Originals and Papers

Profile of Road Traffic Accidents & Head Injury in Jaipur (Rajasthan)

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Abstract

The injuries and death due to head trauma are inescapable in the modern way of life and their correct interpretation is vital to the reconstruction of the events of Forensic Medicine and their proper management for treatment of the injured. The present study was conducted in the department of forensic medicine, SMS medical college, Jaipur in year 2003-2004 to analyze the quantity of the magnitude of deaths due to Road Traffic Accidents (RTAs) and to provide epidemiological data, so the preventive measures can be undertaken. Our study shows that majority of the victims of RTA were male of middle age group (20-40 years), when they were going on two wheelers with out wearing helmets.

Key words : *RTA, Head Injury*

Introduction

India is undergoing major economic and demographic transition coupled with increasing urbanization and motorization. Among the top ten causes of mortality in the country, Road Traffic Accident was the tenth cause two decades back, but with the increasing urban expanse and lifestyle changes, it is projected that road traffic accidents will occupy the fifth position in the list of major killers and third position among causes of disease burden in 2020.

In India, 11% of deaths due to non-communicable diseases are due to injuries and 78% of injury deaths are due to road traffic accidents. It is the leading cause of mortality for young adults of less than 45 years and a major burden of disease across all age groups. Some of the factors that increase the risk of road crashes in India are unsafe traffic environment, poor road infrastructure and encroachments that restrict safe areas for pedestrians; lack of safety engineering measures; traffic mix and an increasing number of motorized vehicles; unsafe driving behavior and lack of valid or fake driving licenses.

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Absence of reliable and quality information could be one of the reasons for the lack of initiatives on better road safety measures. The existing data with the police, hospitals, insurance, and legal sectors is disintegrated and needs major revamping. The Integrated Disease Surveillance Project of the Ministry of Health and Family Welfare recognizing this problem proposes to include the injury module as an additional component. There is, however, a need to develop and test a model for surveillance of road traffic injuries for inclusion in the health information system.

Material & Methods

The present study was conducted in the department of forensic medicine, SMS medical college, Jaipur in year 2003-2004. Total 120 cases of head injury deaths were brought to mortuary directly from the spot or from accidental emergency or from neurosurgery department for the autopsy examination and out of these 79 cases of RTAs (65.83%) were selected for the present study. The epidemiological data were obtained with all pathological features of these cases as scalp injury, pattern of skull fractures and intracranial hemorrhages and their distribution were noted at the actual autopsy examination of victim with detailed history related to time, manner and hospitalization.

Results

Total 120 cases of fatal head injury were registered during the period of study and out of these 79 cases (65.84 %) were of RTAs, 28 cases (23.33%) were of fall from height and rest 13 (10.83%) were of assault and other traumas. Males were more prone to death by RTAs (79.75%) as compare to females (20.05%), making an M: F ratio 4:1. Incidence of RTA was more in third (24.06%) and fourth decade (18.99%) as compared to both extremes of life. The peak timings of RTAs were either morning hours of 9-12 or evening hours between 6-9. Incidence of deaths due to RTAs was maximum (49.37%) in two wheeler riders followed by pedestrians in 32.91% cases. Four wheelers were involved in 15.19% cases and bicyclists in only 5.53% cases. In two wheeler accidents most of the victims (87.17%) were not wearing any protective helmets at the time of incidence while in only 12.83% cases the victims died due to fatal head trauma even they were wearing protective helmets. The dominant type of skull fracture found was the linear (fissured) fracture in 43.04% cases followed by basilar fracture in 17.73%, comminuted fracture in 7.61%, crushes fracture in 5.06% and depressed fracture in 3.78% cases. In rest 22.78% cases, no skull fracture was found. The incidences of subdural hemorrhage (SDH) was maximum in 94.94% cases followed by subarachnoid hemorrhage (SAH) in 83.54% cases, intracerebral hemorrhage in 20.25% cases and extradural hemorrhage (EDH) in only 10.13% cases. We observed that all cases of EDH were found in association with SDH while 75% cases of SAH were found in association with SDH. In 63.29% cases the head injury was so severe that the victims could not survive even for 12 hours after the incidence and most of them died either on the spot, on the way or immediately after they get admitted in the casualty ward. Only 6.33% could survive up to 24-48 hours, 18.98% up to 3-7 days and 11.4% could survive more than 7 days following the intervention of particular treatment or appropriate surgery.

Discussion

Head injury is a major health problem all over the world. Motor vehicle accident is the leading cause of serious injuries with associated head trauma especially in youth and middle age. Despite of tremendous progress in all fields of life, RTA continues to be the major cause of morbidity and mortality in India.

External Cause	Number of cases	Percentage
RTAs	79	65.84
Fall from height	28	23.33
Assault	02	01.67
Others	11	09.16
Total	120	100

Table-1
Distribution of Head injury cases as per External cause

In present study also RTAs are the major cause of deaths due to head injury in 65.84% cases, similar to others [1,2,3,4]. The incidence of RTAs was higher in males and in 3rd to 4th decade of life, which is similar to most of the studies by various authors [1,2,3,5,6,7,8].

Age Group (In Years)	Male	Female	Total Case
0 – 9	03	05	08
10 – 19	08	01	09
20 – 29	18	01	19
30 – 39	12	03	15
40 – 49	10	02	12
50 – 59	04	03	07
60 & Above	08	01	09
Total	63	16	79

Table –2
Age and Sex wise distribution of RTAs

This can be also explained by the fact that during this age, people especially males are more mobile, go out for work and take risks, while elderly people, females and children usually stay at home.

In our study the common cause of RTA was two wheelers and pedestrian accidents in comparison to four wheelers and bicycles accidents, which shows that the four wheelers are comparatively safer than two wheelers.

Some other authors [3,5,8,12] found the pedestrians as the largest group of casualty in their studies. It might be because of different sample size. In two wheeler accidents we noticed that most of the victims who died because of fatal head injury were not user of helmets, which shows that the safety helmet can be the life saving during the accident involving two wheelers.

Time of Incidence	Cases- No(%)
0-3 AM	02(02.53)
3-6 AM	02(02.53)
6-9 AM	11(13.94)
9-12 PM	18(22.78)
12-3 PM	09(11.39)
3-6 PM	11(13.93)
6-9 PM	20(25.32)
9-12 AM	06(07.58)
Total	79(100)

Table-3
Distribution according to time of incidence

Motor Vehicle		Number of cases (%)	
Two Wheeler	Helmet Users	05	39(49.37)
	Helmet Non-users	34	
Four Wheeler		12(15.19)	
Pedestrian		26(32.91)	
Bicycle		02(5.53)	
Total		79(100)	

Table-4

The peak timings of occurrence of RTAs were 9-12 in the morning and 6-9 in the evening, which is probably due to heavy and unequal distribution of traffic at these working and closing hours of the people.

Type of Skull Fracture	Number of cases (%)
Linear Fracture	34(43.04)
Basilar Fracture	14(17.73)
Comminuted Fracture	06(07.61)
Depressed Fracture	03(03.78)
Crush Fracture	04(05.06)
No Fracture	18(22.78)
Total	79(100)

Table-5
Distribution according to type of Skull Fractures

The time of survival of head injury patients varies as per the severity of the trauma and also the kind of treatment and response of the patient to the same. We found that 63% of the victims of RTAs died either on the spot or with in 24 hours of the incidence, and the rest could survive for a couple of days to a maximum of two weeks after getting some medical or surgical interventions, similar to other studies [3,8.]

Type of Intracranial Haemorrhage	Number of cases (%)
Extra dural Haemorrhage	08(10.13)
Sub dural Haemorrhage	75(94.94)
Sub arachnoid Haemorrhage	66(83.54)
Intra cerebral Haemorrhage	16(20.25)

Table-6
Distribution according to type of Intra cranial hemorrhages

Most of the victims of fatal head injury were having linear fracture of either skull vault or base of the skull or both, especially in the thin areas of temporo-parietal bone. It might be due to because that this type of pattern is more common in cases where the head strikes by forcible contact with a broad resisting surface, as in RTAs.

Duration of Survival	Number of cases (%)
0-12 hours	29(36.70)
12-24 hours	21(26.59)
24-48 hours	05(06.33)
3-7 days	15(18.98)
> 7 days	09(11.40)
Total	79(100)

Table-7
Distribution according to Duration of Survival

The incidence of subdural hemorrhage (SDH) and subarachnoid hemorrhage (SAH) was maximum in the victims of RTAs while extradural hemorrhage (EDH) was observed in the least, which coincides with observations of others [1,3,9]. We could also summarize that almost all cases of EDH were found in age group of more than 20 years, which shows its lesser occurrence in children and adolescent. It might be due to the greater adherence of dura to skull, more elasticity of tissues and less atherosclerotic changes in arteries of brain, especially in younger age group[9].

Conclusion

Distribution and causes of intracranial injuries in present study are more or less similar to the pattern found in most of the other studies. This similarity is there in almost all parameters used in this study. These accidents occur more frequently in certain age groups, at certain times of day and at certain localities. Some people are more prone to accidents than others and the alcohol, un-awareness of traffic discipline and carelessness increase the susceptibility. The rate of incidence is higher in India because of its traffic patterns and possibly the lack of preventive measures such as helmets in motor cyclists and seatbelts in automobiles and poorly controlled traffic conditions and poor road conditions.

Finally more studies and research also needs to be done to provide a better understanding of the epidemiology of RTAs in Jaipur and how deaths by RTAs may further be reduced. In the mean time, we hope that the present study has contributed in some way towards the better understanding of this problem.

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