



A RETROSPECTIVE STUDY ON BLUNT CHEST TRAUMA IN A TERTIARY CARE CENTRE, GOA MEDICAL COLLEGE

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ABSTRACT **Background:** Blunt Chest Trauma is usually caused by acceleration or deceleration injuries which maybe due to motor vehicular accidents, fall from height, blunt instrument injury, physical assault, warfare injuries, earthquake or building collapse. Injuries to chest are common, seen in upto 20% of trauma patients. **Methodology:** Retrospective observational study in 100 patients in a tertiary care centre, Goa Medical College. All patients admitted with history of blunt chest trauma were selected over a time period of January 2021 to December 2021. Analysed data included demographic profile, mode of injury, investigations, management and outcomes. **Results:** A total of 100 patients with history of blunt chest trauma were selected. 25 patients were in the age group of 35-40, constituting the maximum number of cases. Majority were males, comprising 85% of patients. Commonest mode of injury was road traffic accident comprising 70% of cases, followed by assault followed by self fall. Thoracic injuries were categorised as skeletal and pleural and visceral injuries. Rib fractures were the most common skeletal injury in 80% cases, followed by clavicular fracture in 10%. Most common visceral injury was lung contusion in 13% cases followed by lung laceration in 6% cases. Hemothorax was seen in 16% cases, pneumothorax in 13% cases and tension pneumothorax in 2% cases. **Conclusion:** Chest trauma contributes significant to both morbidity and mortality especially in adult male victims of the road traffic accidents. The majority of these cases can be managed conservatively. Pain management is most important aspect in management of chest trauma which allows patient for early mobilization and reducing complications of chest injury.

KEYWORDS : blunt chest trauma, rib fractures, pneumothorax, hemothorax, pulmonary contusion, pain management

Introduction:

Chest trauma is one of the major injuries encountered in trauma victims and also the leading cause of death from physical trauma after head injury.¹ Chest injuries are found to be the primary or a contributing cause of about a quarter of all trauma related deaths. Injuries to the chest are common, with up to 20% of trauma patient's presenting with thoracic injuries.^{2,3} Chest trauma contributes to major accidental injuries in India, due to increased incidence of vehicular accidents (6% of global vehicular accidents) due to increased availability of new high-speed vehicles and ignorance or unawareness of traffic rules. Only few studies have been conducted to analyse its magnitude and management in Indian scenario.^{4,5,6} Injury to the chest can affect the chest wall and viscera of the thoracic cavity. These include the bony skeleton (ribs, clavicles, scapulae, sternum), trachea bronchial tree, lungs and pleurae, oesophagus, heart, great vessels and the diaphragm. Lower rib fractures are usually associated with liver and splenic trauma. Fracture of two or more consecutive ribs at two or more sites causes flail chest which is usually associated with paradoxical breathing. Often a combination of these injuries is present.⁷ Repetition of clinical examination in primary survey together with anamnestic information on the mechanism of thoracic trauma will provide information on potential severity of thoracic injury⁸. When the extent of trauma cannot be defined it is recommend to perform contrast-enhanced CT scan⁹. Thoracic ultrasound examination is valid when CT scan is not necessary, in comparison with chest X-ray it shows equivalent sensitivity and specificity for diagnosis of pneumothorax. Ultrasonography in the emergency room is also a reliable method to exclude pleural/pericardial effusion. Indications for thoracotomy according to the ATLS guidelines is as follows: 10

- (I) Blood loss over the chest TD >1,500 mL initially or >200 mL/hour over 2-4 hours;
- (II) Haemoptysis;
- (III) Massive subcutaneous emphysema;
- (IV) Important air-leakage over the chest tub;
- (V) Uncertain images on the chest X-ray or CT thorax;
- (VI) Penetrating chest trauma.

Material and methods:

Retrospective observational study of 100 trauma patients was conducted in a tertiary care centre, Goa Medical College. All patients admitted with history of blunt chest trauma were selected over a time

period of one year from January 2021 to December 2021. Analysed data included demographic profile, mode of injury, investigations, management and outcomes.

Statistical analysis was done using SPSS software. ANOVA test was used for analysis. Chi square test was used for comparison. P value < 0.05 was considered significant. Nominal data was presented as percentage.

Inclusion criteria:

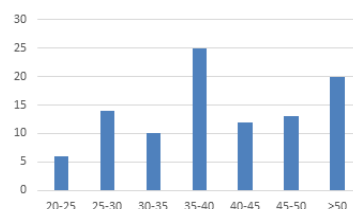
Patients more than 20 years of age with history of blunt chest trauma.

Exclusion criteria:

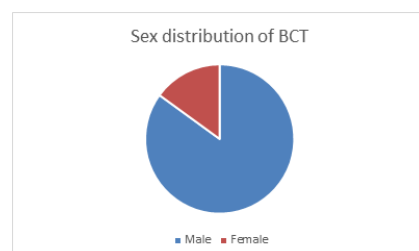
Patients with severe head injury with altered sensorium. Patients who succumbed to their injuries at presentation in emergency department.

Observation:

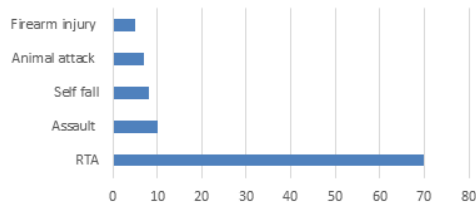
A total of 100 patients with history of blunt chest trauma were selected. 25 patients were in the age group of 35-40, constituting the maximum number of cases. Majority were males, comprising 85% of patients.



Age wise distribution of blunt chest trauma



Commonest mode of injury was road traffic accident comprising 70% of cases, followed by assault followed by self fall.

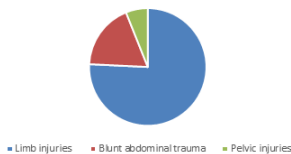


Mode of injury in blunt chest trauma

Thoracic injuries were categorised as skeletal and pleural and visceral injuries.

Rib fractures were the most common skeletal injury in 80% cases, followed by clavicular fracture in 10%. Most common visceral injury was lung contusion in 13% cases followed by lung laceration in 6% cases. Hemothorax was seen in 16% cases, pneumothorax in 13% cases and tension pneumothorax in 2% cases. 50% patients had associated injuries, most common being limb injuries in 25% cases, followed by blunt abdominal trauma in 6% cases and pelvic injuries in 2% cases.

Injuries associated with bct



In this study, most patients were treated conservatively, 87% which includes intravenous antibiotics, analgesics, epidural analgesia, iv fluids and oxygen supplementation. 13% needed tube thoracostomy in patients with significant hemothorax or pneumothorax.

Most common associated complication was pneumonia and atelectasis in 7% cases followed by ARDS in 2% cases. Mortality was found to be 1%.

Results:

A total of 100 patients with history of blunt chest trauma were selected. 25 patients were in the age group of 35-40, constituting the maximum number of cases. Majority were males, comprising 85% of patients.

Commonest mode of injury was road traffic accident comprising 70% of cases, followed by assault followed by self fall.

Rib fractures were the most common skeletal injury in 80% cases, followed by clavicular fracture in 10%. Most common visceral injury was lung contusion in 13% cases followed by lung laceration in 6% cases. Hemothorax was seen in 16% cases, pneumothorax in 13% cases and tension pneumothorax in 2% cases. 50% patients had associated injuries, most common being limb injuries in 25% cases, followed by blunt abdominal trauma in 6% cases and pelvic injuries in 2% cases.

Most common associated complication was pneumonia and atelectasis in 7% cases followed by ARDS in 2% cases. Mortality was found to be 1%.

Discussion:

Chest trauma is one of the major injuries encountered in trauma victims and also the leading cause of death from physical trauma after head injury. Chest injuries are found to be the primary or a contributing cause of about a quarter of all trauma related deaths. Chest trauma is one of the serious injuries and also one of the leading causes of death from physical trauma.^{3,4}

In our study, a total of 100 patients with history of blunt chest trauma were selected. 25 patients were in the age group of 35-40, constituting the maximum number of cases. Majority were males, comprising 85% of patients. Commonest mode of injury was road traffic accident comprising 70% of cases, followed by assault followed by self fall. Thoracic injuries were categorised as skeletal and pleural and visceral

injuries. Rib fractures were the most common skeletal injury in 80% cases, followed by clavicular fracture in 10%. Most common visceral injury was lung contusion in 13% cases followed by lung laceration in 6% cases. Hemothorax was seen in 16% cases, pneumothorax in 13% cases and tension pneumothorax in 2% cases. 50% patients had associated injuries, most common being limb injuries in 25% cases, followed by blunt abdominal trauma in 6% cases and pelvic injuries in 2% cases. In this study, most patients were treated conservatively, 87% which includes iv antibiotics, analgesics, epidural analgesia, iv fluids and oxygen supplementation. 13% needed tube thoracostomy in patients with significant hemothorax/pneumothorax. Most common associated complication was pneumonia and atelectasis in 7% cases followed by ARDS in 2% cases. Mortality was found to be 1%.

Conclusion:

Chest trauma contribute significant to both morbidity and mortality especially in adult male victims of the road traffic accidents. Thus, early diagnosis and rapid management is of paramount importance in chest injuries by following the ATLS protocol. The majority of these cases can be managed conservatively. Tube thoracostomy may be required in the management of life-threatening injuries. Pain management is most important aspect in management of chest trauma which, along with chest physiotherapy allows patient for early mobilization and reducing complications of chest injury such as pneumonia. Use of epidural analgesia should be done if required for pain relief.

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