



Study on Pattern of Thoraco-Abdominal Injuries in Fatal Road Traffic Accidents at Ranchi, Jharkhand

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ABSTRACT

Road traffic injuries are one of the major causes of morbidity and mortality in developing countries including India and are a major health and social problem. Trauma affects generally the young people, and accounts for loss of more years of life. Greatest difficulty in their management lies in the timely diagnosis. This study was made on 340 victims of chest injuries, out of which 232 (68.23%) having thoraco-abdominal injuries, which were autopsied at Rajendra Institute of Medical Sciences, Ranchi, Jharkhand during the period of August 2012 to July 2013.

This is largely due to masking of thoracic trauma by associated injuries like abdominal trauma and bony injury. In Ranchi, vehicular accidents are one of the most common contributory factors to the thoraco-abdominal trauma. The objective of the present study was to analyze the pattern of thoraco-abdominal injuries in fatal road traffic accidents and find out the measures for the prevention. The study shows that, deaths are more in the age group of 31 to 45 years (39.41%), Males (84.71%) are more vulnerable than females (15.29%). Most of the deceased are riders (60%). Thoraco-abdominal region involvement in any form of blunt force trauma can be related to the anatomical location of this region which makes it easily susceptible to impact by a wide variety of reasons like road traffic accidents, railway accidents, industrial mishap, assault, fall from height etc. Thoraco-abdominal injuries provides a major contribution to death because the bony thoracic cage contains vital organs of circulation and respiration and trauma to these organs challenges the integrity and viability of entire human body, similarly abdomen is the third commonest region of body that is injured in civilian trauma, as human abdomen is largely unprotected by bony structure which contains numerous important vital organs like liver, spleen, kidney, pancreas and hollow viscous like stomach, intestines and urinary bladder etc. Road traffic accident is most common cause of death below the age of 50 years because males are usually the earning members of the families.

Keywords: Thoraco-abdominal injuries, Blunt trauma, Road traffic injuries, pattern.

INTRODUCTION

Among abdominal injuries the most commonly affected Accidents are a counter product of

modernization and hasty life and are considered as a modern day epidemic. Road Traffic Accident (RTA) is one among the top 5 causes of morbidity

and mortality in South-East Asian countries^[9]. RTA cause mechanical trauma, resulting in morbidity, disability, and even mortality^[15]. 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^[11]. Narrow and defective roads were the major cause for RTA. The World Health Organization (WHO) in its international conference on RTA noted the importance of adequate data on traffic injuries. The abdomen is the third common region of the body that is injured in civilian trauma. Blunt abdominal trauma (BAT) is one of the leading causes of mortality among trauma victims, it is the main cause of death in people under 35 years of age in worldwide^[2]. Most common cause of blunt thoraco-abdominal trauma in India is road traffic accident followed by pedestrian accidents, abdominal blows, and fall from heights^[2,4,7]. Since prehistoric times, the chest has been looked upon as one of the most vulnerable regions of the body and injuries involving it have always been considered very serious. With fast moving vehicular traffic, vast urbanization, rapid industrialization, changing social patterns etc. It was projected that, if the same trend continued it would become the 3rd leading cause by the year 2020^[17]. The risk to the rider or pillion increases by many folds during the ride; they are Faulty vehicle, faulty rider, unfavorable environmental conditions, and Overloaded vehicle. Hence a study is made on the deaths resulted from fatal road traffic accidents, to know the pattern of thoraco-abdominal injuries. This is also organ was liver (20.23%) followed by spleen (16.18%) and kidneys (12.71%) and among hollow viscus injury to intestine was more frequent i.e. 7.51% followed by injuries to urinary bladder 6.93% and stomach 2.89%. involving bomb explosion injuries Lungs were found injured in all the cases of fatal chest injuries. This is similar to the observations mentioned in standard text books.^[6, 9, 14]. The results of this study could be useful for

strategic planning in the control of road-traffic accidents.

MATERIAL AND METHOD

The present study was conducted at the department of forensic medicine and toxicology at Rajendra Institute of Medical Sciences (RIMS), Ranchi, Jharkhand. It includes sample of 232 autopsies of blunt thoraco-abdominal traumatic deaths of road traffic accidents during the period of August 2012 to July 2013. A detailed victimologic profile was made which include age, sex, time, place, police inquest, fact finding interviews of the relatives, friends and eye witness etc. All the dead bodies were thoroughly examined for external and internal injuries including bones and joints in thoracico-abdominal region. Decomposed bodies were excluded from the study.

RESULTS

Here 232 cases of fatal thoraco-abdominal injuries were studied and it was found that, the majority of the victims were age group 31 to 45 yrs (40.51%); most of the victims were males (84.50%) and male/female ratio was 5.4:1. Only 18 (7.75%) victims had been found died, who were above 60 years of age and 23 (9.91%) victims were below 15 years of age (Tab-1). Among bony injuries, rib fractures (60%) were the most common (Tab-2). The pedestrians rank the highest (35.80%) followed by pillion (15.94%) (Tab-3). The most commonly injured abdominal solid organs were liver (30.17%) followed by (17.24%) spleen (Tab-4). Among the mode of injuries majority of victims died due to road traffic injuries were (60.34%) followed by firearm (10%) and a few numbers (2.15%) due to blast injuries (Tab-5). Majority of victims were died on spot (65.5%) followed by death within 24 hrs (27.5%) (Tab-6). Commonest offending agents were heavy vehicles (51.72%) followed by light vehicles (25.86%), motor cyclist (12.93%) and train (9.50%) (Tab- 7).

Table 1:- Showing the age incidence of victims of thoraco-abdominal injuries.

Age group (in years)	Male No. & (%)	Female No. & (%)	Total No. & (%) of Victims
0-15	19 (8.18%)	4 (1.72%)	23 (9.91%)
16-30	50 (21.55%)	9 (3.87%)	59 (25.43%)
31-45	79 (34.05%)	15 (6.46%)	94 (40.51%)
46-60	33 (14.22%)	5 (2.15%)	38 (16.37%)
Above 61	15 (6.46%)	3 (1.29%)	18 (7.75%)
Total	196 (84.50%)	36 (15.50%)	232 (100%)

Table 2:- Showing the bony fracture of victims of thoraco-abdominal injuries.

Bony fractures	No. (%) of victims
Ribs	139 (60%)
Clavicle	14 (6%)
Sternum	9 (4%)
Combined	70 (30%)
Total	232 (100%)

Table 3: Showing types of road users in accidental cases of thoraco-abdominal injuries.

Type of road users	No. & (%) of victims
Pedestrians	83 (35.80%)
Pillion	37 (15.94%)
Motor Cyclist	32 (13.79%)
Cyclist	13 (5.60%)
Driver of automobiles	30 (12.93%)
Not known	37 (15.94%)
Total	232 (100%)

Table 4: Organs involved in victims of fatal thoraco-abdominal injuries.

Organs involved	No. & (%) of victims
Liver	70 (30.17%)
Spleen	40 (17.24%)
Diaphragm	31 (13.36%)
Oesophagus	26 (11.20%)
Stomach	25 (10.77%)
Intestine	25 (10.77%)
Kidney	15 (6.50%)
Total	232 (100%)

Table 5: Mode of injuries of fatal thoraco-abdominal injuries.

Mode of injuries	No. & (%) of Victims
Road traffic injuries	140(60.34%)
Fire-arm injuries	26 (10%)
Railway traffic injuries	23 (9.05%)
Fall from height	21 (11.20%)
Injuries by blunt weapon	10 (3.01%)
Stab injuries	7 (4.31%)
Blast injuries	5 (2.15%)
Total	232 (100%)

Table 6:- Period of survival of victims of fatal thoraco-abdominal injuries.

Period of survival	No. & (%) of victims
Spot death	154 (66.37%)
Death within 24 hrs	64 (27.60%)
Death after 24 hrs	14 (6.03%)
Total	232 (100%)

Table 7: Showing the offending agents responsible for the accidents.

Name of agents	No. & (%) of Cases	Percentage of cases
Heavy vehicles (Truck, Bus, Lorries)	120	(51.72%)
Light vehicles (Car, Taxy, Jeep Tempo, Auto-rickshaw)	60	(25.86%)
Motor cyclist	30	(12.93%)
Train	22	(9.50%)
Total	232	(100%)

DISCUSSION

Blunt injuries to the thoraco-abdomen are responsible for a large numbers of casualties, road traffic accidents are responsible for most cases. In this study majority of the victims were age group 31 to 45 yrs^[5,13] most of the victims were males^[1,7]. Abdomen was the commonly involved body part in addition to chest injuries in victims of thoraco-abdominal injuries. Regarding bony injuries, fractures ribs were 60% victims, 6% cases were clavicle fractures, 4% cases were sternal fractures and 30% cases were combined fracture^[7,13].

In current study, most common abdominal solid organs injured were liver (30.17%), spleen (17.24%), kidney (6.5%) and others organs like diaphragm, Oesophagus (13.36%)^[13]. The abdomen is more vulnerable to injury than thorax, since there is minimal bony protection for underlying organs. Most of the victims, who sustained thoraco-abdominal injuries in fatal road traffic accidents were pedestrian (35.80%), pillion and unknown (15.94%), motor cyclist (13.79%) followed by automobiles (12.93%) and cyclist (5.60%)^[5,13]. Two wheelers vehicles are used by majority of young age group, and they are most commonly involved agents in fatal road traffic accidents reason being careless driving, overtaking and less stability of the vehicles. In current study, the period of survival after fatal RTA majority had spot death (66.5%) followed by death in hospital within 24 hrs (27.5%) and few died after 24 hrs (6%)^[8]. RTA are responsible for most of these injuries (60.34%). A substantial number of such cases are also seen in other accidents like fire arm injuries, railway traffic

injuries, fall from height, blunt weapon injuries, stab and blast injuries. This is similar to the observations mentioned in standard text books.^[6,9,14]

Offending agents causes for the accident were heavy vehicles like trucks, lorries, bus etc, have been found to be mostly responsible for (51.72%) of cases, followed by light vehicles like car, taxy, jeep, tempo etc were (25.86 %) , motor cyclist (12.93 %) and (9.50%) by trains^[1,3].

CONCLUSION

As evident from the study undertaken, majority of the times in road traffic accidents, young and productive males were injured and lost their life. The study showed that most RTA deaths took place on the spot or within 24 hrs of injury which is indeed very alarming. It suggest the urgency to establish good pre-hospital care. The establishment of a nationwide advanced trauma centres. This study may help the planners to take safety measures and helpful in policy making and health management decisions at national level. It is also very important to increase public awareness about road safety.

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