

A Study of Pattern of Thoracic Injuries in Cases of Railway Traffic Accidents Brought to the Post Mortem Centre

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Abstract

Post mortem examination has important value in case of railway accidents when the thoracic injury are incorporated. There were so many statistical data present which had defined the thoracic injury but no statistical data is observed regarding the traumatic lesion of the vital organs in thoracic region in cases of Railway traffic accident deaths. This significant oversight can lead to find out the exact cause of death in cases of railway traffic accidents.¹ It can help to improve the hospital emergency centre as far as concerned to chest injury victims in case of Railway traffic Accidents. Observations made were compared with the previous studies. The study period extended from the 1st JUNE 2012 to 31st OCTOBER 2014. During this two (2) years period, a total number of 867 Autopsies were carried out in the department of Forensic Medicine, out of which, 74 cases of railway accident were selected for evaluation in the present study. Approval of local institutional ethical committee has been taken. It has been observed that chest fatalities are quite common and their correlation done with other authors.

Key Words: *Indian Railways, Contusions, Lacerations, thoracic injuries, fatalities.*

Backgrounds

Railways being one of the most comfortable means of transportation have a long history and an unprecedented contribution to the human civilization. The basic design if the Railway consists of a locomotive or a self- propelled motor- unit drawing a train of cars over a track of two parallel rails placed together on a permanent stretch of roadway or railway. The flanged wheels rolling on iron or steel ribs, causes minimal friction thereby allowing a smooth and comfortable journey with the added advantage of being cheap, safe and reliable means of transport for everyone.

With increasing advantage of the railway it has been observed that as the day progresses the railway also causes misadventures disadvantages in terms of injury with deaths of the passengers. In India as per the report from the Railway Year book 2011-12⁴, in the year of 2011-12, there were 235 passengers were killed and 358 injured and about 585.89 Lakhs Rs compensation has paid by the railway. An autopsy surgeon usually encounters isolated cases where death results from some kind of railway track incident. While in most cases, an opinion regarding the nature of death can be provided by a close observation of the injury pattern alone, but in some cases, it becomes almost impossible to form an opinion about the nature of death. A correct opinion regarding the cause and nature of death becomes important in view of the increasing number of railway injuries and fatalities, which mount to a high number of compensation cases. The correct opinion helps the Railway to verify the cases liable for compensation and also helps in formulating ways for prevention of the

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same.

Aims and Objectives

- 1) To study the causative factors.
- 2) To study external and internal chest injuries peculiar to railway fatalities.
- 3) To study cause and manner of death
- 4) To assess and evaluate the difference and pattern of thoracic injury on the basis of previous studies.

Material and Methods

The present study was carried out in the post mortem center situated of a medical college situated at Central India. It is prospective study. The post mortem center conducts autopsies on following railway accident victims: 1. Cases brought dead by any of the nearby police station. 2. Cases of Railway accidents admitted to this hospital (Either directly or as a transfer from any other hospital) who succumb to the injuries. The study period extended from the 1st JUNE 2012 to 31st OCTOBER 2014. During this two (2) years period, a total number of 867 Autopsies were carried out in the department of Forensic Medicine, out of which, 74 cases of railway accident were selected for evaluation in the present study. Approval of local institutional ethical committee has been taken. Criteria for selection or exclusion of cases: 1. Victims of railway accidents that took place outside the train (Running or stationary), or on the railway track. Or on the railway platform and brought to the postmortem center with history of railway accidents as per the police inquest. 2. Non- train accidents: Accidents to people on railway premises but not connected with the movement of railway vehicles, were excluded. 3. The natural deaths which occurred in train, railway track, railway platform, railway premises and brought by railway police were not included in the current study.

Materials and Methods

Collection of data: Information that provided the primary data in each case was collected from different sources. They were as follows:

1. Examination of the inquest report and history from the relative if available.

2. In case of hospitalized victims, records of the treatment were perustrate

3. Finding of the autopsy reports.

All data collected from different sources were recorded in specially designed proforma for each case for further collective evaluation.

The information was collected and studied mainly under the following headings.

- a) Brief history
- b) Causal factors
- c) Post mortem examination
- d) Cause of death History and causal factors.

A compendious picture about the back ground of the victims was elicited after taking history from investigating police and relatives of the victims. This included detailed particulars such as name, age, sex, address, religion, educational status, socio economic status, occupation, marital status. Similarly an idea about the circumstances of the event leading to death was made out by other epidemiological data such as place of incident, nature of incident leading to death, time of occurrence, weather conditions; and survival period, etc. very importantly Evidence of suicide notes along with body also noticed.

Post Mortem examination.

The detailed post mortem examination carried out in each case comprised of an external and an internal examination.

a). External examination included general condition of the body, including external orifices, injuries sustained, etc.

b). Internal examination is carried out systematically by opening the three principles body cavities viz. the chest, abdomen and cranium and dissecting the contents by Letulle's method. The location and the extent of the injury were specially observed to note any pattern if any.

Observation & Result

Thorax

Internal injuries to thorax are summarized in the following table no 1.

Injury to thorax	Cases	Percentage
Ribs	24	32.43%
Sternum	8	10.81%
Lungs	19	25.67%
Heart	3	4.05%
None	48	64.87%
N.B. There is overlapping as combination injuries to thorax present in the victims.		

Fracture of ribs was observed in 24 (32.43%) cases. Injuries to lungs were observed in 19 (25.67%) cases. In 8 (10.81%) cases sternum was fractured. Injuries to heart were observed in 3 (4.05%) cases.

Injuries to thorax were seen either in combination or in isolation as summarized in the following table-

Table No:2

Pattern of injuries to thorax	No of cases	Percentage
Only Ribs	5	6.76%
Only Sternum	0	0%
Only Lungs	1	1.35%
Ribs+lungs	10	13.51%
Ribs+lungs+heart	2	2.70%
Ribs+sternum+Lungs+heart	2	2.70%
Ribs+Sternum+Lungs	6	8.11%
Ribs+Sternum	0	0%
Sternum+Lungs	0	0%
Sternum+ heart	0	0%
Heart	0	0%
No of cases with Thoracic injuries	26	35.14%
No injuries to thorax	48	64.86%

Total Internal injuries to the thorax were observed in 26 (35.14%) victims. It was observed that injuries to the ribs along with lungs were the commonest pattern of thoracic injuries, seen in 10 (13.51%) victims, followed by combination of ribs, lung with sternum seen in 6 (8.11%) victims. Fracture to the ribs was observed in 5

(6.76%) victims. Combination of Ribs+ Sternum + Lung + heart Combination of Ribs+ Lungs+ heart were and combination of Ribs +sternum+ Lungs were observed in 2 (2.70%) victims respectively. Internal injuries to thorax were not observed in 48 (64.86%) victims.



Risky Behaviour of peoples while travelling



Crush Thorax injury.

Discussion

Internal injuries to thorax were observed in 35.13% cases. Fracture of ribs was observed in 32.43% cases. Injuries to lungs were observed in 25.67% cases, in these 25.67% cases 2.70% were having penetrating injury which was correlating with the external injuries. In 10.81% cases sternum were fractured. Injuries to heart were observed in 4.05% cases.

Findings are consistent with **Patil Ajay et al (2000)**^{2&3} observed 46% had ribs and sternum fracture. Injury to lung was observed in 6% cases and injury to heart was observed in 3% cases.

Sabale PR and Mohite SC (2005-2008)⁵, observed that ribs were observed in 42% victims, injuries to lungs and heart were noted in 33.76% and 5.35% victims each. He observed fracture of sternum in 6.64% cases.

v In our study the injuries to the ribs along with lungs were the commonest pattern of thoracic injuries,

seen in 13.51% victims, followed by combination of ribs+ lung+ sternum 8.11% victims. Fracture to the ribs was observed in 6.76% victims. Internal injuries to thorax were not observed in 48 (64.86%) victims.

No other author described this type of combination except study done by **Sabale PR and Mohite SC (2005-2008)**⁵, in their study it was observed that in 26.57% victims ribs+ lung shows injuries followed by fracture of the ribs only in 8.30% cases.

Summary & Conclusion

v Injuries to the ribs along with lungs were commonest pattern of thoracic injuries.

v Injuries to the ribs with fracture of sternum along with lungs were second commonest pattern of thoracic injuries.

v Thoracic injuries (37 %) are second only to Head injuries (73%) as far as commonest types of injuries associated with the Railway accidents are concerned.

v Fractures of ribs and sternum in 46% cases. Injury to lung was observed in 6% cases and injury to the heart was observed in 3% cases.

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v Ethical Approval: Not needed.

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