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Profile of chest injuries in a tertiary care centre

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ABSTRACT

Background: Trauma is a major cause of mortality worldwide. This study is aimed at the patterns of chest trauma, their presentation and the outcome of management.
Methods: A prospective study of trauma patients admitted to a tertiary care centre was carried out the clinical history, physical examination and outcome of management recorded in a predesigned proforma were analysed with SPSS 15 and the patients were followed up in the surgical department.
Results: A total of 638 patients were admitted. 57 patents were identified with chest trauma, 43 (75%) were males and 14 (24.56%) were females. The age range was from 3-78 years and the most affected age was in the range of 20 to 39 years. Blunt injury constituted 82.4% while road traffic accident was responsible for 70.1%. The average time taken between accident and admission was 11 hours 12 minutes while the average duration of hospital stay was 11 days. The injury pattern mainly included rib fracture and hemopneumothorax. The mortality rate was 1.75%.
Conclusions: Most patients arriving at the hospital survived, requiring general resuscitation or simple tube thoracostomy with few complications. Mortalities from trauma and cause of death at the site of accident are often not accounted for due to non-presentation to the hospital and lack of autopsy for those who present.

Keywords: Chest, Management, Presentations, Trauma

INTRODUCTION

Trauma is a major cause of morbidity and mortality worldwide as a result of rapid technology, heavy road traffic and the rising crime rate in the society.[1] Thoracic trauma is responsible solely for 25% of all deaths from trauma and in another 25% cases of morbidity and mortality.[2]

Therefore, medical personals must understand not only the patterns of injury, but also the pathophysiology and the outcome of management peculiar to their environment. This would aid not only individual patient's management, but also help in the formulation of policies geared towards preventive measures from deductions from the studies. This formed the basis for the study. This study is aimed at identifying the patterns of presentation, the outcome of management and suggesting relevant recommendations regarding prevention and management.

METHODS

A prospective study of trauma patients admitted to a tertiary care hospital located in western part of India was commenced in January 2016. The clinical history, examination and outcome of management recorded using a predefined proforma were analysed using SPSS 15 and the patients were followed up in the surgical department.

RESULTS

A total of 638 patients (443 men and 195 women) were admitted during this period from trauma. 57 patients were

identified heaving chest trauma, out of them 43(75.4%) were males and 14 (24.6%) were female (Table 1).

Table 1: Sex distribution.

Sex	Frequency (%)
Male	43 (75.4)
Female	14 (24.6)
Total	57 (100)

The age range was from 3-78 years and means age was 34.3 years, while the most affected ages were in the range of 20 to 39 years (Table 2).

Blunt injury constituted 82.4% and penetrating injury 17.6%. Road traffic accident was responsible for 70%, stab injury 12.33%, falls 8.8%, gunshot injury 1.8%, impalement and animal attack 3.5% each (Table 3).

Table 2: Age distribution.

Age in years	Frequency (%)
0-9	4 (7.0)
10-19	5 (8.8)
20-29	12 (21)
30-39	12 (21)
40-49	9 (15.6)
50-59	5 (8.8)
60-69	6 (10.5)
70-79	4 (7.0)
Total	57 (100)

Table 3: Distribution according to mechanism of Injury.

Mechanism of injury	Frequency (%)
Fall	5 (8.8)
Stab	7 (12.3)
Impalement	2 (3.5)
Gunshot	1 (1.8)
RTA	40 (70.1)
Animal	2 (3.5)
Total	57 (100)

The average time taken between accident and admission was 11 hours 12 minutes. Average duration of hospital stay was 11 days. The injury pattern included rib fractures 17.5%, hemopneumothorax 21%, pneumothorax 7%, combinations of chest injuries 5.3%, no specific injury 8.8%, hemothorax 10.5% (Table 4).

Associated injuries included head injury (63.6%), orthopaedic injury (27.3%) and combinations (abdominal, head, and orthopaedic) (9.1%). The fatality of road traffic accident was 36.8%. No patient was attended to by paramedics at the scene of accident while 21.9% of the patients had prehospital resuscitation in peripheral clinics before admission. The transfusion requirement was 14.0%. One patient (1.8%) required a median sternotomy and cardiopulmonary bypass, 54.4% required tube thoracostomy while 43.8% had general resuscitation / non-operative intervention (Table 5).

Table 4: Nature/ pattern of injury.

Pattern of Injury	Frequency (%)
Rib fracture	10 (17.5)
Laceration	3 (5.3)
Bruise	6 (10.5)
Pneumothorax	4 (7.0)
Hemothorax	6 (10.5)
Lung contusion	4 (7.0)
SC Emphysema	2 (3.5)
Hemopneumothorax	12 (21)
Flail chest	2 (3.5)
No specific injury	5 (8.8)
Combination of first	3 (5.3)
Total	57 (100)

Table 5: Intervention/treatment options.

Treatment	Frequency (%)
Intercostal drainage tube (tube thoracostomy)	1 (54.4)
General Resuscitation	25 (43.8)
Sternotomy	1 (1.8)
Total	57 (100)

Only one (1.8%) required ICU care. The complication rate was 5.2%. The mortality rate was 1.8%. Only 9 (15.8%) patients were seen beyond the first outpatient clinic appointment.

DISCUSSION

Trauma is the leading cause of death and disability in the first four decades of the life and the 3rd leading cause of death worldwide.[3,4] The American academy of Science has labelled trauma as 'the neglected disease of modern society'. Furthermore, the bloated emphasis on Malaria, Tuberculosis, HIV and AIDS relegates trauma to an orphaned position. As in many previous findings, road traffic accident accounted for most cases of chest trauma (70.1%).[5,6] That no patient was attended to by paramedics, and the prolonged injury admission time of 11.2 hours is an indication of absent Emergency Medical Services (EMS) and poor health delivery system. Majority of the patients (82.4%) had blunt chest trauma as observed in many previous studies proving that the pattern has changed little over time.[7] Ali and Gali in Maiduguri however found a higher incidence of penetrating injury (61.53%) and this they attributed to urbanization and its attendant high crime rate.[8] The relatively low incidence of gunshot wounds (1.8%) compared to stab wound (12.3%) is the reverse of what obtains in developed society and is simply explained by

accessibility to these weapons.[9,10] This finding on sex distribution, mean age, and age range were in keeping with other findings.[5,8,11] The implication of this is depletion of the productive workforce required even more in developing societies. As authors observed, it is now generally agreed that the majority of chest injured patients (98.2%) require no more than tube thoracostomy for adequate management reserving thoracotomy for those patients with significant hemorrhage or for patients who are hemodynamically unstable, with proven surgical pathologies.[3,5-7] This observed mortality of 1.8%, ICU requirement (1.8%), transfusion requirement (14.0%) and complication rate (5.2%) for admitted patients may all be a reflection of increased understanding of the pathophysiology of chest trauma and therefore better treatment outcome. The observed complications were pneumothorax in two patients and empyema in another while the mortality was as a result of adult respiratory distress syndrome in a multiply injured patient. Cardiopulmonary bypass was required in one patient with arrow injury to the heart.[10] The average duration of hospital stay of 11 days which was as a result of an associated head (63.6%) orthopaedic (27.3%) or combination (9.1%) injuries. While only 17.5% of this patients had rib fracture, Iyer et al found 51.1%. The follow-up response (15.8%) was poor probably as a result of distance and financial constraints.[9]

CONCLUSION

Most patients arriving at the hospital survive requiring general resuscitation or simple tube thoracostomy with few complications. Mortalities from trauma and the cause of the death at the scene of accident are often not accounted for due to non-presentation and lack of autopsy for those that present. The patterns of chest injury vary very little in most centres. Most patients arriving alive at the hospital require no more than tube thoracostomy even in developing societies. The major difference lies in the pre-hospital care due to absence of EMS in most developing societies. Although this is a preliminary report, authors regret the small sample size.

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