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A DESCRIPTIVE STUDY OF FATAL CHEST INJURY DUE TO ROAD TRAFFIC ACCIDENTS NEAR PATNA

Forensic Medicine

Deepmala Senior Resident ,department Of Forensic Medicine And Toxicology , Aiims , Patna .

Binay Kumar Associate Professor , Department Of Forensic Medicine And Toxicology , Aiims , Patna .

Arbind Kumar Singh* Associate Professor , Department Of Forensic Medicine And Toxicology , Nmch ,patna --*Corresponding Author .

ABSTRACT

INTRODUCTION: Road traffic accidents in India are one of the highest in the world. There is a significant increase in the mortality of RTA cases with chest injuries as compared cases without chest injuries. Aim of our study is to analyze & provide data on fatal chest RTA cases near Patna, Bihar that might be helpful in propagating preventive measures and policy making.

Material & Method: Material for this study was collected in the Dept. of Forensic Medicine & Toxicology, NMCH, Patna between October 2011 to February 2014. It consists of 209 fatal RTA cases due to chest injuries brought for autopsy.

Results: Out of 209 autopsy cases of fatal chest RTA, 192 were male (92%) and 17 were female (8%). Age group between 30-60 year were affected more in both male (109 male i.e. 52%) & female (11 female i.e.5%). Most of the victims died on spot (152 victims i.e.72%). Isolated lung injuries were found in 156 victims (i.e.74.6 %) whereas 40 victims (i.e.19.4%) suffered combined injuries and 13 victims (6%) had normal lung findings. Regarding abdominal organ injuries, liver was most commonly involved (109 i.e.49.75%) followed by spleen (59 cases i.e.28.25%) and multi-organ injuries (46 cases i.e.22%).

Conclusion: This study highlights the high mortality of RTA cases with chest injury. This could be minimized by various preventive measures, prompt active management and better availability of healthcare on road & " high-tech trauma centre " at every district headquarters.

KEYWORDS

chest injury, Traffic, fatal, liver injury

INTRODUCTION:

Civilization has brought many miseries to the mankind. The greatest of all these miseries is the mounting tragic toll of Road Traffic Accident deaths. The fatality rate in road traffic accidents in India is one of the highest in the world and reported to be twenty times more than that reported in developed countries.1 Narrow and defective roads are the major cause for RTA. It is the main cause of death in people under 35 year of age in worldwide.2 This ever expanding epidemic targeting the young and productive age groups and is likely to take heavy burden on the quality of life and socio-economic growth of the region.[3]

Human body has three major cavities - e.g. : cranium, thorax and abdomen. Thorax is one of the most important cavities of the human body as it contains two major vital organs – heart & lung. The importance of the injuries to certain intra-thoracic structures was known to Sushruta, the ancient Hindu surgeon as early as 300 B.C..4 Mortality rates of cases with thoracic injuries and those without thoracic injuries are 15.7% & 12.8 % respectively. Reasons for fatality in chest RTA cases are excessive bleeding, deranged cardio-respiratory function, associated organ injuries and sepsis. Injuries to the thoracic & abdominal organs are significant as timely surgical intervention could save the life of a person.5,6

The World Health Organization (WHO) in its international conference on RTA noted the importance of adequate data on traffic injuries.7 Despite significant social impact of traumatic death, very few reliable data are available about fatal chest RTA around Patna, Bihar- a relatively backward state of India. This study could highlight the problem that may be helpful in policy making to prevent RTA deaths by lawmakers.

MATERIAL & METHOD:

This is a prospective study carried out in the Department of Forensic medicine , NMCH ,Patna. The data for study was collected between October 2011 to February 2014 of 209 autopsy cases. Deaths were mainly due to RTA fatal chest injuries around Patna , Bihar. Details of deceased were noted from inquest report and relatives. All data were noted and analyzed in tabular form & percentage method.

Exclusion criteria: Decomposed bodies and bodies with unknown nature of injuries were not included.

OBSERVATIONS :

Following are the different observations in our study which are arranged in tabular form:-

1. Relative Percentage of chest injuries Death due to

Total autopsies	RTA Chest trauma death	Percentage(%)
940	209	22.22%

2. Sex distribution of RTA Chest trauma Death:

Male	Female	Total
192	17	209
92%	8%	100%

3. Age distribution of Male in RTA Chest trauma Death:

Age (year)	No.	Percentage (%)
0 - 30	73	34.8
30 - 60	109	52.2
>60	8	4

4. Age distribution of Female in RTA Chest trauma Death:

Age (year)	No.	Percentage (%)
0 - 30	06	3
30 - 60	11	5
>60	2	1

5. Place of Death in victims of RTA Chest trauma Death :

Place of Death	No. of victims	Percentage (%)
Spot	152	72.5
Hospital	55	26.5
Not Known	2	1
Total	209	100

6. Involvement of Chest cavity Organ in victims of RTA Chest trauma Death:

Injured Abdominal Organ	No. of victims	Percentage (%)

Lung	156	74.6
Combined(Heart,Lung, Great vessel etc)	40	19.4
Normal	13	06

7. Associated Abdominal Organ injuries in victims of RTA Chest trauma Death:

Injured Abdominal Organ	No. of victims	Percentage (%)
Liver	109	49.75
Spleen	59	28.25
Multi-organ (eg.- liver, spleen, bowel , pancreas etc)	46	22

The study shows relatively high percentage of RTA chest trauma death (22%). [Table-1] It further shows male predominance over female (92% vs. 8%). [Table-2] Most of the male and female victims were relatively young between 30-60 yr of age (52.2% & 5% respectively).[Table 3 & Table 4 respectively] Majority of chest trauma deaths occurred on spot (72.5 %). [Table 5] Isolated lung injuries were the most common injuries (74.6 %) followed by combined injuries i.e. lung, heart ,great vessel etc (19.6%) when assessed thoracic organ injuries in fatal chest RTA cases. Surprisingly no injury was detected in 13 cases (6%). [Table 6] Among other associated abdominal organ injuries in fatal chest RTA , liver most commonly injured (49.75%) followed by spleen (28.25%) and combined injuries (22%).[Table 7]

DISCUSSION :

RTA cause mechanical trauma to the body, resulting in morbidity, disability and even death. The fatality rate in road traffic accident in India is one of the highest in the world and reported to be 20 times more than that reported in developed countries.8 The present study shows relatively high percentage of fatal chest RTA cases (22.2%). It may be due to fast moving vehicle, good but narrow road, congestion on road, unawareness of the traffic rules, people lacking road senses etc. Road traffic fatalities are reported to be the common cause of unintentional injuries among children in this region.[9]

Most of the victims were male in this study (92% male vs. 8% female). In both male and female, most of the victims were between 30 -60 year age. It may be due to the fact that males are mainly in outdoor activities while female are more involved in household activities. Also age group between 30-60 yr in both male and female are mainly involved in earning purpose for the family & also spend more times on road. This may be the reason for increased fatality in this age group in both male and female. These findings correlates well with the findings of Husaini et al, Wong et al, Jha et al, Kaul et al & Singh and Dhattarwal .[10,11,12,13,14]

Majority of the victims died on spot (72.5%) while 26.5 % deaths were reported from hospital. Death on spot could be minimized if "High tech Trauma Centre" & "Quick response teams" especially dedicated to trauma were available so that prompt and specific treatment can be offered to the RTA victims. There is need of safe transportation of victims with facilities of general management and resuscitation on way to hospital. These findings are in unison with the finding of Reddy N et al(2014), Archana et al (2005), Sharma RK et al and Kumar PM et al, Shetty BSK et al and Singh H et al.[15,16,17,18,19,20]

On assessing chest cavity organ injuries, lungs were injured in 74.6 % of victims while combined injuries (heart, lung, great vessels etc.) occurred in 19.4% and normal lung found in 6% of victims. Lungs occupy most of the rib cage and thus are probably more vulnerable to injury when compared to the heart. Isolated heart injuries are rare. The findings of this study are in unison with other studies carried out previously by Bansal et al, Lalwani et al and N. Ali & B.M.Gali.[21,22,23]

Regarding associated abdominal organ injuries, Liver were most commonly injured organ(49.75%) followed by spleen (28.25%) and multi-organ injuries (liver, spleen, bowel, pancreas etc. - 22%) in this present study. These findings are may be due to large size of the organs(i.e. liver and spleen) and anterior location in the abdominal cavity. Also parenchymal visceral injuries are more prone to occur in RTA because of its consistency and capacity to absorb the force of blow when compared with hollow viscus organ, These finding correlate well with the findings of Husaini et al, Kaul et al, Kumar PM et al, Chandulal.10,13,18,24

Conclusion :

Majority of the victims in Road Traffic Accidents were young, earning and productive age group of male as well as female. Road users are exposed to different kind of hazards depending upon conditions prevailing in that region, hence present different epidemiological findings. Our study could help planner to take safety measures, to implement strict traffic rules, to risk stratification in vulnerable group to educate people. This study can also help lawmaker to devise strategies and policies to reduce mortality from RTA fatal chest injuries by propagating safety measures and better availability of healthcare on roads.

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