A Retrospective Study of Fatal Road Traffic Accidents on Autopsies done at Madurai Medical College and Hospital

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Abstract

Aims: To study the demographic and injury profile in autopsy cases with an alleged history of RTA.

Design: It is a retrospective observational study.

Setting: Department of Forensic Medicine and Toxicology, Madurai Medical College, Madurai.

Subjects and Method: All autopsies of RTA victims which were performed between January 2018 to June 2018, were analysed for sex, age, time of RTA, type of vehicle, position of victim during RTA, nature of injury, and cause of death.

Exclusion Criteria: None

Statistical Analysis : All parameters were expressed in percentage.

Results: A total of 568 RTA victims were referred for autopsy during the period of January 2018 to June 2018. 301 (53%) victims were between 21-30 years of age, males constituted 71% of the total victims. Injuries involving limbs constituted 31% of the total injuries, followed by injuries involving head, thorax, abdomen, pelvis and spine. Among head injuries, fractured skulls occurred in 67%, Subdural Haemorrhage in 78%, Subarachnoid Haemorrhage in 62%, Extradural Haemorrhage in 49% and Intra-cranial injuries in 22%. Head injury accounted for 67% of deaths, and haemorrhagic shock for 27% of deaths.

Conclusion: Various preventive measures like speed control, helmet use, no driving under alcohol influence etc., enforcing road safety regulations, and improving emergency medical services could be used to control the increasing toll of deaths due to RTA.

Key Words*: RTA, Autopsies, Injury profile, Demographic profile, Road safety*

Introduction

Each year, road traffic injuries take the lives of 1.2 million people around the world and seriously injure millions more[1] The death rate is highest, and still growing in low and middle-income countries, where pedestrians, motorcyclists, cyclists and passengers are especially vulnerable[1] Moreover, estimated costs of road traffic injuries are between 1% and 2% of GNP per annum in these countries, and accounts for a loss of approximately US$ 65 billion every year; almost twice the total development assistance received worldwide by developing countries[1] India accounts for about 10 percent of road accident fatalities worldwide, 85% of all road accident deaths occur in developing countries, and nearly half in the Asia-Pacific region[1] According to the World Health Report 2002, 30.3% morbidity and 28.7% mortality occurred in the South-East Asia Region due to injuries[2]; Road traffic injuries are predicted to rise from ninth place in 2004 to fifth place by 2030 as a contributor to the global burden of diseases[3] ; The purpose of the present study is to describe the demographic and injury profile in autopsy cases with an alleged history of RTA, thereby drawing public attention and awareness in order

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to prevent/control Road traffic accidents.

Material and Method

The present retrospective study was conducted on 568 autopsy cases brought to the Forensic Department of Madurai Medical College during the period between January 2018 to June 2018 with an alleged history of RTA. For the purpose of the study, a RTA was defined as an accident which took place on the road between two or more objects, one of which must be any kind of a moving vehicle. Various study variables analyzed were sex, age, type of vehicle (light vehicle like two wheelers, three wheelers, car, jeep etc. and heavy vehicle like truck, bus, train, tractor) and position of the victim during RTA (occupant/ pedestrian/ driver), nature of injury, and cause of death. The data sources were statements of patient (dying declaration), history from relatives and friends, and police investigation reports. A detailed proforma for the purpose of recording history, epidemiological data and the details of injuries etc. was prepared for the filling observation of the present study. All the parameters were expressed in percentage and numbers.

Observation and Results

A total of 568 RTA victims were autopsied during the period of January 2018 to June 2018.The highest number of victims 301(53%) belonged to age group of 21-30 years. If we considered age group of 21-40 years, it showed more than 3/4th of total RTA victims (73%). The males outnumbered the females in totality and male to female ratio was 3:1. Two wheelers were involved in 42% of RTA. Head injuries constituted 27% of the total injuries, followed by injuries involving limbs, thorax, abdomen, pelvis, and spine [Table 3]. Among the head injuries Subdural Haemorrhage was most common.

Discussion

In the present study, males constituted 71% and females constituted only 29% of the total victims. Moreover, age between 20-40 years was found to be more vulnerable to RTA. Similarly, in a study from South India, there were 83% males and 17% female accident victims[2]. Among the motorized vehicles, two wheeler drivers were more (42%) involved in accidents. Being knocked down was the common mode of accidents[2]. However, in our study, a majority of victims were pedestrians (58%). Previously a study from Delhi reported 69% injuries in the age group of 15 to 35, and males were four times more affected than females[3]. In a study from Maharashtra, maximum cases of RTA were among males (83.20%), and in the age group of 20 to 39 years (51.20%) [5]. Banerjee K.K. from Delhi reported 81.80% victims of thoraco-abdominal injuries all of which were in males, and of all, 40% were in the age group of 21-30 years[6]. A study from Nepal also reported 16-30 years as commonest age-group involved in RTA. Males sustained craniofacial injuries about 4 times more than females in this study[2]. A few studies reported pedestrians as the majority of victims involved in RTA, as reported in our study[5],[7]. In our study, limb injures constituted 31% of the total injuries, followed by injuries involving head, thorax, abdomen, pelvis and spine. Among head injuries, fractured skulls occurred in 69%, Subdural Haemorrhage in 78%, Subarachnoid Haemorrhage in 63%, Extradural Haemorrhage in 47%, Intra-cranial injuries in 23%, and Contusion and Lacerations in 32% of the victims. In an earlier study from India, head was the commonest site to be injured in RTA, and Subdural Haemorrhage was the commonest haemorrhage. Laceration of brain tissue was highest among all brain tissue injuries, as reported in our study[5]. In a study from Nepal, 39% of medico-legal cases that were brought to the emergency department, were of craniofacial trauma (in 70% cases, cause is RTA)[2]. Ganveer GB and Tiwari RR also reported in their study that out of total 423 subjects, 363 (85.8%) were males, while only 60 (14.2%) were female subjects, and a majority of the victims (75%) were in the age group 18-37 years[8]. Moreover, in the above study, two wheelers and LMV were the most common vehicles involved, and fracture of the bones was the common injury afflicted in accidents, as reported in our study[8]. In the present study, head injury was the major cause of death (67%), as reported earlier by Chaudhary B L, et al[5].

Table No – 1: Age Wise Distribution

Age	Number	Percentage
0- 10	16	2%
11-20	39	7%
21-30	301	53%
31-40	111	20%
41-50	60	11%
51-60	27	5%
More than 60	14	2%
	568	100%

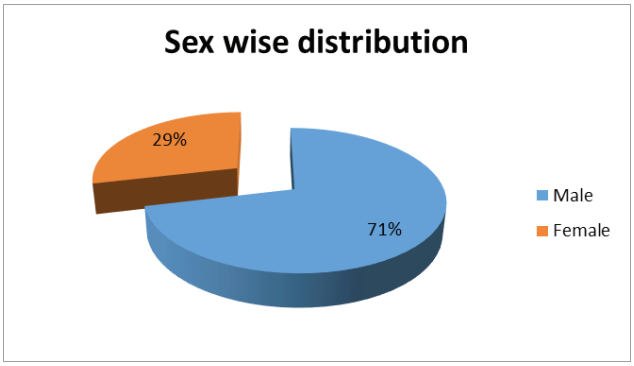

Fig- No- 1

Table – 2: Cause of Death

Cause of death	Number	Percentage
Head injury	380	67%
Haemorrhagic shock	153	27%
Multiple causes	17	3%
Thrombo embolism	6	1%
Spine injury	6	1%
Sepsis	6	1%
Total	568	100%

Table –3: Pattern of injuries

Site of injury	**Number**	**Percentage**
Limbs	436	31%
Head	380	27%
Thoracic	268	19%
Abdomen	239	17%
Pelvis	70	5%
spine	14	1%
Total	1407	100%

Table- 4: Pattern of Head Injuries

Injury	**No of victim**	**Percentage**
Fracture of skull	262	69%
Extradural haemorrhage	179	47%
Subdural haemorrhage	296	78%
Subarachnoid haemorrhage	239	63%
Intra cerebral haemorrhage	87	23%
Contusion / Laceration	122	32%

Table – 5: Position of victim

Position	**No of victim**	**Percentage**
Occupant	114	20%
Driver	125	22%
Pedestrian	329	58%
Total	568	100%

Table – 6:Type of Vehicle involved:

Type of vehicle	**Nunmber**	**Percentage**
Two wheeler	238	42%
Three wheeler	34	6%
Car/ Jeep	80	14%
Heavy vehicle	216	38%
Total	568	100%

Conclusion

RTA is one of the major causes of disability and death all over the world and continues to be a growing menace, incurring heavy loss of valuable human resources, along with wastage of potential economic growth. Every 4 minutes, a person killed or injured in India due to RTA[1] Behaviour of the road user, vehicle characteristics, and traffic environment, coupled with human errors, have been cited as the main causes. The All India road data shows that 83.5% of the accidents were due to the driver's fault. Other contributory factors were: mechanical defects in vehicles, pedestrian fault, fault of the passenger, bad roads, and bad weather[9RTA is the third major preventable cause of all deaths[8]. Various preventing measures like avoiding high speeding and driving under the influence of alcohol; promoting the use of helmets, seat belts and other restraints, ensuring that people walking and cycling are more easily visible, improving the design of roads and vehicles, enforcing road safety regulations, and improving emergency medical services, could be used to control the increasing toll of deaths due to RTA. More importantly there should be legislation and stringent punishment against drunken driving. Society should be involved in implementing many campaigns such as Motorcycle Helmet Campaign, Anti-Drunk-Driving Campaign etc. In addition setting speed limits, separate lane for bicycles, proper pavement for pedestrians in vehicle congested areas and over bridge or subway in national highways crossovers is an effective strategy that minimises the risk of fatal road traffic accidents.

Conflict of Interest- None

Ethical Clearance- Not necessary as it is a retrospective study

Source of Funding - Self

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