

ORIGINAL ARTICLE

Assessment of cases of traumatic chest injuries in hospitalized patients

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ABSTRACT:

Background: Thoracic trauma is the third most common traumatic death, after head and spinal cord injury. The present study was conducted to determine cases of traumatic chest injuries in hospitalized patients. **Materials & methods:** The present study was conducted on 125 patients of traumatic chest injuries of both genders. All patients were subjected to posteroanterior chest X ray, lateral X ray and chest CT scan was done whenever indicated. Patients were also subjected to extended FAST scan including the scan of chest for detection of traumatic pneumothorax or hemothorax. Associated injuries were also reported. **Results:** Out of 125 patients, males were 73 and females were 52. Blunt injuries were seen in 86 patients and penetrating injuries in 39 patients. The difference was significant ($P < 0.05$). The type of chest injury was rib fracture in 104, pneumothorax in 45, haemothorax in 56, Hemopneumothorax in 67, lung contusion in 34, flail chest in 12, fracture sternum in 72 and diaphragmatic injury in 17. The difference was significant ($P < 0.05$). **Conclusion:** Authors found that type of chest injury was rib fracture, pneumothorax, haemothorax, Hemopneumothorax, lung contusion, flail chest, fracture sternum and diaphragmatic injury.

Key words: Chest injury, Hemopneumothorax, lung contusion.

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INTRODUCTION

Trauma is the leading cause of death in India. Thoracic trauma is the third most common traumatic death, after head and spinal cord injury. The incidence of chest trauma is reported 10% of trauma admissions and mortality rate is variable ranging from about 10% to 60%.¹ Polytrauma is a serious global health problem. Chest trauma comprises about 10-15% of all trauma admissions and 25% of trauma related deaths are attributed to chest injuries. The cause and pattern of chest injuries vary in different parts of the world because of variations in infrastructure, civil violence, wars, level of crime as well as the applicability of traffic rules and regulations. Rapid unplanned urbanization and advent of high-speed motor vehicles has resulted in enormous increase in the number of traumatic chest injuries all over the world. As chest is a large and exposed portion, it is likely to get traumatized in most of the impact injuries. Thoracic cage houses the most vital organs- heart, lungs and great vessels, therefore trauma to these organs can prove fatal.²

Trauma to thoracic region has a wide spectrum from chest wall injury to vital organs within the thoracic cavity. Thoracic injuries may be penetrating or blunt and management varies from conservative to invasive.³ A prognostic scoring system makes it easier to manage by directing resources. Improved outcomes and decreased hospital stay was reported following

score and protocol based interventions in trauma victims. The need for a universal system for thoracic trauma is justified to identify critical factors, to predict patient outcomes, urgent need for intervention, requirement of intensive care, and to communicate with the family.⁴ The present study was conducted to determine cases of traumatic chest injuries in hospitalized patients.

MATERIALS & METHODS

The present study was conducted in the department of Orthopaedics & Chest TB. It comprised of 125 patients of traumatic chest injuries of both genders. The study was approved from institutional ethical committee. All patients were informed regarding the study and written consent was obtained.

Data such as name, age, gender etc. was recorded. History and clinical examination was done. All patients were subjected to posteroanterior chest X ray, lateral X ray and chest CT scan was done whenever indicated. Patients were also subjected to extended FAST scan including the scan of chest for detection of traumatic pneumothorax or hemothorax. Associated injuries were also reported. Management in the form of chest physiotherapy, tube thoracostomy or thoracotomy was recorded. Results obtained were tabulated and analyzed. P value < 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 125		
Gender	Male	Female
Number	73	52

Table I, graph I shows that out of 125 patients, males were 73 and females were 52.

Graph I Distribution of patients

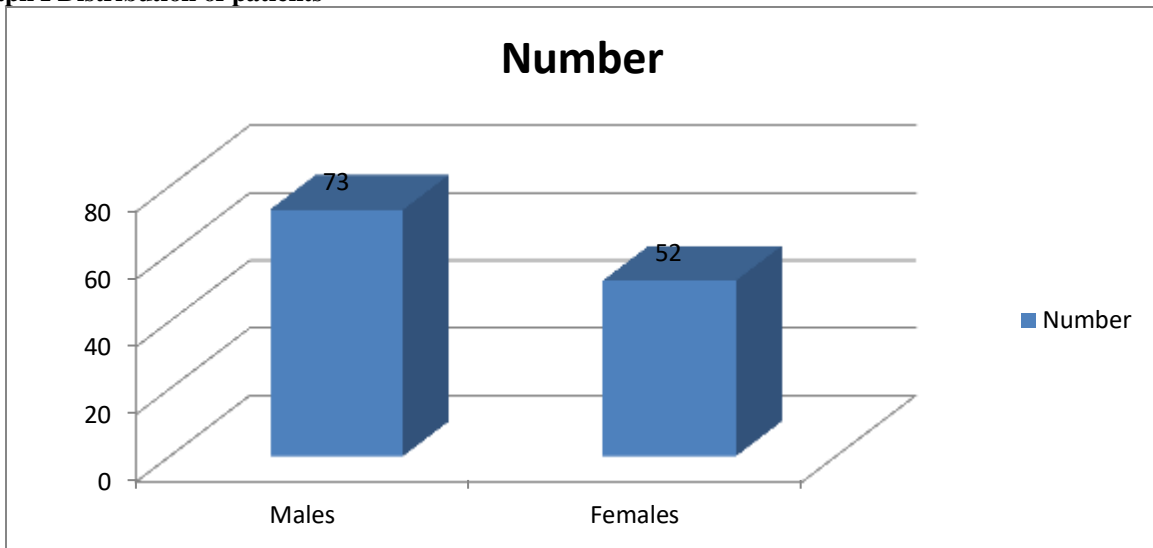


Table II Type of chest trauma

Type	Number	P value
Blunt	86	0.01
Penetrating	39	

Table II, graph II shows that blunt injuries were seen in 86 patients and penetrating injuries in 39 patients. The difference was significant ($P < 0.05$).

Graph II Type of chest trauma

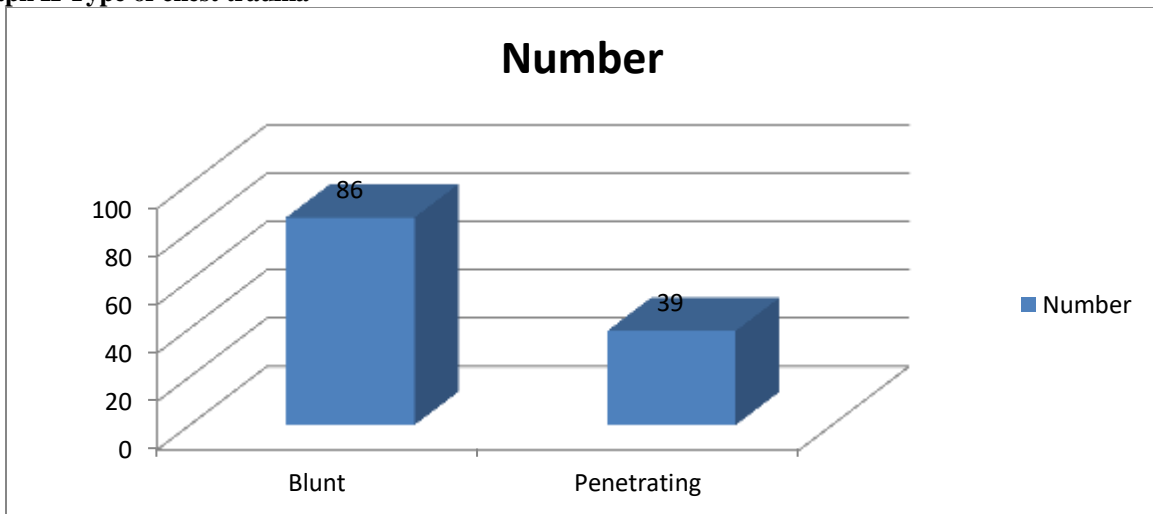


Table III Clinical types in chest trauma patients

Type of injury	Number	P value
Rib fracture	104	0.01
Pneumothorax	45	
Hemothorax	56	
Hemopneumothorax	67	
Lung contusion	34	
Flail chest	12	
Fracture sternum	72	
Diaphragmatic Injury	17	

Table III, graph III shows that type of chest injury was rib fracture in 104, pneumothorax in 45, haemothorax in 56, Hemopneumothorax in 67, lung contusion in 34, flail chest in 12, fracture sternum in 72 and diaphragmatic injury in 17. The difference was significant ($P < 0.05$).

DISCUSSION

Blunt thoracic trauma has a significant impact on morbidity and mortality when left untreated. Many different treatment modalities are used to reduce the complications associated with rib fractures, however, their efficacy is often unclear. Trauma typically affects young males in the productive phase of life. Young males are more prone to chest trauma because of greater exposure to external environmental forces in their daily activities.⁵

In multiple traumatised patients, approximately 50% are affected by a serious chest injury, which continues to significantly influence the outcome in this patient cohort. In this context, mortality was reported to dramatically increase in patients with thoracic trauma (up to 30%).⁶ As the lung represents a target organ for secondary damage by posttraumatic inflammation, lung injury contributes to the development of multiple organ failure (MOF) and therefore represents a major cause of late deaths (24%) after severe trauma. However, progress in the early diagnosis and treatment of thoracic injuries has been noticed during the last decade. Computer tomography was found to reveal otherwise underestimated or overlooked injuries in the multiple injured, positively influence decision making in regard to operative strategies (i.e. chest tube, thoracostomy), and guide intensive care procedures (i.e. mechanical ventilation concepts) were reported to increase patient outcome.⁷ The present study was conducted to determine cases of traumatic chest injuries in hospitalized patients.

In present study, out of 125 patients, males were 73 and females were 52. Blunt injuries were seen in 86 patients and penetrating injuries in 39 patients. Mohta et al⁸ found that a total number of 1429 trauma patients presented to AE of which 160 patients (11.2%) had chest trauma. Majority of the patients (51.87%, n=83) were of age group of 21-40 years. A male preponderance was observed. Road traffic accidents were major causes of blunt chest injury, while gunshot

injury was the major causes of penetrating chest injuries. Head and neck injuries were the most common associated injuries. Tube thoracostomy was the commonest modality of management (65%) and (28%) patients were managed conservatively. Severity of chest trauma and associated injuries coupled with prompt diagnosis and treatment were important factors in efficient management of chest injuries.

We found that type of chest injury was rib fracture in 104, pneumothorax in 45, haemothorax in 56, Hemopneumothorax in 67, lung contusion in 34, flail chest in 12, fracture sternum in 72 and diaphragmatic injury in 17. Massaga et al⁹ reported 33.3% cases of head injury and 26.7% cases of musculoskeletal injuries in their study of 105 cases. The associated injuries are related to the cause of injury as road traffic accidents always lead to multiple injuries whereas as assault lead to isolated injuries mostly.

Liman et al¹⁰ conducted a prospective observational study done in which they evaluated CTS to predict outcome that is mortality as primary objective and development of complications like pneumonia and need for ventilator support as secondary objective in Indian population. Data were collected from 30 patients and they were divided into two groups, CTS <5 (15) and CTS \geq 5 (15). High CTS \geq 5 was statistically significantly associated with high incidence of pneumonia ($P = 0.046$), increased requirement of mechanical ventilation ($P = 0.025$) and mortality ($P = 0.035$) in chest trauma. Area under the ROC for mortality shows that the test is acceptable (0.75) and at CTS score 5.5 maximum sensitivity is 87.5% and specificity is 68%.

CONCLUSION

Authors found that type of chest injury was rib fracture, pneumothorax, haemothorax, Hemopneumothorax, lung contusion, flail chest, fracture sternum and diaphragmatic injury.

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