ORIGINAL ARTICLE

PROFILE OF CHEST TRAUMA IN A TEACHING HOSPITAL

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ABSTRACT

Introduction: Trauma continues to be a major cause of morbidity and mortality world over. This study is aimed at the patterns of presentation and the outcome of management.

Materials and Methods: A prospective study of trauma patients admitted to a Teaching Hospital through the Accident and Emergency units. 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 outpatient department.

Results: A total of 4784 patients were admitted, 42 patients identified with chest trauma, 35 (83.3%) were males and 7(16.7%) were females. The age range was from 5-75years and the most affected ages were in the range of 20 to 49years. Blunt injury constituted 71.4% while road traffic accident was responsible for 61.9%. The average time taken between accident and admission was 31hours, 40minutes and 12seconds while the average duration of hospital stay was 16.10 days. The injury pattern mainly included rib fracture(s) (23.8%), and hemopneumothorax (14.3%). The fatality of road traffic accident was 36.8%.The mortality rate was 2.4%.

Conclusion: Most patients arriving at the hospital survived, requiring general resuscitation or simple tube thoracostomy with few complications. Mortalities from trauma and the cause of death at the site of accident are often not accounted for due to nonpresentation to the hospital and lack of autopsy for those that present.

Key words: Trauma, Chest, Presentations, Management, Recommendations

INTRODUCTION

Trauma is a major cause of morbidity and mortality world over as a result of rapid technology 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% contribute to the morbidity and mortality[2]. Medical personals must therefore understand not only the patterns of injury, but 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 this study.

This study is aimed at identifying the patterns of presentation and the outcome of management and proffering relevant recommendations bordering on prevention and management.

MATERIALS AND METHODS

A prospective study of trauma patients admitted to a Teaching Hospital located in western part of India through the Accident and Emergency unit was commenced in January 2010. The clinical history, examination and outcome of management recorded using a predesigned proforma, were analysed using SPSS 15 and the patients were followed up in the surgical outpatient department.

RESULTS

A total of 4784 patients (3143 men and 1641 women) were admitted during this period for trauma. Of the 42 consecutive patients identified with chest trauma 35(83.3%) were males and 7(16.7%) were females (Table 1).

Table 1: Sex Distribution

Sex	Frequency (%)
Male	35 (83.3)
Female	7 (16.7)
Total	42 (100)

The age range was from 5-75years and the mean age was 35.4years, while the most affected ages were in the range of 20 to 49years(Table 2).

Blunt injury constituted 71.4% and penetrating injury 28.6%. Road traffic accident was responsible for 61.9%, stab injury 21.4%, falls 7.1%, gunshot injury 4.8%, impalement and animal attack were 2.4% respectively (Table 3).

Table 2: Age Distribution

Age in years	Frequency (%)
0 – 9	3 (7.14)
10 – 19	4 (9.52)
20 – 29	9 (21.43)
30 – 39	8 (19.05)
40 – 49	9 (21.43)
50 – 59	3 (7.14)
60 – 69	4 (9.52)
70 – 79	2 (4.76)
Total	**42 (100)**

Table 3: Distribution According to Mechanism of Injury

Mechanism of Injury	Frequency (%)
Fall	3 (7.1)
Stab	9 (21.4)
Impalement	1 (2.4)
Gunshot	2 (4.8)
RTA	26 (61.9)
Animal	1 (2.4)
Total	**42 (100)**

The average time taken between accident and admission was 31.67 hours while the average duration of hospital stay was 16.10 days. The injury pattern included rib fracture(s) (23.8%), hemopneumothorax (14.3%), hemothorax (7.1%), pneumothorax (4.8%), combinations of chest injuries (7.1%), and no specific injury (11.9%)(Table 4).

Table 4: Nature/Pattern of Injury

Pattern of Injury	Frequency (%)
Rib Fracture	10 (23.8)
Laceration	3 (7.1)
Bruise	5 (11.9)
Pneumothorax	2 (4.8)
Hemothorax	3 (7.1)
Lung Contusion	2 (4.8)
SC Emphysema	1 (2.4)
Hemopneumothorax	6 (14.3)
Flail Chest	2 (4.8)
No specific injury	5 (11.9)
Combination of first 9	3 (7.1)
Total	**42 (100)**

Table 5: Intervention /Treatment Options

Treatment	Frequency (%)
Tube Thoracostomy	23 (54.8)
General Resuscitation	18 (42.9)
Sternotomy	1 (2.4)
Total	**42 (100)**

Associated injuries included head injury (63.6%), orthopaedic injury (27.3%) and combinations (abdominal, head, 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 14.3%. One patient (2.4%) required a median sternotomy and cardiopulmonary bypass, 54.8% required tube thoracostomy while 42.9% had general resuscitation /non-operative intervention (Table 5).

Only one (2.4%) required ICU care. The complication rate was 4.8%. The mortality rate was 2.4%. Only 7(16.7%) 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 life and the 3rd leading cause of death the world over[3,4]. The American Academy of Science has labelled trauma, 'the neglected disease of modern society'[3]. Furthermore the bloated emphasis on Malaria, Tuberculosis, HIV & AIDs relegates trauma to an orphaned position. As in many previous findings,[5,6,] road traffic accident accounted for most cases of chest trauma (61.9%). That no patient was attended to by paramedics, and the prolonged injury admission time of 31.67 hours is an indication of absent Emergency Medical Services(EMS) and poor health delivery system. Majority of the patients(71.4%) had blunt chest trauma as observed in many previous studies proving that the pattern has changed little over time[7]. Ali and Gali[8] in Maiduguri however found a higher incidence of penetrating injuriy(61.53%) and this they attributed to urbanization and its attendant high crime rate. The relatively low incidence of gunshot wounds(4.8%) compared to stab wound (21.4%) is the reverse of what obtains in developed society and is simply explained by accessibility to these weapons[8]. Our 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 we observed, it is now generally agreed that the majority of chest injured patients (97.6%) 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].

Our observed mortality of 2.4%, ICU requirement(2.4%), transfusion requirement(14.3%) and complication rate(4.8%) 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 one patient 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[9]. The average duration of hospital stay of 16.10 days which was as a result of associated head (63.6%) orthopaedic (27.3%) or combination (9.1%) injuries. While only 23.8% of our patients had rib fracture, Iyer et al[9] found 51.1%. The follow-up response

(16.7%) was poor probably as a result of distance and financial constraints.

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 death at the scene of accident are often not accounted for due to nonpresentation 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, we regret the small sample size.

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