

ANALYSIS OF DIFFERENT TYPES OF INJURIES AND FRACTURES DURING ACCIDENTS IN ORTHOPEDIC UNIT OF TERTIARY CARE HOSPITAL, LAHOREFatima Niazi¹, Prof. Dr. Syed Muhammad Awais (SI)², Kiran Nazeer³ and Saba Riaz^{*4}^{1,2}Department of Orthopedic Surgery and Traumatology Unit- I (DOST-I), Mayo Hospital, Lahore.³Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore.⁴Assistant Professor Microbiology, Department of Microbiology and Molecular Genetics (MMG), University of the Punjab Lahore, Punjab Pakistan. CitiLab and Research Institute Lahore, Pakistan.***Corresponding Author: Saba Riaz**

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ABSTRACT

Objective The purpose of study was to observe the proportion of different types of orthopedic injuries and fractures in accidents. **Introduction** Accidents are an important yet preventable, result in disabilities and deaths in developing countries like Pakistan. Victims of road traffic accidents (RTA) suffered different types of bone injuries including fractures and dislocations. These injuries not only cause major economic losses to nations but also inflicting huge personal burden on the injured and their families. **Settings** A retrospective study was conducted in Orthopedic Unit of tertiary Hospital, Lahore in 2006. 1675 patients with different injuries and fractures were studied. **Materials and Methods** Data was statistically analyzed by using SPSS 11.5. Continuous variables such as mean & standard deviation were calculated. A p-value, less than 0.05, was taken as the significant value. **Results** We found a large number of patients 1675 visited the accident and emergency (A&E) departments of hospital. 1648 (98.4%) patients experienced different kinds of fractures. Males 1333 (79.6%) were more affected than females 342 (20.4%) with average ages of 35. Most of patients 351 (21.0%) were hit by motorcycle. Out of these, leg injury 366 (21.9%) and femur bone fractures 433 (25.9%) were common. Close fractures 1328 (79.8%), fresh fractures 1662 (99.2%), and right side involvement was highest. Only 14 (0.8%) patients experienced muscle and skin injuries. **Conclusion** Accidents particularly road traffic accidents (RTA) are predicted to be a leading cause of different patterns of bone fractures and injuries. It is concluded that the injuries have large share of burden in Pakistan.

KEYWORDS: Accident and Emergency (A&E) Departments, Road traffic accidents (RTA), Disability, Global Burden, Awareness.

INTRODUCTION

According to world health organization (WHO), road traffic accidents (RTA) are referred as a killer disease.^[1]

In developing countries, accidents are considered to be 2nd leading cause of disabilities and deaths and will be third cause globally by 2020.^[2]

Millions of people suffered serious injuries by road traffic crashes and living with these disabilities. National economy and health system have a substantial burden due to rising time trend in all injuries, the significant loss of life from injuries, age of those injured and less preventive strategies.

Globally, about 2.1% mortalities are attributable to RTA. In the developing countries, road traffic crashes account for about 85% of the deaths.^[3] In capture-recapture analysis in Pakistan in 1994, RTA accounted for at least 972 (95% CI: 912–1031) deaths and 18936 (95% CI: 15 507–22 342) injuries. 185 injuries and 11.2 deaths per

100 000 population were calculated for the year 1994 in Karachi.^[4]

Road traffic accidents are major reason of trauma, emergency situations, and admissions to the accidents and emergency units of most hospitals. Among occupational accidents, the most dangerous and high-risk sites for human injuries are the construction worksites. Epidemiological studies reveal that in all kind of natural and unnatural accidental deaths during 2005, 30.2% are due to road accidents.^[5]

Primarily, road accidents are caused by carelessness, inexperience, violation of stop signals and signs, alcohol, use of helmets, pedestrians, sports, equipment failure, roadway design, poor roadway maintenance, driver's behavior. In Thailand, the most common cause associated with unnatural death was use of alcohol.^[6]

Accidents cause orthopedic diseases includes fractures, infectious and degenerative diseases and congenital abnormalities of the bones and joints, conditions that are all treatable by manipulation or incision.^[7] Head, lower and upper limb injuries were very common among road traffic accidents.^{[8] [9]} These injuries result in long term disabilities and social burden. WHO is working with partners-governmental and non-governmental, around the world to bring awareness for preventability and to address the burden of injuries.^[10]

The purpose of the study was to analyze the different parts of body injured and fractured during accidents within a period of three month.

MATERIALS AND METHODS

Study design

It was a retrospective study. Data of orthopedic patients was collected in 2006.

Selection of patients

Total number of patients was 1675 who came to DOST-MHL in 2006. Study duration was three months.

Sampling method

Questionnaire was used to get the data about patient history and their orthopedic fractures and injuries.

Inclusion criteria

All patients were entered in our study that came at different departments of Orthopedic Unit of hospital, in 2006.

Exclusion criteria

Subjects who have infections, allergies and taking antibiotics were excluded from the studies.

Data analysis

Using SPSS 11.5 all data was analyzed. Continuous variables were presented in form of mean. A p-value, less than 0.05, was taken as the significant value.

Ethical review

27th meeting of ethical committee of Citilab and Research Centre approved the project with project number CLRC-17-277. Committee had evaluated all project material including consent to participate performa. All participants gave written or thumbprint consent to participate.

RESULTS

A large number of victims of accidents presented in DOST-MHL were 1675 in 2006. All had different affected body parts with fractures and injuries. The average age of the patients ranged between 35 ± years with standard deviation 17.43. Male patients

predominate over female in ratio 1333 (79.6%) and 342 (20.4%) i.e. 4:1. Regarding to family status, education, occupation and residence, most victims were poor 1175 (70%), illiterate 1095 (65.4%), laborers 445 (26.6%), and belong to urban areas 1641 (98%) respectively. Hypertension was found as systematic illness among 20 (1.2%) victims. Among all cases of injuries came to hospital, most were associated with the category of RTA 796 (47.5%) in which motorcyclist 351 (21.0%) were highest in number. Majority of victims 1206 (72%) had right side involvement in injuries P-Value=0.000. Upper and lower limb injuries were very common as leg injury 366 (21.9%), thigh 286 (17.1%), hand 138 (8.2%), hip 136 (8.1%), forearm 124 (7.4%), wrist 115 (6.9%), arm 93 (5.6%), foot 88 (5.3%), knee 80 (4.8%), ankle 59 (3.5%), shoulder and elbow were 48 (2.9%). Frequency of other affected body parts during accidents was cervical and scapular 46 (2.7%), dorsal and lumbar spinal 8 (0.5%) and then neck injuries 5 (0.3%) (Table 1). Close fractures 1328 (79.8%) highest in number as compared to open fractures 334 (19.9%). Fresh fractures were 1662 (99.2%) and 4 (0.2%) cases of old fractures and disc prolapse (Table 2). Involvement of thumb, phalanx and middle finger bones was only 1 (0.1%). Frequency distribution of fractured bone in the accidents were femur bone fractures 433 (25.9%) followed by 375 (22.4%) tibia fractures, humerus fractures 160 (9.6%), radius bone fractures 144 (8.6%), hand fractures 116 (6.9%), ulna bone fractures 93 (5.6%), foot fractures 76 (4.5%), clavicle fractures 60 (3.6%), vertebral bone fractures 54 (3.2%), ankle fractures 44 (2.6%), pelvic location fractures 40 (2.4%), patella bone fractures 38 (2.3%), metatarsal bone fractures 22 (1.3%) (Table 3). The ratio of other bones fractures were 1%. On the basis of pattern of fractures on the bone ends, 793 (47.3%) cases of proximal fractures followed by 535 (31.9%) cases of shaft of bone, and 226 (13.4%) were cases of distal end of bone. Distribution of pattern of fracture of bone segments, victims had 1214 (72.5%) simple fracture group involvement, 207 (12.4%) comminuted fractures, 162 (9.7%) and wedge type of fractures. Victims had highest extra articular fractures 1268 (75.7%), partial articular 140 (8.4%) and complete fractures 117(7.0%). Most of fractures were mild fracture displacements 61.9% less than 50%. Cases of dislocation were 0.5% and other types of injuries were 0.1%. Cavities were involved only 1 (0.1%), because maximum patients were with limbs involvement. In most of cases, patients 1610 (96.1%) had no muscle injury, 41 (2.4%) had circumscribe muscle injury, 08 (0.5%) tendon injuries (Extensor) and 07 (0.4%) tendon injuries (Flexor) and crush injuries (Table 4). Out of 535(31.9%) cases of skin injury, 468 (27.9%) skin injury was in fracture area. Majority of cases 1645 (98.2%) had no neurovascular injury.

Table 1: Frequency distribution of affected body parts.

Affected body parts	Frequency	Percent
Hand	138	8.2
Wrist	115	6.9
Forearm	124	7.4
Elbow	48	2.9
Arm	93	5.6
Shoulder	48	2.9
Clavicle/Scapula	46	2.7
Head/Face	3	.2
Neck	5	.3
Chest	1	.1
Abdomen	1	.1
C-Spine	3	.2
L-Spine	9	.5
Pelvis	17	1.0
D-Spine	8	.5
Hip	136	8.1
Thigh	286	17.1
Knee	80	4.8
Leg	366	21.9
Ankle	59	3.5
Foot	88	5.3
Patella	1	.1
Total	1675	100.0

Table 2: Frequency of distribution of fracture/dislocation.

Fracture/ Dislocation	Frequency	Percent
Fresh Fracture	1662	99.2
Old Fracture	4	.2
Fatigue Fracture	2	.1
Dislocation	2	.1
Traumatic Amputation	1	.1
Disc Prolapse	4	.2
Total	1675	100.0

Table 3: Frequency distribution of fractured bone in victims.

Name of bone	Frequency	Percent
Humerus	160	9.6
Femur	433	25.9
Scapula	4	.2
Ankle	44	2.6
Clavicle	60	3.6
Ulna	93	5.6
Radius	144	8.6
Tibia	375	22.4
Hand	116	6.9
Foot	76	4.5
Pelvic Location	40	2.4
Patella	38	2.3
Vertebra Location	54	3.2
Mandible	1	.1
Metacarpals	12	.7
Elbow	1	.1
Metatarsals	22	1.3
Calcaneus	2	.1
Total	1675	100.0

Table 4: Frequency distribution of muscle injury.

Muscle Injury	Frequency	Percent
No Muscle Injury	1610	96.1
Circumscribe Muscle Injury	41	2.4
Avulsion Penetration	2	0.1
Tendon Injury (flaxor)	7	0.4
Tendon Injury (Extensor)	8	0.5
Crush compartment	7	0.4
Total	1675	100.0

DISCUSSION

Different types of injuries and fractures were observed in the large number of patients within the period of only three months revealed that Pakistan has to bear a huge burden of accidents. In male dominated society of Pakistan, males has great exposure on urban streets as compared to females. Cases of injuries were more common in males with productive age group 20-40 years which is the most active phase of life, physically and socially. This shows a serious economic loss to the community. In other studies age of victims was between 20 to 29 years, 25-44 years and 21-40 year.^{[3], [11], [12], [13]} Incidences of accidents among males found high by many researchers.^[3, 11, 12]

Most of victims were laborers, not literate and rich. They had more chances to get injured because they were working on construction sites or travelling on bikes, trucks, rickshaw and cycle as a part of their work. In South India, people with lower level of education were involved in RTAs (65.4%) which is close to the study done in 1994 (82%).^[3]

Extremities of body were more likely to suffer from injuries and fractures. In this study, injuries of leg, thigh, hand, hip, forearm, wrist, arm, foot, knee, ankle, shoulder and elbow were higher in number than other parts of body. Frequency of fractures of femur bone was highest, followed by tibial fractures, and then humerus, ulna, radius, and vestibular fractures in descending order. Closed and Fresh fractures were more common than old fractures. A study conducted at mortuary of SRN Hospital of MLN Medical College, Allahabad, during one year study period also revealed the involvement of lower extremities and pelvis in injuries during accidents was common.^[11] In another study, the most common body region injured were musculoskeletal (60.5%) and the head (52.1%) with open wounds (65.9%) and fractures (26.3%).^[14] Muscle and Neurovascular injuries were seen only in fewer patients.^[15] It is noted that injury characteristics for road users vary in developing countries differ from developed countries. A number of factors contribute to different types injuries are poor knowledge of road safety measures, recklessness, behavior of motorists, and high speed driving.^[16]

CONCLUSION

The ratio of accidents is increasing tremendously in our country. Moreover, it is saddening that the most vulnerable are from the youth, middle age groups and

laborers. These accidents are causing different kinds of orthopedic injuries and fractures. Leg injury and femur bone fractures were seen more frequent in orthopedic patients. On the basis of types of fractures, close fractures, fresh fractures, and articular fractures were common. Most of patients had no muscle injury, and no neurovascular injury.

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17. LIST OF ABBREVIATION

- **RTA** Road Traffic Accidents
- **WHO** World Health Organization
- **CLRC** Criminal Law Revision Committee
- **CI** Confidence Interval