A PROSPECTIVE AUTOPSY STUDY OF BLUNT TRAUMA OF CHEST IN NORTH INDIA

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ABSTRACT

Introduction: The history of trauma dates back right all the way down to the time of evolution of human kind. Since prehistoric times, the chest has been looked upon united of the foremost vulnerable regions of the body and injuries involving it have invariably been thought-about terribly serious. Materials & Methods: The study was conducted in the department of Forensic medicine and Toxocology. Total 50 cases were studied, The epidemiological features pertaining to victim e.g. age, sex, type of trauma, type of road users, type of vehicle involved in the accident and injuries caused to the victims, and other relevant data about the cases will be collected from the papers sent by the police namely Inquest report of police and details from concerned police constables, investigation officers and authorities, witnesses of the incident, relatives, attendants, friends and others accompanying the dead body. A detailed Proforma for the purpose of recording history and epidemiological data. All the dead bodies were thoroughly examined for external and internal injuries including bones and joints in thoracic region. Results: Out of 100 cases male were and female were 80 & 20 respectively. Among all the cases incidences were Road traffic accident (80%), fall from height (10%) and assault (8%). Many Bone and organ damage were seen which is shown in the figure. Conclusion: The risk for associated thoracic and intra-abdominal injuries is significantly increased in patients with thoracic aortic injuries. Majority of victims of blunt chest injuries were young adult males between 21-40 years of age. The study helps in determining the importance of the thoracic region and the vital organs present in the region, protection is also required to prevent thoracic region, like the head region where there is use of helmet to protect vital organ.

Key words: autopsy, road traffic accident, trauma, injury.

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INTRODUCTION

The history of trauma dates back right all the way down to the time of evolution of human kind. Since prehistoric times, the chest has been looked upon unite of the foremost vulnerable regions of the body and injuries involving it have invariably been thought-about terribly serious. As early as 460 BC, medical man was awake to the danger to life caused by injury to respiratory organ and heart. Transection of the thoracic aorta (TTA) remains a leading cause of death after blunt trauma.

With fast moving vehicular traffic, vast urbanization, rapid industrialization, changing social patterns, construction of skyscrapers and increased crime rate with added activity of terrorists, have contributed very greatly to the increase in the incidence of trauma to the human body. Driver of an automobile in a collision accident will strike his chest against the steering column & can sustain sternal fracture or contusion & laceration of heart. During 1990’s Road Traffic Accidents ranked 9th among the leading causes of death in the World. It was projected that, if the same trend continued it would become the 3rd leading cause by the year 2020. Since the thoracic cavity contains the important organs like respiratory organ, heart, great vessels and numerous tubes trauma to the present region challenges the integrity and even the viability of the individual. Due to its size and anatomical position, it’s a significant site of trauma in road accidents. Even with the advance in safety measures in vehicles and larger availability of state of art resuscitative measures, the death rate in crush injuries to the chest region has not declined. Majority of deaths of trauma victims have medico-legal implications. It is therefore necessary to establish the cause of death to get compensation from the State or from insurance companies. Despite significant social impact of trauma, few reliable epidemiological data are available for the trauma caused by blunt mechanisms in India.

MATERIALS AND METHODS

The study was conducted in the department of Forensic medicine and Toxocology. Total 50 cases were studied, The epidemiological features pertaining to victim e.g. age, sex, type of trauma, type of road users, type of vehicle involved in the accident and injuries caused to the victims, and other relevant data...
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The criteria for selection of cases for this study were as follows:

1. All the cases showing fatal pectoral injuries caused by blunt force with or while not external injuries, and people cases who succumb when treatment, In hospital are considered for this study.
2. Rotten bodies and people cases wherever the character of sustenance of injury is not well-known aren’t enclosed during this study.

**RESULTS**

Out of 100 cases male were and female were 80 & 20 respectively. Among all the cases incidences were Road traffic accident (80%), fall from height (10%) and assault (8%). Many Bone and organ damage were seen which is shown in the figure.

<table>
<thead>
<tr>
<th>Table no. 1: distribution of incidences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incidences</td>
</tr>
<tr>
<td>-----------------------</td>
</tr>
<tr>
<td>Road traffic accidents</td>
</tr>
<tr>
<td>Fall from height</td>
</tr>
<tr>
<td>Assault</td>
</tr>
<tr>
<td>Other (fall of object)</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Table no. 2: Age wise distribution of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age of victim</td>
</tr>
<tr>
<td>------------------</td>
</tr>
<tr>
<td>0-10years</td>
</tr>
<tr>
<td>11-20years</td>
</tr>
<tr>
<td>21-30years</td>
</tr>
<tr>
<td>31-40years</td>
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<tr>
<td>41-50years</td>
</tr>
<tr>
<td>51-60years</td>
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<tr>
<td>&gt;60years</td>
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</tbody>
</table>

**Table no. 3: distribution of Road Traffic Accident**

<table>
<thead>
<tr>
<th>Most common among RTA</th>
<th>No. Of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor bikes</td>
<td>31(62%)</td>
</tr>
<tr>
<td>Pedestrians</td>
<td>13 (26%)</td>
</tr>
<tr>
<td>Others</td>
<td>06(12%)</td>
</tr>
</tbody>
</table>

**Table no. 4: distribution of survival Period**

<table>
<thead>
<tr>
<th>Survival period in hours</th>
<th>No. Of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;6 hours</td>
<td>40 (80%)</td>
</tr>
<tr>
<td>6-12 hours</td>
<td>04 (8%)</td>
</tr>
<tr>
<td>12-18 hours</td>
<td>01(2%)</td>
</tr>
<tr>
<td>18-24 hours</td>
<td>01(2%)</td>
</tr>
<tr>
<td>&gt;24hours</td>
<td>04 (8%)</td>
</tr>
</tbody>
</table>

**Fig. 1: sex distribution of cases**

**Sex distribution of Victim**

- Male: 20
- Female: 80

**Fig. 2: Distribution of bone fracture**

<table>
<thead>
<tr>
<th>Distribution of bone fracture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ribs</td>
</tr>
<tr>
<td>Clavicle</td>
</tr>
<tr>
<td>Sternum</td>
</tr>
<tr>
<td>Vertebra</td>
</tr>
<tr>
<td>combined (More than one bone)</td>
</tr>
</tbody>
</table>

**Fig. 3: Distribution of Organ damage**

<table>
<thead>
<tr>
<th>Distribution of Organ damage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lungs</td>
</tr>
<tr>
<td>Heart</td>
</tr>
<tr>
<td>Major vessels of chest</td>
</tr>
<tr>
<td>combined (More than one organ)</td>
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</tbody>
</table>

**Fig. 4: Distribution of Cause of death**

<table>
<thead>
<tr>
<th>Distribution of Cause of death</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphyxia</td>
</tr>
<tr>
<td>Shock &amp;…</td>
</tr>
<tr>
<td>Coma</td>
</tr>
<tr>
<td>Septicemia &amp;…</td>
</tr>
<tr>
<td>combined</td>
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</tbody>
</table>
DISCUSSION

Blunt injuries to the chest are responsible for an oversized range of casualties. Road traffic accidents are accountable for most of these injuries. A considerable variety of such cases are seen in different accidents as collapse of building, fall from height, stampede etc. Few cases of blunt trauma on chest also are seen in deadly scuffle when somebody is overwhelmed by a group of person/crowd with fist, foot or some onerous blunt weapon.

The results of our study on the fatal chest injury because of blunt force were analysed and compared with different studies conducted at numerous places in India and abroad. Whereas comparison the results of our study with alternative workers, several factors were taken into consideration.

According to this study RTA was the commonest cause for blunt chest trauma which was in accordance with the study conducted by Robert M. Shorr, Raju S Iyer, Serife Tuba Liman, N. Ali and Pathak Manoj Kumar.

In the present study the maximum number of blunt chest injury occurred between the age group of 21 – 30 years, followed by age group 31 – 40 years. Similar results were observed in the previous studies conducted by Raju S Iyer, A.L. Ghangale, R.V. Kachre, D.Harish, Harnam Singh, and Pathak Manoj Kumar.

The reason being that young adults are prime bread earners of the family and remain out doors during most of the day, while persons in extremes of age group remain indoors. Male dominance is explained by the actual fact that, males are more exposed to hazards of road, industry and violence they’re the working and earning members in majority of families, whereas females sometimes stay inside and appearance once the family work in household. Similar results were observed in studies conducted by Robert M. Shorr, Serife Tuba Liman, D.Harish, N. Ali.

From the study population in RTA it was observed that motor cyclists accounted for 31 cases (62%) formed the major part of victims of blunt chest injury followed by pedestrians 12 cases (26%). Similar results were observed in the studies conducted by Ganveer GB, Pathak Manoj and Srinivasulu Pothireddy on road traffic accidents. In the present study we observed that victims had 24 cases (48%) rib fracture, followed by combined bony fractures 16 cases (32%) which is in accordance with the study conducted by Robert M. Shorr, Raju S Iyer, A.L. Ghangale, Dr T.H. Meera and Pathak Manoj.

This could be as ribs are most exposed bone to trauma as they are spread over large area. In the present study it was observed that Shock and hemorrhage was seen in 41 cases (82%) followed by asphyxia and coma 5 cases (10%) and 03 cases (6%) respectively but it is similar to study done by Dr. Archana Kual and Meera T.H. Chest and adjacent parts of head and neck are involved in most cases.

CONCLUSION

The risk for associated thoracic and intra-abdominal injuries is significantly increased in patients with thoracic aortic injuries. Majority of victims of blunt chest injuries were young adult males between 21-40 years of age. The study helps in determining the importance of the thoracic region and the vital organs present in the region, protection is also required to prevent thoracic region, like the head region where there is use of helmet to protect vital organ.

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