



An Analytical Study of Pattern of Orthopedic Injuries among Patients presenting to the Emergency Department in a Tertiary Care Hospital at GMC Jammu

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Abstract

Aims: This study was aimed at analysing the pattern of Orthopaedic injuries among patients attending the Emergency department.

Methods: This was a Retrospective study conducted in the Department of Orthopedics GMC Jammu. The record analysis of injured patients seen at the emergency department over a 17 months period from January 2017 to 31 may 2018. The data was analyzed with special reference to the pattern of Orthopedic injuries.

Results: During the 17 months study period, 2878 injured patients were seen in the emergency department. Out of these the maximum (n=366, 44.3 percent) were in the age group of 20-40 years. There were 1956 males (67.96 percent) and 922 (32.03 percent) females patients. Road traffic accident was the most common cause of injuries being responsible for 1729 (60.07%) of patient injuries. Other causes were fall from height in 533 cases (18.52%), fall from bed in 36 cases (1.25%) fall from stairs in 61 cases (2.12%), fall on ground in 93 cases (4.87%), occupational injuries in 239 cases (83 %), assault in cases 140 (4.87%) and sports related in 24 cases (0.83%) and firearm injury 23 cases.

Conclusion: Our study concluded that Road Traffic Accidents (RTA) was demonstrated to be a leading cause of musculoskeletal injuries. Thus application of Road safety measures are required to bring down the road traffic accident (RTA) rate & related mortality. The provision of appropriate emergency service to the patients with Prompt and adequate care can save lives and also reduce the severity and duration of illness.

Introduction

Traumatic injuries pose a significant and increasing challenge to healthcare systems worldwide^[1]. According to the World Health Organization (WHO), traumatic injuries are one of the main causes of mortality in the world, with 90% of the injuries estimated to occur in low-and middle- income countries^[2]. A large number of traumatic injuries are orthopaedic in nature. Orthopaedic injuries are injuries that cause

damage to the musculoskeletal system, which includes bones, ligaments, joints, tendons, muscles, and nerves^[3]. Orthopaedic injuries can be divided into traumatic and non-traumatic injuries. Studies have shown that RTAs are the most common determinant of traumatic orthopaedic injuries, with a prevalence of 39.1%^[4] and 63.6%.^[5] Some researchers report that RTAs are the most common determinant of fractures, with a fracture prevalence of 29.4%, 49.3% and

68.4%.^[6,7 &8] Similarly, falls have been shown to be a serious public health problem worldwide^[9,10,11,]. Studies have shown that falls are the second most common determinant of traumatic orthopedic injuries, with a prevalence of 21.8%^[5] and 35.1%^[4]

Injuries and death from road traffic crash are expected to increase if no preventive measures are made^[12] Formally road traffic injuries were the leading cause of permanent disability and mortality among those in productive age in developed countries but currently the developing countries are also faced by a similar challenge as they undergo what has been termed as the “epidemiology of transition”^[13]. Currently Road traffic injuries are ranked ninth globally among the leading causes of disability adjusted life years lost. It has been predicted that by 2020, they will rank as high as third among causes of Disability adjusted life years (DALYs) lost^[12]. With increasing modernization in many developing countries, road traffic deaths are increasing and traffic deaths are projected to become the third most important health problem by 2020^[14-16]. The morbidity and mortality burden in developing countries is rising due to a combination of factors, including rapid motorization, poor road and traffic infrastructure as well as the behavior of road users^[17]. Therefore it’s very important to know the pattern and prevalence to form the preventive and therapeutic measures.

Method

This was a retrospective study conducted from January 2017 to 31may2018. We included in this study all the patients presenting to emergency departments that required orthopedic treatment. The relevant clinical information including age, gender, bone fractured, side involved (Right, left), site of fracture, fracture pattern, associated injuries (Head injury, Chest injury, abdominal injury, vascular injury and Nerve injuries) and compounding of fractures. Data obtained were analyzed in frequencies.

All these patients were resuscitated and evaluated

on arrival to the hospital. These patients were individualized on the basis of clinical parameters and group as stable and unstable. After hemodynamic stabilization decision regarding surgical intervention was made on the basis of clinical features and radiological examination. In this manner patient were grouped as those requiring conservative management or surgical intervention.

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 17 months study period, 2878 injured patients were seen in the emergency department. There were 1956 males (67.96 %) and 922 (32.03 %) females patients (Table1).

Table no.1: Male and Female number and percentage

Gender	Male	Female
Number	1956	922
Percentage	67.96%	32.03%

The maximum (n=366, 44.3% percent) were in the age group of 20–40 years (Table 2).

Table no.2: Age distribution of the injuries.

Age	Percentage	Number
0-20	19.08%	549
20-40	45.79%	1318
40-60	25.36%	730
>60	9.76%	281

Road traffic accident was the most common cause of injuries being responsible for 1729 (60.07%) of patient injuries. Other causes were fall from height in 533 cases (18.52%), fall from bed in 36 cases (1.25%) fall from stairs in 61 cases (2.12%), fall on ground in 93 cases (4.87%), occupational injuries in 239 cases (8.3 %), assault in cases 140 (4.87%) and sports related in 24 cases (0.83%) and firearm injury 23 cases (0.79%) (Table-1).

Table 3: Etiology of orthopedic injuries seen in emergency department.

Etiology	Number of patients	Percentage
RTA	1729	60.076%
Fall from height	533	18.52%
Fall from staircase	61	2.12%
Fall from ground	93	3.23%
Fall from bed	36	1.25%
Occupational injury	239	8.3%
Sports injury	24	0.834%
Assault	140	4.87%
Firearm injury	23	0.79%

Study revealed that the commonest injury was a fracture 67.82 percent (n=1952) patients and the most common site was lower limbs in 53.89 percent patients (n=1052), with the tibia/fibula being the most common bones to be fractured. Next common site was upper limbs 28.94 percent (n=565) patients followed by pelvic fractures 9.02 percent (n=176) patients, spine fractures 5.84 percent (n=114) patients, and rib fractures 2.31 percent (n=45) patients. There were 3.89 percent cases (n=36) of various dislocations, shoulder dislocation being the most common. The sprain and strain of ligaments and muscles were present in 11.77 percent (n=109) patients, only laceration was present in 13.82 percent (n=128) patients, contusion with intact skin were present in 15.98 percent (n=148) patients, Degloving injuries in 10.37 percent (n=96) patients, major vascular injuries 11.45 percent (n=106) patients, nerve injuries in 9.07percent (n=33)patients and tendon injuries in 23.65 percent (n=219) patients (Table 4).

Table 4: Type of injury

Type of injury	Number	Percentage
1) Fracture	1952	67.82
Lower limb	1052	53.89
Upper limb	565	28.94
Pelvis	176	9.02
Spine	114	5.84
Ribs	45	2.31
Soft tissue injury	926	32.175%
Sprain & strain	109	11.77%
Only laceration	128	13.82%
Contusion with intact skin	148	15.98%
Dislocation	36	3.89%
Degloving	96	10.37%
Nerve injury	84	9.07%
Tendon	219	23.65%
Major vessel injury	106	11.45%

There were 71.31 percent cases (n=1393) of simple fractures and 28.68 percent cases (n=559) of compound fractures. (Table 5)

Table 5: Simple vs compound fractures

Fracture type	No of cases	Percentage
Simple fracture	1393	71.36%
Compound fracture	559	28.63%

Single bone fracture was present in 43.65 percent cases (n=852), two bone fractures were present in 38.57 percent cases (n=753) and multiple fractures were seen in 17.78 percent (n=347) of patients (table 6).

Table no 6: Number of bones fractured.

Number of bones fractured	No. of cases	Percentage
Single bone	852	43.65%
Two bones	753	38.57%
Multiple bones	347	17.78%

Most commonly associated visceral injury was the head injury in 17.92 percent (n=516) of cases. Abdominal injuries were present in 4.96% (n=143), thoracic injuries in 3.89 percent cases (n=112) and Pelvic & genitourinary injuries in 1.42 percent (n=41). No visceral injuries were found in 75.94% cases (Table 6).

Table no. 6: Associated injuries.

Associated visceral injury	Cases	Percentage
Head injury	516	17.92%
Abdominal injury	143	4.96%
Thoracic injury	112	3.89%
Pelvis & Genitourinary	41	1.42%

Discussion

Trauma, particularly that occurring from RTA has become major health problems throughout the world and especially in low and middle-income countries^[18-19]. Our study shows that road traffic accidents are the commonest cause of injury in our center. This high prevalence of RTA, 60.87 percent, is consistent with other parts of the world^[20-23], majority of our admissions were injury related. This high rate is probably because of the location of the study center on National Highway-NH44. This high prevalence of RTA, noteworthy as it has implications for the provision of adequate facilities for managing road traffic injuries. Other

causes were fall from height in 533 cases (18.52%), fall from bed in 36 cases (1.25%) fall from stairs in 61 cases (2.12%), fall on ground in 93 cases (4.87%), occupational injuries in 239 cases (8.3 %), assault in cases 140 (4.87%) and sports related in 24 cases (0.83%) and firearm injury 23 cases (0.79%). In the study by Huda N,^[24] the commonest mode of injury was RTA 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%. Solagberu et al.^[25] has reported 62.3 percent prevalence of RTA in their trauma series from Nigeria. Gururaj^[26] 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 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.^[27-32]

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 67.96 percent (n=1956) and 32.03 percent (n=922) were females. This is in conformity with other studies in India^[27,30-35] and abroad^[36]. 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 67.82 percent (n=1952) of all injuries and the most common site was lower limb in 53.89 percent cases (n=1052) with the tibia /fibula being the commonest bones to be fractured. 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.^[37] In china the data of 2213 patients with traffic trauma showed that fracture of extremities (53.3 Percent) occurred most often, head trauma (percent) next, followed by thoracic and abdominal injury (6.56 percent, spine fracture, (5.37 percent), fracture of ribs (4.88 percent) and pelvic fracture (4.18 Percent).^[38] 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).^[39] Another hospital based study of 450 cases admitted due to traffic accidents in India revealed that commonest type of injury was fracture (49.33 percent) and the most common site of fracture was a lower limb (48.2 percent)^[40].

In the present study simple fractures were seen in 71.36% cases (n=1393) and compound fractures were present in 28.63% cases (n=559). In a study by Chetna Malhotra, MM Singh,^[41] 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

Our study concluded that Road Traffic Accidents (RTA) were demonstrated to be a leading cause of musculoskeletal injuries especially in individuals in their 3rd and 4th decades of life, constituting most of its victims. Thus application of Road safety measures are required to bring down the road traffic accident (RTA) rate & related mortality. The provision of appropriate emergency service to the patients with Prompt and adequate care can save lives and also reduce the severity and duration of illness. Development of the vital infrastructures such as diagnostic and therapeutic facilities should be provided and upgraded on a regular basis.

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