

The Clinical Profile Of Polytrauma And Management Of Abdominal Trauma In A General Hospital In The Central Region Of The Kingdom Of Saudi Arabia

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Citation

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Abstract

Objective: To study the clinical profile of patients admitted with polytrauma over a five-year period in a general hospital and review the management of abdominal trauma in them.

Materials and Methods: Medical records of 242 patients were studied retrospectively. The clinical presentation with details of injuries, relevant investigations done and the operative findings were analyzed.

Results: Polytrauma was significantly more common in males than females ($P < 0.001$) and more so in the young age, between 16 and 30 years of age ($P < 0.01$). Road Traffic Accidents were the predominant cause followed by falls. Surgical operative management was necessary in 92 patients (41%) with abdominal trauma. Overall mortality was 11%, that for admitted patients 3% and post-operative mortality 7%.

Conclusion: The clinical profile of polytrauma and the management of abdominal trauma in a general hospital are presented. The need for updating the national trauma registry with uniformity in reporting polytrauma in Saudi Arabia is suggested.

INTRODUCTION

Polytrauma with multisystem injuries is a major cause of morbidity and mortality in both developed and developing countries. For example, in the United States approximately 60 million people are injured annually accounting for approximately one in six hospital admissions.¹ By 2020, bodily injuries are predicted to outpace infectious diseases worldwide in terms of years of productive life lost.² The Kingdom of Saudi Arabia is no exemption with increasing numbers of fast highways and high speed vehicles. The incidence and prevalence of polytrauma probably varies in different regions in Saudi Arabia. The most common causes are road traffic accidents (RTA), fall from heights, bullet injuries etc. This article represents the population in the central region of Saudi Arabia and needs to be compared with the statistics from other regions. For accuracy of comparison, there should be uniformity in defining polytrauma and major trauma. The trauma reporting system should also be organized well for proper documentation and establishment of a reliable database.

MATERIALS AND METHODS

Two hundred and forty-two patients brought to the emergency room of a general hospital in Saudi Arabia were included in this study. A retrospective analysis of the data documented in the medical records of these patients was done. The age groups, sex, nationality, etiological factors, and clinical features at the time of presentation were studied. The relevant investigations were evaluated.

Management was either conservative or operative; in the latter group the intraoperative findings were clearly documented. The post-operative morbidity and mortality were also assessed. Appropriate statistical tests were applied to get the statistical significance.

RESULTS

The majority of trauma was in the age group between 16 and 30 years of age. Males were affected significantly more often than females 19:1 ($P < 0.001$). Saudis took statistically non-significant preponderance over non-Saudis. Road traffic accidents were the predominant etiological factor followed by falls.

Figure 1

Figure 1: Age Distribution of Patients with Polytrauma

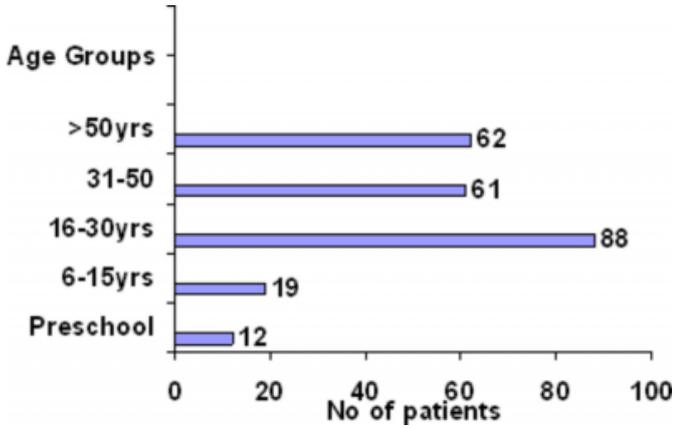


Figure 2

Figure 2: Sex Distribution of Patients with Polytrauma

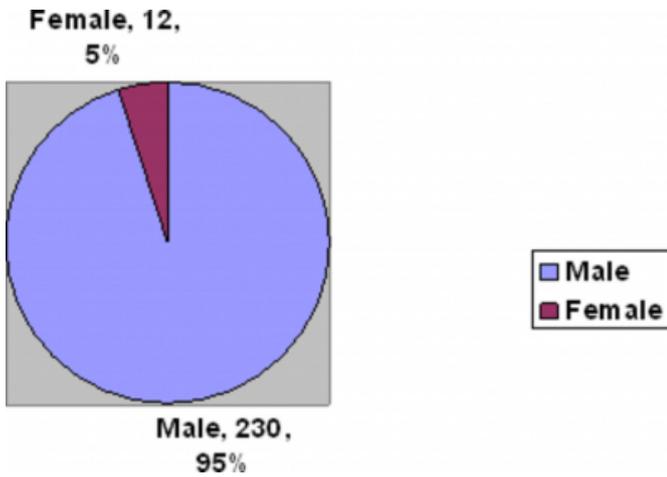


Figure 3

Figure 3: Distribution of Patients According to Nationality



Figure 4

Table 1: Etiological Factors in Polytrauma

Etiological Factor	Number of Patients
RTA	196
Fall	35
Stab	4
Bullet	3
Machine	4

The different types of trauma encountered are given in Table 2. The majority of patients with polytrauma had the chest as the predominant site followed by blunt abdominal trauma. Nineteen patients had mixed chest and abdominal trauma.

Figure 5

Table 2: Type of Trauma Encountered

Trauma	Number of patients
Chest, Abdomen, Head Injury and Fractures	165
Blunt abdominal	42
Chest only	24
Penetrating abdominal	7
Machine	4

One hundred and eighty-seven patients (84%) had abdominal pain as the presenting feature. Chest pain and dyspnea was the dominating clinical picture in 169 patients (76%). Shock was present in 84 patients (38%). External bleeding was evident in 51 (23%) and loss of consciousness in 58 (26%) (Table 3).

Figure 6

Table 3: Dominating Clinical Features in Patients with Polytrauma

Dominating clinical picture	Number of patients	Percentage
Abdominal Pain	187	84%
Chest Pain and Dyspnea	169	77%
Shock	84	38%
External bleeding	51	23%
Loss of consciousness	58	26%

The results of relevant investigations in patients with abdominal trauma are shown in table 4. Anemia requiring blood transfusion was present in 128 patients (57%) with polytrauma. Chest X-ray findings (fractured ribs, hemothorax and/or lung contusion) were evident in 80 patients (33%). Ultrasound of the abdomen was positive in 110 and DPL was positive in 35 patients. CT scan was positive for retroperitoneal hematoma in 25 patients.

Figure 7

Table 4: Relevant Investigations in Abdominal Trauma

Investigations	Number of patients
Anemia	128
X-ray positive	80
Ultrasound positive	110
DPL positive	35
CT scan positive for retroperitoneal hematoma	25

The general approach to management is shown in Table 5. Twenty patients were dead on arrival to the Emergency Room. One hundred and thirty patients were managed conservatively and 92 (41%) needed surgical intervention.

Figure 8

Table 5: Approach to Management

Management	Number of Patients
Conservative	130
Operative	92

The operative findings in the patients managed surgically were as shown in Table 6.

Figure 9

Table 6: Operative Findings in Patients with Polytrauma

Operative findings	Number of patients
Mesenteric tear	30
Splenic injury	14
Liver tear	12
Intestinal injury	18
Mixed liver and splenic injury	8
Soft tissue injury	18
Retroperitoneal hematoma	25
Pancreatic injury	8
Duodenal injury	4

The outcome of management was evaluated. The overall mortality of admitted patients was 3%. Six patients died post-operatively out of the 92 operated, making up a surgical mortality of 7%. The cause of death was multi-organ dysfunction. Three patients had complications after surgery and prolonged hospital stay.

DISCUSSION

Even though the nature of injuries varies with the type and mechanism of trauma, presence of multiple system injuries was the feature of polytrauma due to RTA. Males were affected significantly more often than females. This is because in Saudi Arabia the drivers are males and also belong to the younger age group. The clinical presentation depended on the predominant site of involvement. In this

series, abdominal pain was the presenting symptom in the majority of patients (84%) corresponding to the larger number of patients with abdominal trauma, followed by chest pain and dyspnea (77%). Shock was evident in 38%.

As regards investigations, anemia due to acute blood loss was present in 58% of patients. All of them required blood transfusion in varying amounts. X-rays were done according to the trauma protocol and additional X-rays according to the particular injuries. DPL was positive in 35 (16%) of patients. DPL may be misleading sometimes due to leakage of blood into the peritoneum from retroperitoneal hemorrhage.¹ There were no false positives in this series.

Management was conservative in 59%. After initial fluid resuscitation and stabilization definitive treatment was instituted. All chest trauma could be managed conservatively with or without intercostal drainage. Surgical management was necessary in the remaining 41% for abdominal trauma. Six patients with splenic injury were managed conservatively and eight required splenectomy. Out of the 18 patients with intestinal injury, eight required resection and end-to-end anastomosis and the other ten needed repair of perforation. The four patients with duodenal injury had posterior perforations which were closed surgically but post-operatively they were noted to have mild to moderate pancreatitis which settled gradually.

Mortality was 3% in the admitted patients; 20 patients were dead on arrival. The pattern of death after trauma in this study was comparable to the standard description in the text books¹ where the maximum mortality seems to happen during the first few hours of trauma. The post-operative mortality was 6.5% (six out of 92 patients) and was related to multiple organ involvement. Mortality increases between the ages of 44-55 years for same injury severity and is doubled above 75 years relative to 45 years.³ Trauma in the elderly population is also associated with increased risk of complications, intensive care and hospital stay.³

In the United States, trauma is the leading cause of death in children and adults up to an age of 44 years and kills more Americans of an age of 1-34 years than all diseases combined.¹ The total cost of injury in the US is estimated at approximately \$200 million per year and the cost was seen to increase continuously.^{4,5}

The pattern of polytrauma in our region is similar to other regions, with road traffic accidents dominating the picture in spite of the excellent traffic regulations existing in the Kingdom of Saudi Arabia. There is no available data about the total cost of care of patients with polytrauma in the Kingdom of Saudi Arabia. The problems of maintaining a national trauma registry and the difference in the reporting of polytrauma have to be addressed to get reliable data about polytrauma in the Kingdom of Saudi Arabia. In the policy briefing on provision of trauma care⁶, the Royal College of Surgeons of England recommends regionalization of care to specialist trauma centers which is shown to reduce mortality by 25% and length of hospital stay by 4 days.

CONCLUSION

A retrospective analysis of 242 polytrauma patients received in a general hospital in Saudi Arabia is presented. The need for updating the National Trauma Registry with uniformity of reporting polytrauma is suggested.

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