ORIGINAL ARTICLE

Associated Injuries in Patients with Maxillofacial Trauma in Tertiary Care Hospital Nawabshah

NAEEM-UL-KAREEM BHATTI[1], KASHIF ALI CHANNAR[2], ABDUL BARI MEMON[3], WAHEED MURAD DAHRI[4], ABDUL QAYOOM MEMON[5], ALMAS RAHOJO[6], MAHNOOR MEMON[7]
[1]Assistant Professor, Department of General Surgery, Peoples University of Medical & Health Sciences Nawabshah
[2]Associate Professor, Oral & Maxillofacial Surgery, Liaquat University of Medical & Health Sciences Jamshoro
[3,4,6]Assistant Professor, Bibi Aseefa Dental College, SMBBMU Larkana
[5]Senior Registrar, Peoples University of Medical & Health Sciences Nawabshah
[7]DPT 4th Year Student, Peoples University of Medical & Health Sciences, Nawabshah
Correspondence to: Dr. Naeem-ul-Kareem Bhatti, E-mail: drnkbsr@gmail.com, Cell:0333-8866878

ABSTRACT

Background: Maxillofacial trauma is the physical trauma that causing great concern among population of developing countries because of increasing ratio of Road Traffic Accidents (RTA) in younger boys. Apart from RTA, other causes are also involved in MFT. Leaving face aside, other injuries involved in MFT are related to chest, abdomen, limbs and other systems. Pneumothorax, hemothorax, hemo-peritonium and fractures of upper and lower limb bones are associated injuries
Aim: To evaluate the associated injuries with Maxillofacial trauma
Study design: Descriptive study
Place and duration of study: Department of Surgery at Peoples University of Medical & Health Sciences Nawabshah from 1st July 2011 to 30th September 2019.
Methodology: Six hundred and fifty two patients were enrolled. Meticulous clinical examination was done for whole body especially the head and neck region. All injuries were initially diagnosed by clinical examination followed by plane radiograph or CT scan to conform diagnosis. All facial injuries and associate injuries were assessed. Injuries to the head, spine, upper lower limbs and abdomen were considered as associated injuries.
Results: There were 532(81.6%) and 120(18.4%) were females. Majority of patients (35%) were in age group of 21-30 years followed by 23% in 31-40 years. Road traffic accidents affected 44% patients. Fall was the cause among 19% patients. Interpersonal violence affected 28%. Mandible bone was injured in 35% patients followed by maxilla 23%, zygoma 18% and dento-alveolar 13%. Head and spine injured in 34% patients; upper limb in 11%. Lower limb in 14%, abdominal injuries were observed in 9% and skin injuries were observed in 30% patients. Two hundred and twenty three (34%) patients suffered head and spine injuries.
Conclusion: Head and spine injuries are most common associated injuries in cases of maxillofacial trauma followed by skin, lower limb, upper limb.
Key words: Trauma, Maxillofacial, Pneumothorax, Spine injuries

INTRODUCTION

Facial trauma also named maxillofacial trauma is the physical trauma to the face. Maxillofacial (MF) injuries are one of the major problems being faced by the world nowadays owing to its sensitivity of anatomy involved. The matter of concern is the pattern of injury. It is connected with social, cultural and environmental factors and is different in every populace.[1]It can cause soft tissue injuries in form of burns, lacerations, bruises and bony fractures of face such as nasal fractures and fractures of jaw. Commonly injured bones incorporate nasal bones, mandible, and maxilla. Mandible is fractured at its symphysis, angle, ramus, body and condyle. The zygoma and frontal bone are other sites of fractures. Fractures can also occur in palate bones and orbit of the eye.[2] Eye injuries are also its part. Disfigurement and loss of function are the repercussions. It could be deadly as it causes bleeding and airway interference. Fractures of bones are associated with pain, bruising and swelling of surrounding structures. Fractures of skull, nose and maxilla commonly bleed profusely. Nasal fractures cause deformity of the nose. Deformity of face such as a sunken cheekbone or teeth not aligned properly suggests the presence of fractures.[3,4]

Road traffic accident (RTA) is the commonest cause of MF injuries and is increasing day by day throughout the world. Other causes include assaults, sports, occupational-related injuries and falls. Blunt assaults, and blows from fists are also common causes.[5] Facial trauma can also result from wartime injuries such as gunshots and blasts. Other causes included are animal attacks and industrial accidents. Face striking to a vehicle's part also causes injuries. Airbags can cause corneal abrasions and lacerations to the face. According to survey, Motor vehicle crashes (MVC) are found to be common in Gulf Co-operation Council (GCC) countries. The factures commonly occur in male between 21-30 years[6]. Two most common reasons seen in MVC are over speeding and no use of belt. Soft tissues injuries are usually seen[7]. Previously only plain radiograph was the sole investigation for its diagnosis. Now days, angiography is also used to dig out the source of bleeding. Computed Tomography is the standard investigation to diagnose bony and soft tissue injuries and

Received on 30-09-2020
Accepted on 03-01-2021

finds the way whether to perform surgery or manage conservatively. It is even used in multi trauma patients.[8,9]

Immediate treatment is to check airway. Any material present in mouth should be removed. Facial fractures obstructing airway should be reduced by moving bone back into place. Tracheal intubation is difficult so surgical airway should be placed. Cricothyrotomy and tracheostomy can secure airway. Dressing can be applied to keep wounds clean. Antibiotics are used apart from analgesics. Fractures may be wired but bone grafting is also another option. Research suggests early repair of facial injuries having better results.[10] Associated systems involved during MFT are thorax, abdomen, bones of upper and lower limb, and head and neck injuries are the systems affected. Head and neck are the common areas affected.[11]This study will be beneficial for the stake holders in terms of planning to control and prevent such injuries in the large interest of population.

MATERIALS AND METHODS

This is a descriptive study done at Department of Surgery, Peoples University Medical & Health Sciences Nawabshah from 1st July 2011 to 30th September 2019. A total of 652 patients were enrolled. Patients of all ages and of either sex were included. A clinical history was taken. Meticulous clinical examination was done especially the face examination was performed. The age of patient with his gender and cause of trauma were documented and Special emphasis were on maxillofacial injuries and associate body injuries were recorded by using a standard Performa designed for this study. The injuries to facio-maxillary region were classified according to location of fracture as fracture nasal bone, fracture Maxilla ,Mandible, orbital rim, zygomatic bone and dento alveolar fracture.

The patients were also assessed for any associated injury like Injuries to the head, spine, upper lower limbs, Abdomen and skin were considered as associated injuries. All injuries were initially diagnosed by clinical examination followed by plane radiograph or CT scan to confirm it. Glasgow Coma Scale (GCS) were used to identify head and spine injuries and confirmed by the CT scan/MRI scan. Chest injuries were assessed primary by chest examination and than a chest X-ray was advised. Upper and lower limb x rays were taken to rule out injuries to the extremities. For abdominal injuries ultrasound was advised. The data was entered and analyzed through SPSS-25.

RESULTS

There were 532(81.6%) males and 120(18%) were females. Majority of patients (35%) were in age group of 21-30 years followed by 23% in 31-40 years. Road traffic accidents affected 44% patients. Fall was the cause among 19% patients. Interpersonal violence affected 28%. Mandible bone was injured in 35% patients followed by maxilla 23%, zygoma 18% and dento-alveolar 13% (Table 1). Multiple sites were involved in maxillofacial trauma; head and spine were injuries in 34% patients; upper limb was injuries in 11%. Lower limb was injured in 14%, abdominal injuries were observed in 9% and skin injuries were observed in 30% patients(Table 2).

Table 1: Demographic information of the patients (n=652)

Variable	No.	%
Gender		
Male	532	81.6
Female	120	18.4
Age (years)		
10-20	102	15.6
21-30	227	34.8
31-40	152	23.4
41-50	99	15.2
>51	72	11.0
Aetiology		
Road traffic accident	286	44.0
Fall	123	19.0
Interpersonal violence	182	28.0
Sports	22	3.0
Others	39	6.0
Site		
Zygoma	117	18.0
Mandible	228	35.0
Orbit	32	5.0
Maxilla	149	23.0
Nose	39	6.0
Dento alveolar	84	13.0

Table 2: Frequency of associated injuries (n=652)

Variable	No.	%
Head and spine	223	34.0
Upper limb	71	11.0
Lower limb	91	14.0
Abdomen	58	9.0
Skin	195	30.0

DISCUSSION

Faciomaxillary injury can be simply defined as facial injuries that include injuries to bony structures, soft tissues, blood vessels, and nerves of the face. MF injuries are caused by trauma to the face, head and jaws. These can be life threatening if blood vessels and airway is involved. Psychological impact of MFT cannot be neglected[12,13].

Road side accidents, falls, inter personal violence and sport injuries are the common cause body injuries. In children, other causes of facial injuries are rare except falling. Murray concluded in his study that jaw bone fractures are most common result of trauma. Pandey and Mishra[14] observed that dog bite is most common cause of soft tissue injuries.

In the present study, the common age group affected was 21-30 years. This is in agreement with the study results of Kamath et al[15] and Patil et al[16] where they showed the same age group was victimized, this might be due to this age group apparently is highly active in outdoor activities.

Male were predominant as compared to female is in agreement with a study done by Singh etal.[17] The reason for more incidents might be because the man has distinct role in our society and involved in outdoor activity like driving, working in factories and offices, they also more involved playing outdoor games, attending social events such as parties.

In this study mandible bone was injured in 35% patients followed by maxilla 23%, zygoma 18% and dento-alveolar 13% which is in agreement with the study results

of Hauget al[18] and Obuekwe et al[19] where they found that mandible was most commonly injured bone followed by maxilla and zygomatic bone. Prominent position of the mandible and its inelastic nature makes it more vulnerable to fracture.

In our study, 44% patients had history of RTA, 19% fall, 28% interpersonal violence and 3% sports. RTA was the common cause in our study. This is in contradiction with the study done by Singh et al[17], where they observed assault was on the top. Whereas our results are in consistent with the findings of several other studies.[19-21]In our study, the associated injuries were also seen in other systems. 34% patients suffered from head and spine injuries followed by lower limb injuries as 14%, upper limb injuries as 11%, abdomen as 9% and skin as 30%. Obuekwe[19] and Scherbaum-Eidtet al[22] in their studies identify same results. Contradictory observations were also found by the Akmaet al.[23] This may be due to the differences in the predominant means of transportation in the population.[20]Holmes et al[24] observed in his study that neurologic injuries were the most frequent concomitant injury with maxillofacial fractures patient.

CONCLUSION

Males were more affected. Majority of patients were affected in 3rd decayed of life. Road traffic accident was the most common cause of associated injuries followed by interpersonal violence. The most common associated injuries observed were, Head and Spine, Upper limb, Lower limb, Abdominal and Skin. Our study expressed loudly and clearly that isolated facial fractures are rare, associated injuries may be fatal that necessitate over all examination thorough multisystem trauma as early on presentation. Only a multi-disciplinary approach and co-ordination among trauma team can guarantee for best possible success in the management of trauma patient. Morbid and mortality can be reduced if all safety measures been undertaken.

REFERENCES

1. Andreas ZJ, Benoit S, Olivier L, et al. Incidence, aetiology and pattern of mandibular fractures in central Switzerland. Swiss Med Wkly 2011;141:132-7.
2. Oginni FO, Oladejo T, Alake DP. Facial bone fractures Inile-Ife, Nigeria: an update on pattern of presentation and care. J Maxillofac Oral Surg 2016;15:184-90.
3. Wittchen HU, Jacobi F, Rehm J, et al. The size and burden of mental disorders and other disorders of the brain in Europe 2010. EurNeuropsychPharmacol 2011;21:655-79.
4. Nalliah RP, Allareddy V, Kim MK, et al. Economics of facial fracture reductions in the United States over 12 months. Dent Traumatol 2013;29:115-20.
5. Samieirad S, Tohidi E, Shahidi-Payam A, et al. Retrospective study maxillofacial fractures epidemiology and treatment plans in Southeast of Iran. Med Oral Patol Oral Cir Bucal 2015; 20:729-36.
6. Smith H, Peek-Asa C, Nesheim D, et al. Etiology, diagnosis, and characteristics of facial fracture at a mid western level I trauma center. J Trauma Nurs 2012;19:57-65.
7. Brucoli M, Boffano P, Pezzana A, et al. The European mandibular angle. the analysis of complications after unilateral angle fractures. Oral Surg Oral Med Oral Pathol Oral Radiol 2019;128:14-7.
8. Agnihotri A, Galfat D, Agnihotri D. Incidence and pattern of maxillofacial trauma due to road traffic accidents: a prospective study. J Maxillofac Oral Surg 2014;13:184-8.
9. Munante-Cardenas JL,FacchinaNunes PH, Passer LA. Etiology, treatment, and complications of mandibular fractures. J CraniofacSurg 2015;26:611-5.
10. Cagatay HH, Ekinci M, Pamukcu C, et al. Retrospective analysis of 132 patients with orbital fracture. UlusTravmaAcilCerrahiDerg 2013;19:449-55.
11. Obimakinde OS, Ogundipe KO, Rabiu TB, et al. Maxillofacial fractures in a budding teaching hospital: a study of pattern of presentation and care. Pan Afr Med J 2017;26:218.
12. Samieirad S, Tohidi E, Pakravan M. A conservative method for treating severely displaced pediatric mandibular fractures: an effective alternative technique. J Dent Mater Tech 2016;5:53-8.
13. Atisha DM, van Rensselaer Burr T, Allori AC, et al. Facial fractures in the aging population. Plastic Recon Surg 2016;137:587-93.
14. Pandey RK, Mishra A. The incidence of facial injuries in children in Indian population: a retrospective study. J Oral BiolCraniofac Res 2018;8:82-5.
15. Kamath RA, Bharani S, Hammannavar R, Ingle SP, Shah AG. Maxillofacial trauma in Central Karnataka, India: an outcome of 95 cases in a regional trauma care centre. Craniomaxillofac Trauma Reconstr 2012; 5(4):197-204.
16. Patil SG, Munnangi A, Joshi U, Thakur N, Allurkar S, Patil BS. Associated injuries in maxillofacial trauma: a study in a tertiary hospital in south India. J Maxillofac Oral Surg 2018;17(4):410-6.
17. Singh V, Malkunje L, Mohammad S, Singh N, Dhasmana S, Das SK. The maxillofacial injuries: a study. Nat J MaxillofacSurg 2012; 3(2):166.
18. Haug RH, Prather J, Indresano AT. An epidemiologic survey of facial fractures and concomitant injuries. J Oral MaxillofacSurg 1990; 48:926-32.
19. Obuekwe ON, Etetafia M. Associated injuries in patients with maxillofacial trauma: analysis of 312 consecutive cases due to road traffic accidents. JMBR Peer Rev J Biomed Sci 2004; 3(1):30-36.
20. Ajike SO, Adebayo ET, Amanyiewe EU, Ononiwu CN. An epidemiologic survey of maxillofacial fractures and concomitant injuries in Kaduna, Nigeria. Niger J Surg Res 2005; 7(3):251-5.
21. Khan M, Din QU, Murad N, Shah SMA. Maxillofacial and associated fractures of the skeleton - a study. Pak Oral Dent J 2010; 30(2):313-6.
22. Scherbaum-Eidt JM, De Conto F, DeBortoli MM, Engelmann JL, Rocha FD. Associated injuries in patients with maxillofacial trauma at the Hospital Sa˜o Vicente dePaulo, Passo Fundo, Brazil. J Oral Maxillofac Res 2013; 4(3):1-8.
23. Akama MK, Chindia ML, Macigo FG, Ghuthua SW. Pattern of maxillofacial and associated injuries in road traffic accidents. East Afr Med J 2007; 84:287-90
24. Holmes PJ, Koehler J Jr, McGwin G, Rue LW. Frequency of maxillofacial injuries in all-terrain vehicle collisions. J Oral MaxillofacSurg2004; 62:697-701.