ORIGINAL ARTICLE

CROSS SECTIONAL SURVEY ON MAXILLO FACIAL INJURIES IN ROAD TRAFFIC ACCIDENTS IN KARACHI

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ABSTRACT

Background: Injuries due to motorcycle accidents are frequent happenings in developing countries as people utilize it commonly as a mode of transport. In Pakistan 56% of Maxillofacial injuries can be associated to Road traffic accidents (RTA) majority of which are due to involvement of motorbikes.

Methods: This cross sectional survey was carried out in public tertiary care setting in the year 2016. Three Hundred and Seventy participants were inducted in the study using Purposive sampling technique. Only those with maxillofacial injuries were included and diagnosed through conventional and panoramic radiographs and computed tomographic scans. Those who consented were included whereas, participants with language barrier or unable to answer were excluded. Data was collected by questionnaire with analysis being performed on SPSS version 21. Descriptive analysis was performed for quantitative variables with association between categorical variables tested through chi square. Bond of error was taken at 5% with 95% confidence interval. Permission was sought from ethical review board.

Results: Majority, [267(84.5%)] were young patients with [282(89.2%)] patients involved in Motorcycle accidents. Of total participants male gender was [275(87%)] the driver inflicted in most situations [184(58.2%)]. Most patients [285(90.2%)] were without any safety device. Majority [220(69.6%)] had Mandibular fractures whereas, 111(35.1%) had Maxillary fractures. Soft tissue injuries were seen in 212(67.1%) patients.

Conclusion: Motorcycle related accidents are common cause for maxillofacial injuries in road traffic accidents. Most patients suffered soft tissue injuries. Most commonly fractured bones were mandible and maxilla.

KEYWORDS: *Maxillofacial injuries, Motorcycle, Accidents*

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INTRODUCTION

Globally unintentional injuries are the main cause of injury deaths.[1] Greater than two third of such injuries occur in developing world[2]. Maxillofacial injuries are becoming more austere and increasing in prevalence. Maxillofacial injuries have a range of causes like assault, fall related injuries, road traffic accidents, warfare injuries and as a consequence of sports.[3-5] RTAs remain the most common causes of the maxillofacial injuries.[6,7] Injuries due to motorcycle accidents are a frequent trait because in developing countries people utilize it commonly as a mode of transport for passenger and stocks for being economical and convenient in the absence of appropriate public transport and dreadful road situations.[8,9]

Usage of vehicles like motorcycle is skimpy in developed nations like USA (2%) however, in developing countries it is a typical mode of transport and comprises as 95% registration in Asia. High registrations

(>60%) have been seen in Malaysia, China, Africa, Taiwan and Vietnam.[10-12] Injury to Maxillofacial area is a typical presentation among victims of motorcycle accidents with involvement of facial bones and predisposition of injuries to face.[8,9] In the Western world predominantly maxillofacial injuries can be attributed to road traffic accidents.[6] However in China this incidence is around 31%.[7] Whereas, in Pakistan 56% of Maxillofacial injuries can be affiliated to Road traffic accidents (RTA).[8]

In 2003 Obekue et al. referred to motorcycle related accidents as second common cause for Maxillo facial trauma,[13] whereas, in 2009 Ogini et al. found that injury to soft tissues were mostly reported.[12] In our part of the world despite devastating effects of maxillofacial injuries there is scanty data regarding this issue hence this study was conducted to determine the frequency of motorcycle related accidents and type of maxillofacial injuries in road traffic accidents arriving at public tertiary care hospital.

METHODS

This cross sectional study was performed in a public tertiary care hospital for a period of four months. Purposive sampling technique was utilized for collection of data. On the basis of 28% prevalence sample size was estimated[14] using the confidence level of 95%.The actual sample size was calculated.

$$N = \frac{(z)^2 \times P(1-P)}{D^2} = 310$$

However, the final size after an inflation of 20% for an anticipated no-response rate was 370. Selection of patients was based on the presence of Maxillo Facial injuries due to RTAs. Facial injuries were, Dento alveolar, Mandibular, Maxillary, Zygomatic Complex, Nasal and Orbital fractures. All bony injuries were diagnosed by conventional and panoramic radiographs and computed tomographic scans. Exclusion criteria comprised of people who did not consent, those with language barriers or were unable to answer Management of fractures was based on X-ray findings. Orthopantomogram (OPG) was commonly advised (15.2%) followed by Para Nasal Sinus View 73(23.1%) and Postero-Anterior View of 46 (14.6) patients and Computed Tomographic (CT) Scan of 192(60.8) patients.

For data collection self administered questionnaire was used with written consent of patients or attendants to note patient's demographics including age, gender, education, cause of injury, site of injury, and use of safety device like helmet. Age of patients was divided into young children (<10 years), Adolescents (10-19years), Young age (19.1-40), Middle age(40.1-60) and old age (>60 years). Data was entered on Microsoft Excel and transformed to SPSS version 20 for analysis. Descriptive analysis was used for numerical variables with mean and standard deviation. For association between pattern of Maxillo facial injuries and safety device and age of participants chi square was utilized. *P* value less than 0.05 was considered significant. Approval was taken through the Ethics review committee.

RESULTS

A total of n=370 patients were recorded. Out of which 54 cases of maxillofacial injuries due to other causes were excluded. Out of n=316 patients with RTAs n=275(87%) were males and n=41(13%) were females. Age range was 1 to 75 yrs. The most commonly involved age group were young adults n=305 (96.5%). Motorcycle accident was the main contributory factor in this study, n=282(89.2%) while the rest of the subjects n=34(10.8%) had accidents due to other vehicles. Out of 282 patients, with motorcycle accidents; only 28(9.8%) were wearing helmets whereas, remaining 285 (90.2%) were travelling without it. When time was ascertained it was observed that of 282 crashes, 163(51.6%) occurred during daytime and 153(48.4%) during night time. Of all accidents majority, 184(58.2%) sufferers were drivers while the remaining, 132(41.8%) were passengers.

The site distribution of the fractures showed fracture of mandible was most common bone fracture of 220(69.65%) patients followed by maxilla fracture 111(35.1%) patients, Lefort1 was found in 31(9.8%) patients, Lefort II in 49(15.5%) patients, Lefort III in 30(9.5%) patients, Zygomatic Complex Fractures in 83(26.3%), Dentoalveolar fractures in 48(15.2%) and Panfacial fractures in 11(3.5%). Soft tissue injuries were quite common as 212(67%) suffered from it. Of 220(69.6%), mandilbular fractures fracture of parasymphysis were most common 105(33.2%) followed by condyle 73(23.1%), body of mandible 53(16.8%) and angle of mandible 48(15.2%). Percentage of common injuries associated with RTA involving motorbikes are shown in Figure 1.

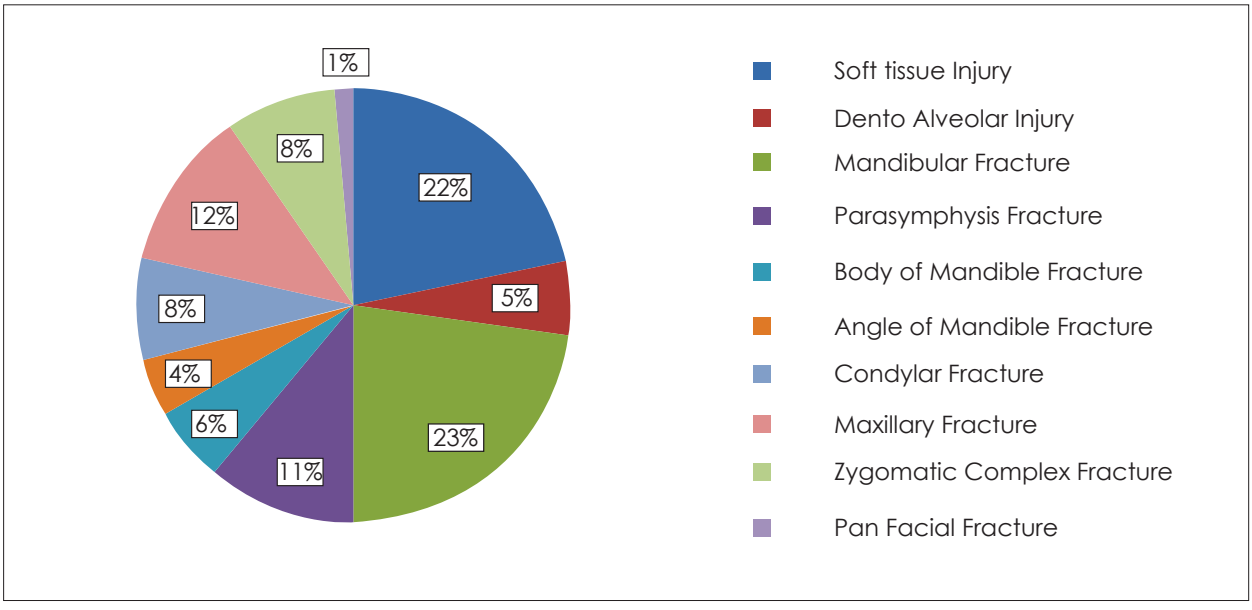

Figure 1: Types of injuries sustained in RTA involving Motorbikes (%)

When management was observed it was seen that 196(62%) had open reduction with bone plates, 89(28.2%) had closed reduction with Intermaxillary Fixation/Arch bar/Soft tissue repair while 26(8.2%) had open reduction with Intermaxillary Fixation.

Association of type of injury/fracture with status of wearing safety gadgets and age groups is shown in **Tables 1&2**.

Table 1: Association of safety device wearing status with type of injury

Type of Injury		Status: Wearing Safety Device				P Value
		Yes		No		
		n	%	n	%	
Soft Tissue Injury	Yes	19	9	193	91	0.469
	No	12	11.5	92	88.5	
DentolAcelolar Injuries	Yes	4	8.3	44	91.7	0.709
	No	27	10.1	241	89.9	
Mandibular fractures	Yes	24	10.9	196	89.1	0.32
	No	7	7.3	89	92.7	
Parasymphysis Fracture	Yes	16	15.2	89	84.8	0.022
	No	15	7.1	196	92.9	
Body of Mandible Fracture	Yes	7	13.2	46	86.8	0.362
	No	24	9.1	239	90.9	
Angle of Mandible Fracture	Yes	3	6.3	45	93.8	0.368
	No	28	10.4	240	89.6	
Condyle Fracture	Yes	5	6.8	68	93.2	0.332
	No	26	10.7	217	89.6	
Maxilla Fracture	Yes	6	5.4	105	94.6	0.053
	No	25	12.2	180	87.8	
Zygomatic Complex Fracture	Yes	10	12	73	88	0.425
	No	21	9	212	91	
Pan Facial Fracture	Yes	1	9.1	10	90.9	0.935
	No	30	9.8	275	90.2	

cial injuries. Non utilization of protective equipments is presumed to be the dominant reason for severe soft tissue injuries in patients with Maxillofacial trauma.[23] In South Asian region in previous decades there has been an upsurge in maxillofacial injuries due to RTA and is anticipated to increase by 2.5 times in the next 20 years.[24] Among those sufferings from RTA 60% have some degree of facial fractures.[16]

On one side RTA's are falling in developed nations whereas, in low and middle income countries they are escalating.[25] Rise in traffic and urbanization is also observed in Pakistan has lead to increase in number of automobiles.[14] Hence awareness campaign should be conducted to raise the education level of public regarding the significance of using protective equipments like helmets. Preventive measures like speed limit, enforcement of seat belt law, restrictions of mobile-phone use while driving should be enforced so that such consequences can be averted. It is vital that Government and concerned agencies make this issue a priority. Having license should be made mandatory for all drivers.

CONCLUSION

The results of this study exhibit that maxillofacial injuries are quite common following road traffic accidents. The present study provides a relevant pattern and outcome in people involved in these injuries with the highest occurrence in the second and third decades of age. The main contributory factor is Motor Vehicle accidents especially involving the motor-cyclists with less use of safety devices. Road traffic accidents are avoidable provided that the basic information and awareness regarding the security measures and traffic regulations is given to people.

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