio-economic factors, considering that the males represent most of the economically active population, exhibit more abuse of alcohol and drugs, practice more contact sports, are involved in the majority in traffic and thus are more exposed to the factors responsible for facial injuries. The most common cause in women is self fall in our study.

The patients in the study range from 5-79 yr. Most common age group involved is 20-29 yr. This is in concurrence with other studies like Silva et al study the most common reason attributed is the use of motor vehicular accident, drunken driving. There is less incidence of facial trauma in paediatric population due to the attention of the family. However the reason is either the self fall or sports injury.

The most common reason for the maxilla facial fractures is the road traffic accident mainly seen in males which is in concurrence with other studies done in India. There are various causative factors like alcohol abuse, fast driving. The next common cause is the self fall followed by assault which is not in agreement with other studies wherein interpersonal violence and assault is the reason. The possible cause for self fall is alcohol abuse.

The frequent cause associated with females is self fall.

The most common area involved in the facial fractures is the nasal bone, midface fractures like maxilla and zygomatic complex involvement. Fifty percent of the patient showed isolated nasal bone fracture. The patient mainly presented with swelling over the dorsum of the nose, bleeding from the nose, periorbital swelling, and inability to open the mouth, laceration over the face, dental malocclusion and disfigurement. The possible explanation for involvement of nose could be its prominent position on the face.

CONCLUSION

Unfortunately the head and face is the most damaged organ in road traffic accident after limbs in multiple trauma. They are major causes of morbidity and socioeconomic loss. The study of epidemiology of facial trauma is important for the studying the cause and effects of facial trauma, assist the initial evaluation and care, and publishing preventive policies.

The most common age of maxillofacial injury is the third decade of life. Regarding the type of trauma the most common region involved is nasal region.

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