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Pattern of thoraco-abdominal injuries: An autopsy study

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Abstract

Background: Thoraco-abdominal injuries are caused by wide variety of reasons like road traffic accidents. The present study was conducted to find out the pattern of thoracoabdominal injuries.

Materials & Methods: The present study was conducted On 50 cases of Thoraco-abdominal injuries of both genders. 50 died during treatment in the hospital and brought to mortuary for postmortem examination.

Results: Age group 10-20 years had 5, 20-40 years had 25, 40- 60 years had 12 and >60 years had 8 cases. The difference was significant ($P < 0.05$). The manner was accidental in 33, suicidal in 10 and homicidal in 7. The difference was significant ($P < 0.05$). 15 died on spot, 10 on arrival, 4 <1 hour, 7 in 1-2 hours, 8 in 2-6 hours, 4 in 6-24 hours and 2 in 1-7 days. The difference was significant ($P < 0.05$).

Conclusion: Authors found that maximum victims died at spot and on arrival. The manner was accidental, suicidal and homicidal.

Keywords: accidental, suicidal, homicidal

Introduction

Thoraco-abdominal injuries are caused by wide variety of reasons like road traffic accidents, penetrating trauma, blunt trauma, railway accidents etc. ^[1] The bony thoracic cage contains vital organs of circulation and respiration; and trauma to these organs challenges the integrity, and viability of entire organism. The abdomen is the third commonest region of body that is injured in civilian trauma ^[2]. The modern era is an era of speed and pace along with degraded social and moral values of mechanized society. The road traffic accidents are increasing at an alarming rate throughout the world due to fast pace of modernization ^[3].

Thoraco-abdominal injuries provide a major contribution to death due to anatomical position and dimension. The thoraco-abdominal region, which contains vital organs of body, is a major site of impact in any type of trauma ^[4]. It is frequently seen that the thoracic wall may or may not show any injuries subsequent to blunt force trauma but abdominal walls usually escape gross injury by transmitting the force of violence to the more resistant organs inside the abdominal cavity which get injured without any visible external injury in the region. Hence, there is always a possibility of fatal thoraco-abdominal injuries to go unnoticed, and leading to their late detection and fatal outcome ^[5]. The present study was conducted to find out the pattern of thoracoabdominal injuries.

Materials & Methods

The present study was conducted in the department of Forensic medicine. It comprised of 82 cases of Thoraco-abdominal injuries of both genders. The study protocol was approved from institutional ethical committee.

Data such as name, age, gender etc. was recorded. 50 died during treatment in the hospital and brought to mortuary for postmortem examination. Results were tabulate and subjected to statistical analysis. P value less than 0.05 was considered significant.

Results

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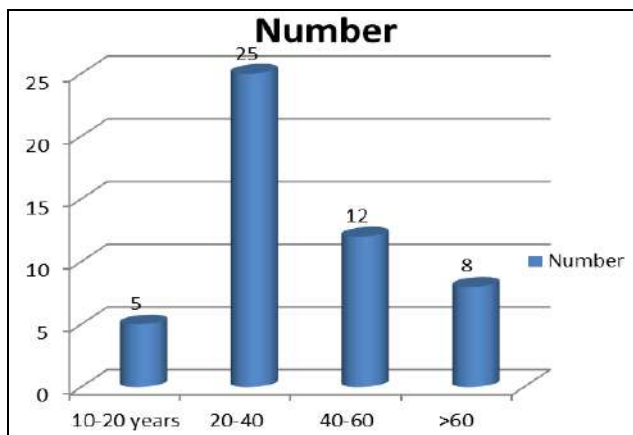
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Table I: Age wise distribution

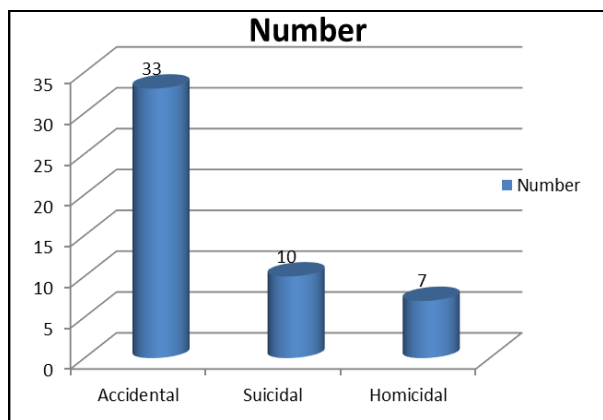
Age group (Years)	Number	P value
10-20	5	0.01
20-40	25	
40-60	12	
>60	8	

Table I shows that age group 10-20 years had 5, 20-40 years had 25, 40-60 years had 12 and >60 years had 8 cases. The difference was significant ($P < 0.05$).

**Graph I:** Age wise distribution**Table II:** Manner wise distribution of cases

Manner	Number	P value
Accidental	33	0.01
Suicidal	10	
Homicidal	7	

Table II, graph II shows that manner was accidental in 33, suicidal in 10 and homicidal in 7. The difference was significant ($P < 0.05$).

**Graph II:** Manner wise distribution of cases**Table III:** Survival period of victims of fatal Thoraco abdominal injuries

Survival period	Number	P value
Died on spot	15	0.01
Dead on arrival	10	
Died <1 hour	4	
1-2 hour	7	

2-6 hour	8	
6- 24 hours	4	
1-7 days	2	

Table III shows that 15 died on spot, 10 on arrival, 4 <1 hour, 7 in 1-2 hours, 8 in 2-6 hours, 4 in 6-24 hours and 2 in 1-7 days. The difference was significant ($P < 0.05$).

Discussion

Injuries are overlooked during three phases in patient management: (a) initial assessment, (b) diagnostic work-up (imaging, laboratory studies etc.), (c) surgical exploration.⁶ These undiagnosed fatal injuries become a source of professional embarrassment and possible litigation. According to a study by CRRI (Central Road Research Institute) New Delhi and studies done by WHO road traffic accidents account for 2.5% of total deaths. India has one of the largest railway networks in the world and accidents are not unexpected. The trauma related to railway accidents is usually severe, intensely fatal and mutilating [7]. Industrial accidents also contribute to thoraco-abdominal injuries due to rapid industrialization in urban as well as rural areas throughout the country. Sexual assaults continues to present most rapidly growing violent crimes in our society and in these cases injuries are present over the chest and abdomen as a sign of struggle like love bites, scratch marks have their own special medico-legal significance. Traumatic injuries in child abuse cases are frequent cause of morbidity and mortality in children worldwide [8]. The present study was conducted to find out the pattern of thoraco-abdominal injuries.

In present study, age group 10-20 years had 5, 20-40 years had 25, 40-60 years had 12 and >60 years had 8 cases. Jha *et al.* [9] found that mean age was 33.8 (SD 13.2; range 15–90) years. The mechanism of injury was a stab wound in 62 cases (25.3%), a gunshot wound in 160 cases (65.3%) and other penetrating objects in 23 cases (9.4%). The median ISS was 10 (range 4–75). ISS was 4–8 in 22 cases (9.0%); 9–15 in 155 cases (63.3%); 16–24 in 39 cases (15.9%); 25–40 in 26 cases (10.6%); 41–75 in 3 cases (1.2%). The maximum RTS was obtained in 206 patients (84.1%). The GCS score was 13–15 in 229 patients (93.5%). Patients had normal arterial blood pressure in 230 cases (93.9%). Patients were eupneic in 229 cases (93.5%). Thoracic and abdominal injuries with an AIS score of 2 or greater were present in 203 patients (82.8%) and 192 patients (78.4%) respectively. Fifty patients (20.4%) had both thoracic and abdominal injuries. In patients with abdominal injuries, the median PATI was 12 (range 4–57). Excluding thoracic drains, a surgical procedure was carried out in 150 (61.2%) of the 245 patients. Forty eight patients with thoracic injuries underwent surgery (19.6%). This represents 31.4% of the 153 patients who had injuries to the thoracic region. For patients with abdominal injuries, a surgical intervention was done in 133 (54.3%) of the 245 patients. This represents 93.7% of the 142 patients who had abdominal injuries.

We found that manner was accidental in 33, suicidal in 10 and homicidal in 7. 15 died on spot, 10 on arrival, 4 <1 hour, 7 in 1-2 hours, 8 in 2-6 hours, 4 in 6-24 hours and 2 in 1-7 days. The difference was significant ($P < 0.05$). Feliciano *et al.* [10] found that mortality amongst the victims of thoraco-abdominal injuries was 53.73%. Most commonly involved age group was 21 to 40 years and this group accounts for 53.75% of victims. Present study shows Male predominance in ratio of 4.8:1. Amongst social factors

which were analyzed it revealed that significant numbers of victims were married, labourers, educated up to higher secondary and low socioeconomic group. The most common manner of the thoraco-abdominal injuries was accidental in nature followed by homicide and suicide. In cases of fatal thoraco abdominal injuries, majority of the victims either died on the spot or before reaching to hospital during transportation.

Conclusion

Authors found that maximum victims died at spot and on arrival. The manner was accidental, suicidal and homicidal.

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