ORIGINAL ARTICLE

Pattern of Orthopaedic Injuries Among Patients Attending the Emergency Department in a Tertiary Care Hospital – An Analytical Study

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Introduction: This study was aimed at analyzing the pattern of Orthopaedic injuries among patients attending the Emergency department in a tertiary care hospital. Retrospective study was conducted in the Department of Orthopaedics, Teerthanker Mahaveer Medical College & Research Centre. **Methods:** The record analysis of injured patients seen at the emergency department over a 12 months period from June 2012 to may 2013 was done. The data was analyzed with special reference tothepattern of Orthopaedic injuries. **Results:** A total of 1110 records of injured patients that attended the emergency department were analyzed. Study showed that themajority of victims were in the age group of 11-44 years (n=909, 81.89 percent). 71.09 percent (n=789) were males and 28.9 percent (n=321) were females. Road traffic accident was the most common cause of injuries being responsible for 59.72 percent, (n=663) followed by fall from height (22.5 percent, n=247). Study revealed that the most common presentation of injuries was fracture (68.64 percent, n=762) and the most common site was lower limbs in 48.16 percent cases, (n=367). Next most common site was upper limbs (28.08 percent, n=214) followed by pelvic fracture (10.01 percent, n=77), spine fractures (8.26 percent, n=63), facial fracture (2.88 percent, n=22) & Ribs fracture (2.49 percent, n=19). There were 71.65 percent cases (n=546) of simple fracture and 28.34 percent cases (n=216) ofthecompound fracture. There were 3.87 percent cases (n=43), of various dislocations, shoulder dislocation being the most common. Crush injury was seen in 7.5 percent cases. Most commonly associated visceral injury wasthehead injury in 17.20 percent cases (n=191). **Conclusion**: Fractures were the most common pattern of Orthopaedic injuries, frequently associated with head injuries. Research in to appropriate strategies for prevention of injuries, especially RTA is required in tertiary care hospitals.

Keywords: Fracture, Orthopaedic injuries, Road traffic accidents

INTRODUCTION

Trauma registry in Uttar Pradesh, India is still in the developmental stages with relatively few published data, thus making documentation of injuries inadequate and posing great difficulty in assessing these data. Road traffic accidents are responsible for a substantial proportion of deaths & injuries and are responsible for more years of life lost than most human diseases. Road traffic accidents are a growing problem worldwide accounting for around 1.2 million deaths and over 50 million injuries annually.[1] It is expected that by the year 2020 RTA will rank third in the global burden of diseases.[2] The world health organization's world health day for 2004 was dedicated to road safety.[3] This level of attention to road safety underscores the global burden of road traffic injuries and the need for public health concerned towards reducing this epidemic. This study was designed to identify the characteristics of Orthopaedic injuries as seen in the Teerthanker Mahaveer Medical College & Research Centre and identify potential areas of development to enhance trauma research, an important adjunct to effective policy formulation and implementation.

METHODS

This was a retrospective study conducted at the Orthopaedics department of Teerthanker Mahaveer Medical College & Research Centre, a tertiary care hospital situated in Moradabad, Uttar Pradesh, India at National Highway-24. The patients attending the emergency department of Teerthanker Mahaveer Medical College & Research Centre during June 2012 to may 2013 were included in this study. Personal data and pattern of injuries sustained were extracted from the case records, casualty admission register and operation records. Data extraction was manually done by reviewing each case file since there was no purpose designed computerized trauma registry.

RESULTS

During the 12 months study period, 1110 injured patients were seen in the emergency department. Out of these the maximum (n=909, 81.89 percent) were in the age group of 11-44 years. There were 789 males (71.09 percent) and 321 (28.9 percent) females patients. Road

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traffic accident was the most common cause of injuries being responsible for 59.72 percent (n=663) of patient injuries. Other causes were fall from height in 247 cases (22.25 %), fall from bed in 3 cases (0.27 %) fall from stairs in 8 cases (0.72 %), fall on ground in 7 cases (0.63 %), occupational injuries in 92 cases (8.28%), assault in 63 cases (5.67%), sports related in 18 cases (1.62%) and firearm injuries in 9 cases (0.8%) (Table 1, Figure 1).

Study revealed that the commonest injury was afracture (68.64 percent, n=762) and the most common site was lower limbs in 48.16 percent cases (n=367) with the tibia/fibula being the most common bones to be fractured (32.97 percent, n=121). Next common site was upper limbs (28.08 percent, n=214) followed by pelvic fractures (10.01 percent, n=77), spine fractures (8.26 percent, n=63), facial fractures (2.88 percent, n=22) & Rib fractures (2.49 percent, n=19) (Table 2, Figure 2).

There were 71.65 percent cases (n=546) of simple fractures and 28.34 percent cases (n=216) of compound fractures (Table 3, Figure 3).

Single bone fracture was present in 46.98 percent cases (n=358), two bone fractures were present in 38.9 percent cases (n=297) and multiple fractures were seen in 14.04 percent (n=107) (Table 4, Figure 4).

Table 1: Etiology of orthopaedic injuries seen in emergency department

Etiology	Number	Percentage
RTA	663	59.72
Falls		
Fall from height	247	22.25
Fall from bed	3	0.27
Fall from stairs	8	0.72
Fall on ground	7	0.63
Occupational injuries	92	8.28
Assault	63	5.67
Sports related	18	1.62
Fire arms	9	0.8

Table 2: Type of injury

Type of injury	Number	Percentage
Fracture	762	68.64
Fracture of lower limb	367	48.16
Fracture of upper limb	214	20.08
Pelvic fractures	77	10.01
Spine fractures	63	8.26
Facial fractures	22	2.88
Rib fractures	19	2.49
Dislocation	43	3.87
Sprain & strain	153	13.78
Only laceration	103	9.27
Contusion with intact skin	49	4.41

There were 3.87 percent cases (n=43) of various dislocation, shoulder dislocation being the most common. Crush injury was seen in 7.5 percent case (Table 5, Figure 5).

The sprain and strain of ligaments and muscles were present in 13.78 percent cases (n=153) only laceration was present in 9.27 percent cases (n=103) contusion with intact skin were present in 4.41 percent case (n=49) Right side ofthebody was involved 49.54% cases followed by left 30.54 % cases and bilateral and axial skeleton in 19.90% cases. Most commonly associated visceral injury was the head injury in 23.22 percent cases (n=191). Pelvic injuries in 2.52 % cases (n=28), thoracic injuries in 1.71% cases (n=19), abdominal injuries were present in 1.53% cases (n=17), genitourinary in 1.08% cases (n=12), and. No visceral injuries were found in 75.94% cases (Table 6, Figure 6).

DISCUSSION

Our study shows that road traffic accidents are the commonest cause of injury in our center. This high prevalence of RTA, 59.72 percent, is noteworthy as it has implications for the provision of adequate facilities for managing road traffic injuries. This high rate is probably because of the location of the study center, situated on National Highway – 24. In the present study, other modes of injuries were falls in 23.87 percent cases (n=265), occupational injuries in 92 cases (8.28%), assault in 63 cases

Table 3: Simple vs compound fractures

Type of fractures	Cases	Percentage
Simple fracture	546	71.65
Compound fracture	216	28.34

Table: 4 Number of fracture

No. of fracture	Cases	Percentage
Single bone fracture	358	46.98
Two bone fracture	297	38.9
Multiple fracture	107	14.07

Table 5: Crush injuries

Crush Injury	Cases	Percentage
No	1026	92.43
Yes	84	7.56

Table 6: Associated visceral injury

Associated visceral injury	Cases	Percentage
No visceral injury	843	75.94
Head injury	191	17.20
Pelvic injury	28	2.52
Thoracic injury	19	1.71
Abdominal injury	17	1.53
Genitourinary	12	1.08

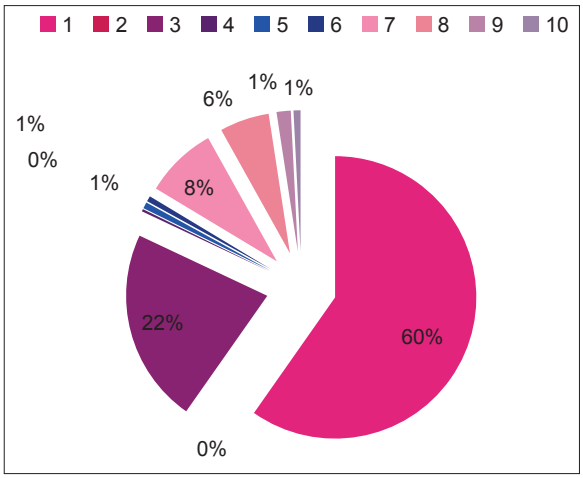

Figure 1: Orthopaedic injuries seen in emergency department

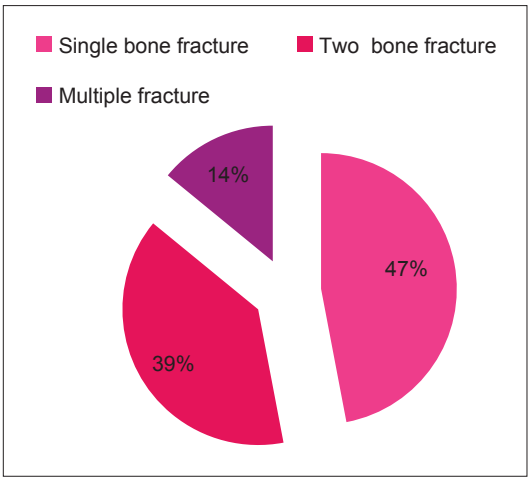

Figure 4: Number of fracture

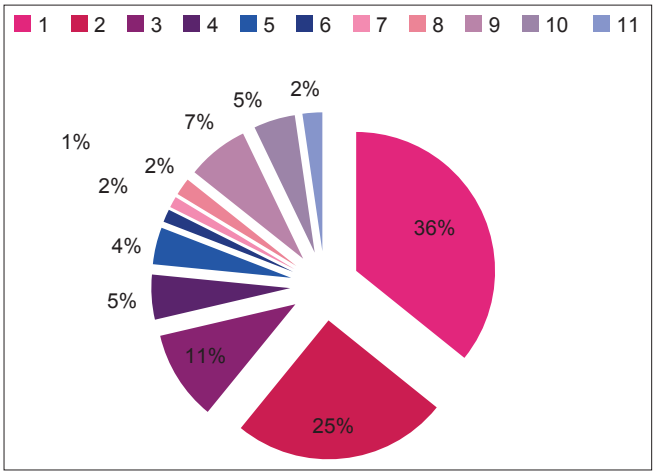

Figure 2: Type of injury

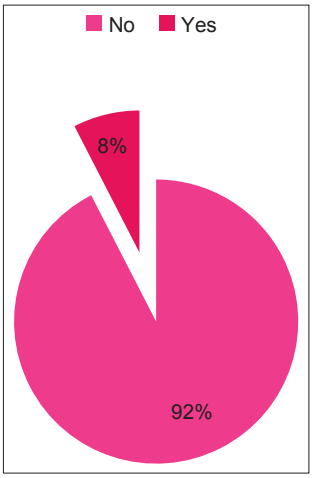

Figure 5: Crush injuries

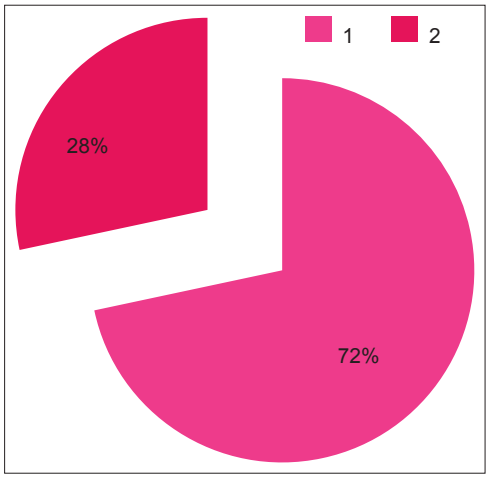

Figure 3: Simple vs compound fracture

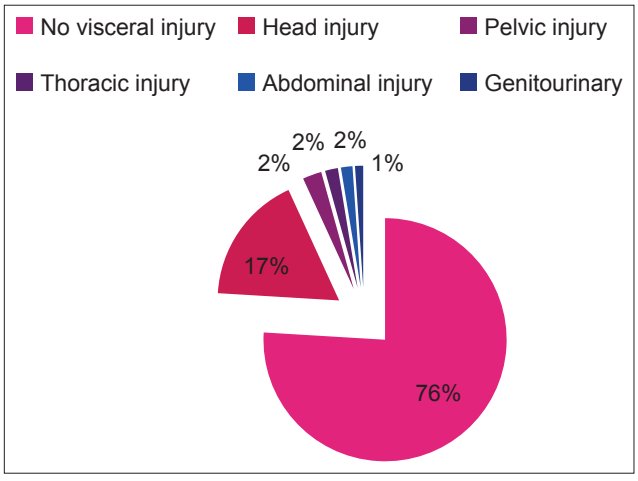

Figure 6: Associated visceral injury

(5.67%) sports related in 18 cases (1.62%) and firearm injuries in 9 cases (0.8%).

Solagberu et al.[4] has reported 62.3 percent prevalence of RTA in their trauma series from Nigeria. In a study by L.O.A. Thani, O.A. Kehinde,[5] at a Nigerian teaching hospital road traffic accident was the most common cause of injuries in 90.6 percent cases. Gururaj[6] conducted a study in 2004 and found that RTA was responsible for 52% of injuries, falls for 13%, occupational injuries constituted 4% & assault 3%

of total injuries. In the study by Huda N,[7] the commonest mode of injury was roadside accident seen in 48.13% cases, followed by fall in 29.5%, assault in 5.4%, occupational injuries 10.5%, sports related in 4.17% and firearms in 2.08%.

In our study the slightly higher incidence of occupational injuries is because many factories are situated in proximity of the hospital.

In the present study maximum number of victims were between 11-44 years (n=909, 81.89 percent). Similar age distribution has been reported in other studies from developing countries.[8-13] Considering the maximum involvement of individuals in the economically productive years, RTA may have an important economic impact. It also implies that interventions should be designed so as to target these individuals.

Majority of those injured in the present study were males (71.09 percent, n=789) and 28.9 percent (n=321) were females. This is in conformity with other studies in India[8,11-16] and abroad.[17] Preponderance of males attributed to their greater exposure to traffic and more risky behavior than females.

In the present study fractures were the most frequently seen injuries accounting for 68.64 percent (n=762) of all injuries and the most common site was lower limb in 48.16 percent cases (n=367) with the tibial/fibula being the commonest bones to be fractured (32.97 percent, n=121). A cross – sectional study in India showed that fractures were the commonest injury among the victims of nonfatal road traffic accidents, and majority of the victims were in the age group of 18-37 years.[18] In china the data of 2213 patients with traffic trauma showed that fracture of extremities (53.3 Percent) occurred most often, cranio-cerebral trauma (19.4 percent) next, the followed in turn by thoraco-abdominal visceral injury (6.56 percent, spine fracture, (5.37 percent), fracture of ribs (4.88 percent) and pelvic fracture (4.18 Percent).[19] In Africa a retrospective analysis of nonfatal road traffic crush victims still showed that the commonest injuries were fractures (69.0 percent) with the tibia/fibula being most fractured bones (30.3 percent).[20] Another hospital based study of 450 cases admitted due to traffic accidents in India revealed that commonest type of injury wasafracture (49.33 percent) and the most common site of fracture was a lower limb (48.2 percent).[21]

In the present study simple fractures were seen in 71.65% cases (n=546) and compound fractures were present in 28.34% cases (n=216). In a study by Chetna Malhotra, MM Singh,[22] compound fractures were present in 31.6% cases. In the study Huda N,[7] compound fractures were seen in 39.9 percent cases and simple fractures were present in 66 percent cases.

CONCLUSION

Fractures were the most common pattern of Orthopaedic injuries. They were frequently associated with other injuries especially head injuries. Research in to appropriate strategies for prevention of injuries, especially RTA, is required, but this must start with the establishment of institutional and regional trauma registries for complete documentation of relevant data.

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