



A Study on Pattern of Road Traffic Accident Injuries Arriving in Emergency/ Orthopaedics Department of a Tertiary Care Hospital in Dehradun.

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ABSTRACT

Background: According to the latest world status report on road safety released by WHO, we are now the world leaders in road traffic accident rate & related mortality. Objectives: To know the prevalence and pattern of injuries present among the road traffic accident cases. Material and Methods: We retrospectively reviewed the charts of all trauma patients who presented between June to August 2015 to the emergency or orthopaedics ward of Shri Guru Ram Rai Institute of Medical and Health Sciences (SGRRIM &HS), Dehradun and identified the patients characteristics and nature of injury sustained. Results: Road traffic crashes (RTC) were the leading causes of trauma and involved in 41% of all trauma patients. Majority of the patients were young males below the age of 40. The commonest injuries were fractures, cranial trauma and soft tissue injuries. The lower limbs especially the leg bore the brunt of the injuries. Conclusion: Well equipped secondary & tertiary level trauma centres, specially dedicated to management of trauma patients, with a proper triage plan, are necessary for proper management of trauma patients & better utilization of resources.

KEYWORDS

Road traffic Accidents, Road traffic crashes, Cranial Trauma, Fractures.

Introduction:

Globally, trauma resulting from road traffic crashes is a major cause of death and disability with majority occurring in developing countries (1). This is partly due to increased motorization but also due to failure by authorities to enforce necessary regulations. Throughout the world, the growth of the transport system has been and continues to be a key element in economic development. An increase in gross national product is accompanied by a greater movement of people and goods and greater investment in both vehicles and transport infrastructure. In the developing world, current trends in population growth, industrialization and urbanization are putting heavy pressure on the transport network in general and on road system in particular. Some of the unwanted side-effects of this growth in traffic, such as congestion and noise are immediately obvious to the individual citizen. Others, such as the growing number of deaths and injuries from road traffic accidents (RTAs), are apparent only through aggregated statistics. These reveal a serious and growing problem, with absolute fatality and casualty figures rising rapidly in the majority of developing countries and with death rates considerably higher than in the developed world (2).

Each year RTAs claim some 6,00,000 lives and thirty times this number, that is over fifteen million, are injured according to the World Health Organization. This represents more than one life lost every minute and an injury every two seconds. Two third of these victims are from the third world countries (3).

SGRRIM &HS, Dehradun, being one of the apex tertiary level hospital in one of the major cities of the state, data generated from this source, could be widely applicable especially to the urban population, & would help in comparison with other major cities.

Aims and objectives:

This study aimed at describing the magnitude and variety of trauma and to know prevalence and pattern of injuries present among the road traffic accident cases.

Material and methods:

This was a retrospective study conducted between June 2015 and August 2015, on patients presenting to the outpatient orthopaedic or emergency department of our institution ie. Shri Guru Ram Rai Institute of Medical and Health Sciences (SGRRIM &HS), Dehradun. All patients who were admitted due to trauma as determined from the case history by the admitting doctor were included. Patients with pathological fractures and burns were excluded. Cases that were seen as referrals after initial management at peripheral centres were also included. Charts initially retrieved for perusal that were found to be ineligible were excluded.

It was difficult to divide the groups of patients into riders, passengers or pedestrians as this information was not clearly recorded in majority of the files perused. The site of injury was recorded. The lower limb was considered as the pelvic girdle and the rest of the lower limb and the upper limb included the pectoral girdle. Injuries to the face and head including concussions were classified as head injuries. Injuries involving the thorax including rib fractures and injuries to the thoracic viscera were classified as chest injuries. Injuries to the abdominal wall and abdominal and pelvic viscera were classified as abdominal injuries. The data was collected using a research tool designed for that purpose and later keyed in to a computer using MS Excel. The data was then analyzed.

Results:

Type of Injuries	Number of patients
Chest injuries	20
Dislocations	10
Fractures	175
Head injuries	75
Spine injuries	15
Soft tissue injuries	100
Abdomen injuries	05

Table 1: Pattern of injuries following road traffic accidents.

Age group of patient's sustaining trauma (in years)	Percentage (%)
<11	10
11-20	15
21-30	40
31-40	25
41-50	08
51-60	05
61-70	03
71-80	02
>80	02

Table 2: Distribution of patients according to age sustain trauma.

Nature of bones fractured	Number
Scapula	02
Clavicle	05
Humerus	12
Radius/Ulna	10
Pelvis	08
Femur	53
Patella	10
Tibia/Fibula	65
Ankle	04
Foot	06

Table 3: Distribution of fractures in road traffic accident injuries.

920 of 1500 (61.4%) files identified from the admission log for possible perusal were retrieved. Road traffic crashes (RTCs) contributed 51% (n=400) of all trauma patients seen. Males were involved in 81% of the cases with a male to female ratio of 5:1. The peak age was 21-30 years and the average age was 30 years. About two thirds of the patients were between 20 and 40 and 90% of patients were below 40 years of age (Figure 2).

Only about 10.4% of patients sustained multiple injuries (n=36). About half of the cases seen were limb fractures (n=175) and 78.53% were closed injuries (n=125). Cranial trauma and soft tissue injuries comprised majority of the remainder (Fig.1).

About three quarters of all limb fractures were in the lower limbs (n=118) with most being the long weight bearing bones. Both limbs were fractured in 10.49% of cases. The leg was involved more than the thigh (Figure 3).

Discussion:

In our study the most common age group involved in road traffic accidents is 21-30 yr group (40%). Approximately 60%

of the patients belong to 11-50 yr age group, which is the economically & socially productive age group. Thus RTAs have a major impact on the society.

Similar results were found in other studies (4) in JIPMER [Pondicherry], Delhi & Nepal also. Majority of the RTA victims were males [81%], probably due to their profession & outdoor activities. Most of other studies show similar results (4). Around 70% of the patients arrived in EMRI ambulance. It shows better awareness among the general population of the 108 ambulance services, its easy accessibility & rapid transport of the injured patients. 18% of the drivers involved in RTAs did not have license, & around 1.5% claimed to have lost the license. These are violations of the traffic rules & such drivers are at increased risk of being involved in accidents & injuring themselves and others. In one study of RTA patients (5), per mile driven, teen drivers ages 16 to 19 are three times more likely than drivers aged 20 and older to be in a fatal crash. Another study showed that riders without a licence had twice the risk of being involved in an accident than those holding a valid licence.(6) Off the vehicles involved in RTAs most common are 2 wheelers [56%], followed by auto rickshaws [16.67%] & pedestrians [14.67%]. It reflects the urban traffic of India & other Asian countries where 2 wheelers are the most common mode of transport. Auto rickshaws pose a unique challenge to road safety measures as neither helmets nor seat belt rules are applicable to them. The most common time of RTA is between 6 am to 12 noon [36.67%], & 66% of the accidents occurred during daytime [6 am to 6 pm]. It is due to the increased traffic during daytime during office hours. This is in contrast to some of the studies (7) in which [44.65%] majority of accidents occurred in evening (6-12 pm). Interestingly however, accidents requiring admission were more during night time [62.74%], as compared to daytime [52.52%]. It is due to absence of traffic signals & traffic police at night resulting in more rash driving & more serious injuries at night. This suggests poor traffic sense among commuters in India. Most of the patients arriving in Emergency Department (ED) of our hospital suffered accidents on city roads, and most of the patients from highways received primary care in other hospitals located near highways. There was increased hospitalisation among accidents occurring on highways than city roads, reflecting more severity of accidents on highways. Innocent passengers & pedestrians contributed 41% of the accident cases. Some of the studies in other countries show a much higher incidence of pedestrians (56.54%) (8). Around 10% of the patients were found to be using mobile phones at the time of accidents, which was probably the causative factor in them. Only 21% of the patients had an abnormal GCS on presentation. And these patients were having positive CT scan; hence GCS is very reliable and re-producible parameters in trauma victims in ED. Use of FAST (Focused Abdominal Sonography for Trauma) done with portable USG in our ED, helped in rapid detection of life threatening intra-abdominal bleed. Avoidance of safety measures like not using headlights at night [26%], seatbelts [80%], helmets [91%] were found in a substantial proportion of cases, which probably contributed to more severe injuries & susceptibility to RTA. According to one study published in public health, Safety devices were not used in 10% of cases where they should have been used according to legislation (9). The pattern of injuries differs slightly from other studies (10) which show fracture of extremities (53.3%) occurred most often, followed by craniocerebral trauma (19.4%), thoraco-abdominal visceral injury (6.56%), spine fracture (5.37%), fracture of ribs (4.88%) etc. Hence well equipped trauma centre is a want of time. Dressing &/or laceration repair were required in 2/3rd of the cases. Thus setting up of secondary

level trauma centres with personnel trained in handling such minor injuries, would greatly help in reducing the patient load in tertiary hospitals. This would help in better utilisation of the scarce resources & staff for patients who actually need it. Population-based evidence supports a 15 to 20% improved survival rate among seriously injured patients with trauma system (11). Our study shows that an ER physician should be trained

in laceration repair, dressing, splint/ slab application, fracture/ dislocation reduction, ICD insertion, intubation, reading x-rays, performing FAST etc for better management of trauma patients. One study shows that patients had significantly lower rates of missed major or life-threatening injuries when treated by physicians trained in managing trauma than those without specific training (12).

Limitations of study:

As it is a single centre study with a relatively small study population, results cannot be generalised to the entire population.

Conclusion:

Thus stricter application of traffic laws & safety measures are required to bring down the road traffic accident (RTA) rate & related mortality. Helmets & seatbelts have a significant role in preventing severe head injuries & should be advocated & strictly followed. More measures need to be taken for pedestrian & bystander safety. Well equipped & adequately staffed secondary & tertiary level trauma centres should be set up dedicated to managing RTA victims only.

Prompt and adequate ambulance service should be provided to the victims with the help of government and other voluntary agencies. Computerization and use of International Classification of Diseases code in the hospitals would help in preparation of a good database for future studies and other uses.

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