PATTERN AND COMMON RISK FACTORS OF MAXILLOFACIAL FRACTURES IN ADULTS

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ABSTRACT

Objective: *To dertemine the pattern and leading factors of maxillofacial trauma in adults.*

Materials and Methods: *This was descriptive crossectional study which was carried out at the Department of Oral & Maxillofacial Surgery, Khyber College of Dentistry Peshawar from 02 March, 2018 to 02 November, 2018. A total of 189 patients were selected. The age range was 17-60 years. Fire arm injured patients and those presenting after 24 hours of injury were excluded from this study. The data were analyzed using SPSS 22.0 version. Pvalue ≤ 0.05 was taken as significance.*

Results: *Amongst 189 patients, 156 (74.64%) were male and 47 (25.53%) were female. RTA was the leading factor with 108 (54.41%) followed by assaults 45 (23.80%) and falls 36 (19.04%).36 (19.04%) patients have pan facial fractures and 32 (16.93%) patients had zygomatic complex fractures while 26 (13.75%) patients had fracture maxilla, 11 (5.82%) patients had fracture mandible, 36 (19.04%) patients had frontal bone fractures. Mandibular Dentoalveolar Fractures were 16 (8.46%) while Maxillary Dentoalveolar Fracture 10 (5.29%),orbito Nasoethmoide Fracture was found to be 22 (11.64%).*

Conclusion: *This study concluded that road traffic accidents were the leading factor which results in maxillofacial trauma.*

Keywords: *Maxillofacial Injuries, Fracture Maxilla, Fracture Mandible, Road Traffic Accidents, Assault.*

INTRODUCTION

Trauma is a major health care problem in present day society. In spite of the high rates of mortality associated with trauma, it is still not regarded as a major disease.[1] Oral and Maxillofacial (OMF) trauma has become a major Point in focus, owing to its increasing incidence and the multispecialty management, which it dictates. OMF injuries, either with or without associated systemic injuries, account for a large number of hospital admissions, especially through the emergency department[2-4] While the specialty of OMF surgery is most commonlyinvolved in diagnosis and treatment of rnaxillofacial traumatic injuries, comprehensive management often involves several other specialties.[3] A clear understanding of the maxillofacial anatomy and pattern of injuries is required not only to diagnose, but also to assess injury severity following maxillofacial trauma. Injury seventy is regarded as an indicator of the nature and intensity of treatment required by the patient, and helps predict treatrnent outcome when quantified.[2,3,5]

According to study Perform in Tanzania, Road traffic accidents were the most common risk factor i.e. 57.1%), majority of the victims of the maxillofacial traurna patients were motercyclists, followed by assaults (16.2%) and falls (14.3%) respectively.[6]

Due to cultural environment, and socioeconomic factors, causes for maxillofacial trauma differ world-

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wide.[7] Hence epidemiological Studieare used to analyze the incidence and pattern of etiology, frequency and severity of maxillofacial and dental trauma.[8]

Maxillofacial trauma/ fractures are known risk factors for morbidity and Motiabw worldwide, the rationale of the study is that it will provide local data on the subject matter and will helpIdentify future guidelines for prevention of maxillofacial fractures. The study help to inform the general masses about the Preventive measures like use of seat belts, helmet wearing in order to prevent such injuries.

The objective of this study was to determine pattern and common leading factors of maxillofacial trauma in adults.

MATERIALS AND METHODS

A descriptive cross sectional study was carried out in the Department of Oral and Maxillofacial Surgery, Khyber College of Dentistry, Peshawar from 2 March, 2018 to 02 November, 2018. A total of 189 patients of both gender through non-probability consective sampling technique were selected using 14.3% proporiton of falls with 95% confidence, 5% level of significance, 5% margin of error calculated on WHO formula for Samplz Size Determination. Patients age range 17-60 years and those presenting within 24 hours after injury were included in this study. Fire arm injury patients were excluded from the study. Approval of study was taken from the institutional ethical review committee at Khyber College of Dentistry. Data for this study was compiled from the patients visiting the out patient Department admitted in Department of Oral and Maxillofacial Surgery, Khyber College of Dentistry, Peshawar fulfilling the inclusion criteria. The purpose, procedure, risk and benefits were explained to them and an informed consent was taken from them to participate in the study. They were assured of confidentiality of all data. The data was analyzed using SPSS 22. Descriptive statistics was used to analyze the data quantitative variables like age was calculated by taking mean and standard deviation. qualitative variables like gender and leading factors of maxillofacial fractures (RTA, falls, Assaults) and patterns of maxillofacial surgery. Confounding variables like age and gender was controlled by stratification. The level of significance was kept at $p \leq 0.05$.

RESULTS

The mean age presentation was 38±5 years. 65 (34.39%) patients were recorded in 17-30 age group. 70 (37.03%) patients were recorded in 31-40 age group, 54 (28.57%) patients were recorded in 41-60 years age group as shown in the table 1. The male patients were 156 (74.64%) while the female were 47 (25.53%) as shown in figure 1.

As per frequencies and percentages for leading factors, 45 (23.80%) patients got fractures due to assault, 36 (19.04%) patients got fractures due to falls and 108 (54.41%) patients got fractures due to RTA as shown in table 2.

As per frequencies and percentages for patterns of maxillofacial surgery, 26 (13.75%) patients had fracture maxilla, 11 (5.82%) patients had fracture mandible, 36 (19.04%) patients had frontal bone fractures, 16 (8.46%) patients had Mandibular Dentoalveolar Fractures, 10 (5.29%) Maxillary Dentoalviolar Fracture, 22 (11.64%) Orbito Naso-ethmoide Fracture, 36 (19.04%) pan facial fractures and 32 (16.93%) patients had zygomatic complex fractures as shown in table 3.

DISCUSSION

Oral and Maxillofacial (OMF) trauma has become a major Point in focus, owing to its increasing incidence and the multispecialty management, which it dictates. OMF injuries, either with or without associated systemic injuries, account for a large number of hospital admissions, especially through the emergency department[2-4] While the specialty of OMF surgery is most commonlyinvolved in diagnosis and treatment of rnaxillofacial traumatic injuries,

Table: 1 Age Wise Distribution

Age Group	Frequency	Percentage
17-30	65	34.39%
31-40	70	37.03%
41-60	54	28.57%
Total	189	100%
Mean and SD	35+11.53	

Table: 2 Leading Factors

Leading Factors	Frequencies	Percentages
Assault	45	23.80%
Falls	36	19.04%
RTA	108	57.14%

Table: 3 Patterns of Maxillofacial Surgery

Patterns of Maxillofacial Surgery	FREQUENCY	PERCENTAGE
Fracture Maxilla	26	13.75%
Fracture Mandible	11	05.82%
Frontal Bone Fracture	36	19.04%
Mandibular Dentoalveolar Fractures	16	08.46%
Maxillary Dentoalviolar Fracture	10	05.29%
Orbito Nasoethmoide Fracture	22	11.64%
Pan Facial Fractures	36	19.04%
Zygomatic Complex Fractures	32	16.93%

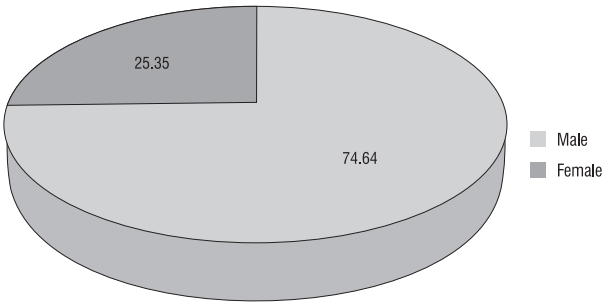

Fig 1: Percentage of gender wise distribution

comprehensive management often involves several other specialties.[3] Injury seventy is regarded as an indicator of the nature and intensity of treatment required by the patient, and helps predict treatrnent outcome when quantified.[2,3,5]

The etiological factors and pattern of maxillofacial injuries have been reported to vary from one geographical area to another depending upon the socioeconomic status, geographic condition and cultural characteristics.[9]

The male predominance in our study agrees with what is reported in literature. Males are at greater risk due to their greater participation in high risk activities which increases their exposure to risk factors such as driving vehicles, sports that involve physical contact, an active social life and drug use, including alcohol.[10]

In agreement with other studies,10-14 the majorities of patients in the present study were young adult in their third decade (21-30 years). However, this observation in contrast to some studies, where the dominant age groups having a high incidence were 0-10 years and 11-20 years respectively. The possible reasons for the higher frequency of maxillofacial injuries in third decade may be attributed to the fact that people in this period of life are more active regarding sports, fights, violent activities, industry and high speed transportation. The low frequencies in the very young and old age groups are due to the low activities of these age groups.

According to on of the study, Road traffic accidents were the most common risk factor i.e. 57.1%), majority of the victims of the maxillofacial traurna patients were motercyclists, followed by assaults (16.2%) and falls (14.3%) respectively.6 In our study, as per frequencies and percentages for leading factors, 45 (23.80%) patients got fractures due to assault, 36 (19.04%) patients got fractures due to falls and 108 (54.41%) patients got fractures due to RTA.

Due to cultural environment, and socioeconomic factors, causes for maxillofacial trauma differ worldwide.[7,15,16] Hence epidemiological Studieare used to analyze the incidence and pattern of etiology, frequency and severity of maxillofacial and dental trauma.[8,17-19]

The present study shows that the most common cause of maxillofacial injuries was road traffic accidents, which is consistent with other studies in developing countries, but in contrast to other studies done in developed countries which reported assaults as the most common cause of maxillofacial injuries. These etiological differences reflect differences in socioeconomic factors, national infrastructure development (particularly roadways, traffic regulations and legislation), and other behavioral practices such as alcohol consumption and other criminal activities.

The high number of maxillofacial injuries attributed to RTA in our study is attributed to recklessness and negligence of the driver, often driving under the influence of alcohol or drugs and complete disregard of traffic laws, over speeding, overloading, underage driving and poor conditions of roads and vehicles.

Soft tissue injuries were the most frequently occurring type of injury and mandibular fracture was the most frequent type of bony injury. Similar finding was also reported by other studies. This preponder-

ance could be due to the fact that the mandible is the most prominent and only moveable facial bone, and hence has a greater chance of being fractured than the well-articulated mid-facial bones. Other studies reported midface fractures as the most frequent site of injury. This difference in injury patterns reflects differences in the mechanism of injury and anatomical site of the fractured bone.

In our study, as per frequencies and percentages for leading factors, 45 (23.80%) patients got fractures due to assault, 36 (19.04%) patients got fractures due to falls and 108 (54.41%) patients got fractures due to RTA. (Table No. 4). In our study, as per frequencies and percentages for patterns of maxillofacial surgery, 26 (13.75%) patients had fracture maxilla, 11 (5.82%) patients had fracture mandible, 36 (19.04%) patients had frontal bone fractures, 16 (8.46%) patients had Mandibular Dentoalveolar Fractures, 10 (5.29%) Maxillary Dentoalviolar Fracture, 22 (11.64%) Orbito Nasoethmoide Fracture, 36 (19.04%) pan facial fractures and 32 (16.93%) patients had zygomatic complex fractures. The high rates of infection in the present study could be ascribed to the use of closed reduction with mandibulo-maxillary inter-fixation and its accompanying oral hygiene and nutritional challenges.

The limitation of this study was small sample size and male predominance. The study was conducted was limited to one of the hospital and this may be the other limitation of this study which cannot be anticipated for the whole nation.

CONCLUSION

The study concluded that road traffic accidents are the leading factors of maxillofacial injuries in our local population of Khyber Pukhtunhwa. Therefore, suitable measures for the prevention of road traffic accidents are strongly emphasized in order to reduce the occurrence of such injuries.

REFERENCES

1. Ramolingom S Role of Maxillofacial Trauma Scoring Systems in Economic Burden to Maxillofacial Trauma Patients in India. Journal of international Oral Health 2015, 7(4):38-43.
2. Ahrnad Z, Nouraei R, Holmes S. Towards a classification system for complex craniofacial fracttges Br .J Oral Maxiliofac Surg 2012;50(6):490-4.
3. Bagheri SC, Dierks EJ, Kademani D, Holmgren E, Bell RB, Hornrner L, et al. Application of a facial injury severity scale in craniomaxillofacial trauma. J Oral Maxillofac Surg 2006; 64(3)408-14.
4. Allareddy V, Nalliah RP. EPidemiology of facial fracture injuries. J OralMaxillofac Surg 2011;69(10):2613-8.
5. Zhang J, Zhang Y, el-maaytah m, Ma I, liu I, Zhou ID. maxillofacial injury severity score proposal of a new scoring system Int j oral maxillofac surg 2006; 35(2):109-14.
6. Chalya PL, Mabula JB, Kanumbs ES, Gilyoma JM. Etiological spectrum, injury characteristics and treatment of maxillofacial injuries in a Tanzanian hospital. J Trauma Manage Outcomes 2011; 5:1-7.
7. Mock C. Quansah R, Krishnan R, Arreoa-Rise C, Rivara F. Strengthening the prevention and care of injuries worldwide. Lancet. 2004; 363:2172-2179.
8. Gassner R, Tuli T, Hachl O, Rudisch A, Ulirner H. Cranio-maxillofacial trauma, a 10 Year review of 9,543 cases with 21,067 inluries. JCraniomaxillofac Sorg 2003; 3151-61.
9. Hwang K, You SH, Lee HS. Outcome analysis of sports-related multiple facial fractures. J Craniofac Surg. 2009 May. 20(3):825-9. .
10. Costello BJ, Papadopoulos H, Ruiz R. Pediatric craniomaxillofacial trauma. Clin Pediatr Emerg Med. 2005. 6(1):32-40.
11. Boden BP, Tacchetti R, Mueller FO. Catastrophic injuries in high school and college baseball players. Am J Sports Med. 2004 Jul-Aug. 32(5):1189-96. .
12. Schulz RC. Facial Injuries. 2nd ed. Chicago, Ill: Yearbook Medical Publishers, Inc; 1977.
13. Reehal P. Facial injury in sport. Curr Sports Med Rep. 2010 Jan-Feb. 9(1):27-34. .
14. Romeo SJ, Hawley CJ, Romeo MW, Romeo JP. Facial injuries in sports: a team physician's guide to diagnosis and treatment. Phys Sportsmed. 2005 Apr. 33(4):45-53. . .
15. Tanaka N, Hayashi S, Suzuki K, et al. [Clinical study of maxillofacial fractures sustained during sports and games] [Japanese]. Kokubyo Gakkai Zasshi. 1992 Sep. 59(3):571-7. .
16. Laskin DM. Protecting the faces of America. J Oral Maxillofac Surg. 2000 Apr. 58(4):363. .
17. Iida S, Kogo M, Sugiura T, Mima T, Matsuya T. Retrospective analysis of 1502 patients with facial fractures. Int J Oral Maxillofac Surg. 2001 Aug. 30(4):286-90. .
18. Bak MJ, Doerr TD. Craniomaxillofacial fractures during recreational baseball and softball. J Oral Maxillofac Surg. 2004 Oct. 62(10):1209-12. .
19. Reyes Mendez D, Lapointe A. Nasal trauma and fractures in children. UpToDate. May 2007.