Pattern of Injuries in Motorbike Accidents

Kashif Mahmood Khan, Muhammad Jamil, Iftikhar Ahmed Memon, Zeeshan Idrees

ABSTRACT

Objective: To determine the different pattern of injuries and their frequency in motor bike accidents

Methods: This Case series study was conducted at Department of Orthopedics, Jinnah Post Graduate Medical Centre(JPMC), Karachi, from January 2017 to December 2017**.** Patients aged 5-65 years, any gender and every kind of injury were included in the study. Pathological fractures and concealed injuries were excluded. Patients were admitted through Accident & Emergency Department of JPMC and informed consent was taken. Injuries were divided in different regions. Examination and required investigations were done. Injuries were recorded in proforma. Statistical analysis was done using SPSS version 18.

Results: Two thousand patients were included. Mean age was 29.6 years. 1588 (79.4%) were males and 412 (20.6%) females. Male to female ratio was 3.85:1.A total of 684 (34.2%) patients were between age 16-30 years and 512 (25.6%) between 31-40. Lower limb injuries were 1136 (56.8%) while upper limb injuries were 544 (27.2%). Abrasions were 1874 (93.7%), lacerations 1362 (68.1%) and bruises 1040 (52%). Fractures in lower limb were 450 (22.5%) and upper limb 272 (13.6%)

Conclusion: Younger males were more prone to motorbike injuries. Lower limb abrasions and fractures were the most common injuries.

Key words: Abrasion, fracture**,** Injury pattern, motorbike accidents

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INTRODUCTION

Motorbike is a major source of transport in a metropolitan city in a developing world [1]. Low income class people [2], bike enthusiasts [3] or nature of job drives people to use this mode of transport. Improvement in condition of roads, increase in traffic load [1,2], lack of respect for traffic rules [4], over speeding and stunts by bike enthusiasts and youngsters [5] results in majority of bike accidents. Over speeding and passion for bike stunts [3,5] has changed the pattern of injuries in motor bike accidents also [6]. Motor bike accidents is a problem of national concern. It's a major problem and has a profound impact on economy [7], life and health of people and communities[8].

Department of Orthopaedics, Jinnah postgraduate medical centre Karachi
Correspondence: Kashif Mahmood Khan
Email: kashif2511@hotmail.com

It is a neglected problem around the world especially developing countries. Pattern of injuries seen are from abrasion [9] to multiple fractures [10], life threatening and fatal injuries [11]. Increase in severity of injuries increases cost of treatment for patients and the government [7]. It is one of the leading causes of injuries, disabilities and death around the world [12].

We conducted this study to show pattern of injuries in motor bike accidents.Our study will help us in formulating guidelines to allocate manpower and resources so that these patients are managed promptly in Accidents & Emergency Department.

METHODS

Patients of age between 5 and 65 years and any gender who had different kind of fractures, wounds of any severity, injuries involving a particular region were included in the study. Patients with bone pathologies and concealed injuries were excluded. Approval from JPMC ethics committee was taken for study and proforma prepared. Patients with injuries were received in A & E department of JPMC. Those with manageable injuries in A & E department, were treated in emergency department. Those with complex and multiple injuries requiring special management were admitted in ward.

Patients were briefed about the research. Consent was taken individually from every patient. Injuries of patients treated and discharged from emergency department were recorded there on proforma on that very day, attention being paid to all the injuries. Those admitted in ward, were examined thoroughly and each injury recorded in ward and entered in proforma. For convenience, the pattern of injury was recorded by dividing the body into regions. Thoracic spinal injuries combined with thorax and lumbar spine combined with the abdomen. The face and head were defined together. Injuries of the shoulder with upper limb and hip joint were included with the lower limb region. The risk factors for serious injury could be identified by careful documentation of the circumstances of the accident. Descriptive statistics was used and data presented in the form of means, percentage and tables. All statistical analysis was performed using SPSS.18 software.Frequency and percentages were calculated for categorical variables.Data presented in tables where necessary.

RESULTS

Two thousand patients were included in the study and analyzed. Mean age of the patients was 29.6 years. 1588 (79.4%) patients were males and 412 (20.6%) were females. Male to female ratio was 3.85:1. 684 (34.2%) patients were between age 16-30 years, 512 (25.6%) between 31-40, 390 (19.5%) between 5-15 years, 204 (10.25%) between 41-50 years, 142 (7.1%) between 51-60 years and 68 (3.4%) patients above 60 years age.

Majority of patients had more than one injury. Lower limb injuries were 1136 (56.8%), upper limb injuries were 544 (27.2%) while other regions which sustained injuries are shown in table1.Abrasions, bruises and laceration were most common in lower limb 990 (49.5%), 340 (17%), 508 (25.4%) respectively,

Table 1: Regions of the body sustained injuries in motorbike accidents.

Site of injury	Total injury
Lower limb	1136 (56.8%)
Upper limb	544 (27.3%)
Genital	110(5.5%)
Maxillo Facial	95(4.75%)
Abdominal and Lumbar spine	71(3.5%)
Thorax and Thoracic spine	32(1.6%)
Head and neck Injuries	12(0.6%)

Table 2: Types of injuries in motorbike accidents.

Sites	Abrasions	Bruises	Lacerations	Crush	Blunt	Total
Lower Limb	790	340	508	24	8	1670
Upper Limb	452	250	302	16	12	1032
Face	376	188	266	0	0	830
Abdomen/Lower back	20	58	16	0	0	94
Thorax/ Upper back	26	70	30	0	0	126
Head/ neck	210	134	240	0	0	584
Total	1874	1040	1362	40	20	

Table 3: Distribution of fractures in motor bike accidents.

Site of Fracture	Total
Lower limb	450 (22.5%)
Upper limb	272 (13.6%)
Pelvis	82 (4.1%)
Spine	28 (1.4%)
Ribs	42 (4.2%)
Skull and maxillofacial	30 (1.5%)
Total	904 (45.2%)

followed by upper limb 652 (32.6%), 250 (12.5%), 302 (15.1%) respectively and face 576 (28.8%), 188 (9.4%), 246 (12.3%)respectively. Abrasions were by far the commonest superficial injury in 1874 (93.7%), followed by lacerations 1362 (68.1%) and bruises 1040 (52%) respectively (Table 2). Many victims suffered multiple abrasions, bruises and lacerations on different parts and sites. Crush and blunt injuries occurred only in upper and lower limbs. Fractures were most common in lower limb, which were 450 (22.5%), followed by upper limb 272 (13.6%), pelvis 82 (4.1%), spine 28 (1.4%), ribs 42 (2.1%), skull and maxilla facial 30 (1.5%) as shown in Table 3.

DISCUSSION

Motor bike injuries are common public health problem, affecting mostly young individuals [13] who are more enthusiastic, adventure loving [3], no regard for traffic rules4, over speeding [5], noncompliance with helmets [14] and carelessness on roads. Elderly people injuries are few [15] but always serious when have motorbike accidents [16]. Our results of related to age group frequency are comparable with other studies locally and abroad. Khani GM and colleagues [17] showed that young people are mostly involved. Khan A18 showed that young people are mostly involved in motorbike. Fouda EY and colleagues [15] in their study concluded that mostly injured are young victims. Bevan CA and co researchers [19] showed increasing number of motorbike injuries in children and adolescents. Males are involved mostly in motorbike injuries in Pakistan, as we have seldom seen females riding motorbikes in Pakistan. Mike N and colleagues [20] showed that male is the gender predominantly involved in motorbike accident. Sharma BR and colleagues [21] also showed more male sufferers than females. Fitzharris M and fellow researchers [22] also found more male injured than females. So, our results are comparable with other researchers as we also showed more male injuries. Females who have suffered bike injuries are mostly pillion riders. They suffer direct injuries mostly and sometimes dupatta (long scarf) injuries around the neck, due to dupatta getting stuck in rear wheel spokes. Minhas MS and colleagues [23] showed increased number of dupatta (long scarf) injuries in female pillion riders. Females have few injuries compared to males because they don't ride motorbikes in our society and are mostly pillion riders. Singh R and colleagues [24] showed less female injuries comparable to our study. Most injuries and fractures occur in lower limbs because this is the main part that first comes in contact with ground and receives the brunt of force, or is stuck between bike and other vehicle or bike and ground. Kaim Khani GM and fellow researchers [17], Khan A [18], and Hofling [I] and colleagues [25] showed increased number of lower limb injuries and fractures in lower limb. Upper limb injuries and fractures are second most common because after fall it is used as reactionary force to prevent further injuries [24]. We also showed that lower limb injuries and fractures are more compared to upper limb and other organs. Other injuries like bruises, abrasions and lacerations [26,27] occur because of secondary impact of individual organ on ground of other vehicle or ground. Injuries mostly occur by collision with other vehicle [28], hitting other object or ground and collision with pedestrian [29]. Head and neck injuries [30] are the third most common because most bikers don't use helmets [31,32]. Our study also showed soft tissue injury and other organ injuries to be less. Wearing helmets prevent severe injuries [33,34]. Implementation of traffic laws and following traffic rules plays important role in prevention of motorbike injuries [35].

CONCLUSION

Younger males were more prone to motorbike injuries. Lower limb abrasions and fractures were the most common injuries. The results of our study helps in not identifying high risk groups and their injuries and then educating them but also to formulate guidelines to treat these injuries promptly in A & E department. Furthermore creating awareness among motorcyclist regarding helmet wear and protective clothing and strictly following traffic rule and laws, many accidents and subsequent injuries can be prevented, benefitting both the individual and society in general.

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Authorship and Contribution Declaration

Kashif Mahmood Khan, Conception and design, Collected the data, interpreted the data, Drafted the manuscript
Muhammad Jamil, Revised the manuscript critically for important intellectual content, final approval of the version for publication
Iftikhar Ahmed Memon, Collected the data
Zeeshan Idrees, Collected the data