

Spectrum of Lower Limb Injuries in Road Traffic Accidents Presenting In M.G.M Medical College, Jamshedpur

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Abstract

Introduction: The lower limbs of human beings are primarily adapted for balance and locomotion,¹ just as the upper limbs' primary function is access to the apertures of the body and manipulation of tools. The erect posture assumed by man is inherently unstable and depends for its success on a carefully orchestrated balance between opposing groups of muscles, controlled by a rapidly adapting nervous system.

Materials and Methods: A study was undertaken at M.G.M Medical College, Jamshedpur to find out the types of injury patterns occurred due to the road traffic accidents. All Case histories and records, reports pertaining to road traffic accident victims were collected and analyzed to see different types of injury patterns sustained in the accident and data was compiled based on the findings with SPSS 20 software.

Results: The study population consisted of 470 patients. Majority of them were males (84.25%) and belonged to the age group of 21 to 30 years with 25.31%. Majority of the patients had injury to Head neck and face constituting 53.61% and least had injury to the abdominal region constituting 9.14%. Abrasion was seen in most of the cases around 64.89% and Lacerations was the least found in 14.46%. Majority of the patients around 42.81% had skull and maxillofacial fracture and the least type of fracture observed was Ribs fracture observed in 4.79% of the cases.

Conclusion: All efforts need to undertake to prevent a Road Traffic injury which is an important cause of mortality, morbidity and disability.

Key Words: road traffic accidents, Ribs fracture, Abrasion, mortality, morbidity

I. Introduction

The lower limbs of human beings are primarily adapted for balance and locomotion,¹ just as the upper limbs' primary function is access to the apertures of the body and manipulation of tools. The erect posture assumed by man is inherently unstable and depends for its success on a carefully orchestrated balance between opposing groups of muscles, controlled by a rapidly adapting nervous system. Damage to one or the other of the two lower limbs severely incapacitates an individual, whereas quadrupeds can maintain a reasonable amount of stability on three limbs out of four. The increasing population and crowding and congestion of both people and vehicles on the roads have led to an ever increasing number of road traffic accidents.² This is due to ignorance and violation of traffic rules, decreased percentage of road networks, ever increasing number of vehicles which are able to accelerate instantly and move fast with little regard for pedestrians. The tendency of individuals to cross the roads at will without caution has further compounded the situation.^{3,4}

The average height of vehicles with their fenders and bumpers cause the majority of traffic accidents injuries to affect the lower limbs.⁵ The injuries range from minor abrasions, cuts and bruises to serious injuries like compound and comminuted fractures, dislocations and crush injuries.⁶ These are frequently accompanied by injuries to the trunk and the head. In the present study we have analysed the pattern of injuries to the lower limbs in traffic accident cases over a period of six months and looked for the most vulnerable age groups and also the distribution of injuries in different regions of the lower limb.

II. Materials And Methods

Place of Study: Department of Anatomy, Department of Surgery.

Type Of Study: A Prospective Study

Sample Collection: 470 cases

Sampling Methods: Consecutive sampling

Inclusion Criteria: All patients with Road Traffic Accidents were included in the study across all age ranges and gender.

Exclusion Criteria: All patients without the involvement of Road Traffic Accidents and those patients who were transferred to other hospital based on their family demands were excluded from the study.

Statistical Methods: The statistical analysis was done with the help of SPSS Version 20 program. The data is presented in the form of statistical tables.

In depth, the sequence, extent and distribution of the injuries were examined for all the cases admitted to the hospital. Factors such as age, gender, injury nature and intoxication have been examined. All fatal and non-fatal accidents were recorded. Throughout this time a total of 470 cases were examined.

III. Results

Table 1: Distribution of patients by age and gender

Age (in years)	Gender					
	Male	%	Female	%	Total	%
1 - 10	7	1.48%	7	1.48%	14	2.97%
11 - 20	33	7.02%	6	1.27%	39	8.29%
21 - 30	110	23.40%	9	1.91%	119	25.31%
31 - 40	91	19.36%	12	3.24%	103	21.91%
41 - 50	75	15.95%	15	3.19%	90	19.14%
51 - 60	44	9.36%	11	2.34%	55	11.70%
61 - 70	30	6.38%	12	2.55%	42	8.93%
71 - 80	6	1.27%	2	0.42%	8	1.70%
TOTAL	396	84.25%	74	15.75%	470	100%

Majority of the patients belonged to the mid age range group of 21 to 30 years with 25.31% and the least belonged to the age group of 71 to 80 years.

Table 2: Distribution of body regions injured in the accident

Site of Injury	Abrasion	Contusion	Lacerations	Total	Percentage
Head, neck and face	163	57	32	252	53.61%
Upper Limb	59	11	3	73	15.53%
Lower Limb	29	2	19	50	10.63%
Abdomen	23	15	5	43	9.14%
Others	31	12	9	52	11.06%

Majority of the patients had injury to Head neck and face constituting 53.61% and least had injury to the abdominal region constituting 9.14%. Abrasion was seen mostly totaling 64.89% of the cases and Lacerations was the least found in 14.46%.

Table 3: Distribution of fracture across various body region

Region of Fracture	Total	Percentage
Skull and maxillofacial	143	42.81%
Lower limb	50	14.97%
Upper Limb	73	21.85%
Spinal	27	8.08%
Ribs	16	4.79%
Pelvic	25	7.48%

Majority of the patients around 42.81% had skull and maxillofacial fracture followed by upper limb fracture seen in 21.85%, lower limb fracture seen in 14.97%, spinal fracture seen in 8.08%, pelvic fracture observed in 7.48% and the least type of fracture observed was Ribs fracture observed in 4.79% of the cases.

IV. Discussion

Injuries in road traffic is a significant public safety concern. These result not only in mortality but also in disabilities among survivors who could be burdensome to the community. As a developing country, India is experiencing a social, epidemiological and economic transformation that has dramatically altered the health scenarios. This shift contributed to the non-communicable diseases issue, like Road Traffic Accidents resulting in grievous Injuries becoming a key concern of the health care system. Since the road traffic accident is an important cause for morbidity and mortality, this study was taken up to find out the epidemiological factors determining the accidents. The majority of the victims are males and the sole bread earners of the family. They are greatly exposed on roads.^{6,7,8,9} Frank *et al.* also observed a higher male: female ratio.¹⁰ Majority of the accidents took place in the city premises in the evening, night and early morning and were a result of speeding and negligence of traffic rules by the people returning from work, pubs or outing with friends and family,

majority of it was result of fatigue, work place tensions, drunk driving resulting in crashing into pedestrians, dividers, barricades or other vehicles. The findings of our study coincide with other studies.^{11,12} Majority of the injuries were on the face, head and neck with 53.61%. Similar was the result of study done by Wong *et al.* in 1980. Abrasion, bruises and lacerations were seen in all the cases with abrasion being most common. The lower end fractions again are attributed to the interplay of gravity and speed of the automobile during collisions, which contributes to kinetic energy production that in effect contributes to fractures. Brain damage is a significant cause of morbidity in survivors; impairment may arise regardless of the original extent of the head injury and recovering patients with brain injuries are more affected than patients with injury to other areas of the body. The reasons for a greater number of RTA cases may be due to the inadequate knowledge about road safety among people, bad condition of the roads and improper lighting of the roads at night and drunk driving.

V. Conclusion

Injury is the leading cause of death and injuries puts a rising pressure on developed world health services. The usage of motor cars is increasing globally, with the rapid urbanization, the overcrowding and inadequate observance of "road rules," becoming the standard in the developing world. The life of majority of the victims can be saved by early treatment, as the initial few hours following injury forms the critical time. Thus the injuries due to RTA can be prevented or at least can be reduced by preventing the occurrence of traffic accidents and by early hospitalization and treatment. All measures should be taken to avoid road accidents that are a significant cause of disability, mortality and morbidity.

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