INTRA-ABDOMINAL VISCERAL INJURIES IN BLUNT ABDOMINAL TRAUMA

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ABSTRACT
Objective: *To find out the pattern of intra-abdominal visceral injuries in Blunt Abdominal Trauma.*
Study Design: *Case Series.*
Setting & Duration: *Non-probability purposive, Surgical Unit III, Civil Hospital, Karachi from May to Dec 2006.*
Methodology: *All patients, above the age of 14 years of either gender, who presented to the casualty department of Civil Hospital Karachi on the on call day of Surgical Unit III with Blunt Abdominal Trauma, were included in the study. Incident in which the injury was suffered was noted. Area of abdomen where impact of injury occurred was recorded with details to injury to skin if any were noted. Any patient with penetrating trauma beyond the skin was excluded from the study. Relevant descriptive statistics, frequency and percentage were computed for presentation of qualitative and quantitative variables presented by mean ± standard deviation.*
Results: *A total of 35 patients were initially recruited for the study yet two patients had to excluded from the study group; thus a total of 33 patients who consented to be included in the study formed the final group. Twenty out of 33 patients underwent exploratory laparotomy while 13 were managed conservatively Common clinical presentations were abdominal pain 85%, distension 54%, vomiting 30% and shock 27%. Liver injury is slightly higher (30.30%) as compared to the splenic injury (27.27%). Post-operative complication as chest infection, wound infection and sepsis developed in more than 12 cases and death occurred in 3 cases.*
Conclusion: *This study shows a similar pattern of clinical presentation and visceral injuries for blunt abdominal trauma, however higher percentages of surgical management could be attributed to lack of diagnostic and monitoring facilities..*

KEY WORDS: *Blunt Abdominal Trauma, Visceral Injury, Trauma, Liver Trauma, Splenic Trauma, Bowel Injury*

INTRODUCTION

Blunt abdominal trauma (BAT) presents special surgical problems and is a continuous challenge to the surgeon's ability to make an early diagnosis and provide adequate treatment.[1] Under the conditions of an increasing number of road traffic accidents and criminal injuries thoracic and abdominal trauma is a source of a significant morbidity and mortality in blunt and penetrating mechanism of injury.[2] Initial signs and symptoms of blunt abdominal trauma sufficient to reveal abdominal visceral injury in some cases, while other may need further assessment and investigations. Involvements of associated intra-abdominal organs like spleen; pancreas, bowel and liver with renal injuries have a higher rate of open operative management.[3]

The spectrum of injuries in blunt abdominal trauma show splenic injuries to be the most common injury,[4] management of blunt splenic injury remains controversial. Liver injuries are the second most common organ which is involved due to blunt abdominal trauma.[5] In all situations close observation of the patient is prerequisite. Laparotomy or laparoscopy must be decided in any case of suspected injury immediately. Per-operative mortality is mainly attributed to haemorrhage.[6]

Other organs involved is the gastrointestinal tract. Several features of the diagnosis and management of this injury are emphasized, including a strong association

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with thoracic trauma and a high incidence of intra-abdominal abscess formation which results from massive intraperitoneal contamination. The key to survival for these patients is early operative intervention and an aggressive approach to reoperation and drainage of abscesses.[7] Blunt small bowel and mesenteric injuries including patients with perforated or ischemic bowel are difficult to diagnose using currently available diagnostic tools, and require a low threshold for exploration based on clinical suspicion in order to reduce the complications following delayed treatment of these injuries.[8] Major gastrointestinal injuries are associated with a high mortality due to the severity and complexity of associated injuries. Morbidity from gastrointestinal injuries correlates to delays in diagnosis and management.[9] Pancreatic injury is infrequent and is more often associated with penetrating trauma rather than blunt abdominal injury. The clinician dealing with blunt abdominal trauma patients should be able to evaluate them clinically and use appropriate diagnostic procedures such as Ultrasound, Diagnostic Peritoneal Lavage and Computed Tomography when required.

METHODOLOGY

This prospective case series study was carried out on 33 patients who were presented with blunt abdominal trauma and were admitted to Surgical Unit III Civil Hospital Karachi from May 2006 to December 2006. Patients were included on non probability purposive bases.

All patients, above the age of 14 years of either gender, who presented to the casualty department of Civil Hospital Karachi on the on call day of Surgical Unit III with Blunt Abdominal Trauma, were included in the study. Incident in which the injury was suffered was noted. Area of abdomen where impact of injury occurred was recorded with details to injury to skin if any were noted. Any patient with penetrating trauma beyond the skin was excluded from the study; also patients who refused to be part of the study were excluded from the study.

The data were entered on a performa specially designed for the study which contained details about biodata, presenting complaints, clinical examination, relevant investigations, and diagnosis and per-operative findings. Data was analyzed by SPSS versoin 10.0. Ratio (M:F) was computed to present sex distribution. Mean ± SD was computed for presentation of age distribution. Frequencies and Percentages were computed for all categorized variables like clinical presentations, etiological factors and different organ injuries.

Chi-square test was applied to test the significance of clinical presentation and etiological factors. A p-value < 0.05 was considered statistically significant result.

RESULTS

A total of 35 patients were initially recruited for the study yet two patients had to excluded from the study group; both were transferred to a private medical centre and were lost to follow-up thus a total of 33 patients who consented to be included in the study formed the final group. Out of 33 patients 26(78.78%) were males and 7 (21.22%) females with ratio of 3.7:1 respectively. Nearly half (45.45%) of our patients were under the age of 45 years which is considered the most productive age group. Mean age of patients was 33.22 years.

Road traffic accident was the major cause of Blunt abdominal trauma by this mean 18(54.55%) were injured. 8(24.24%) had history of fall, 5(15.15%) were injured due to violence and 2(6.06%) had injuries caused by industrial accidents.

Twenty eight (84.84%) patients presented with Abdominal pain, 10(30.30%) patients vomiting, 18(54.54%) had abdominal distension, 2(6.06%) patient with haematuria 9(27.27%) patients were brought with shock, bowel sounds were absent in 25(75.75%) and tenderness were positive in 20(60.60%), while13 were treated conservatively which include patients who sustained liver injuries 5 with splenic injuries and one with renal involvement while 20 patients under went different surgical procedures.

Hepatic injury were present in 10(30.30%) patients, among these 70% (7) patients had I or II injuries, 2 patients (20%) had grade III and one (10%) had grade IV hepatic injury. seven patients with liver injury were treated conservatively while 3 under went different operative procedures. one patient had associated injury

Table I. Frequency of organ injury in blunt abdominal trauma

Organ	Frequency	%
Liver Injury	10	30.30
Spleen Injury	9	27.27
Gut Injury	7	21.21
Retro Peritoneal Injury	3	9.09
Renal Injury	2	6.06
Pancreatic Injury	1	3.03
Urinary Bladder Injury	1	54.54

of colon and one patient has retro peritoneal haematoma. Spleen was injured in 9 patients (27.27%), 4(44.44%) of them had grade I injury, grade II injury were present in 3 patients (33.33%) and two patients (22.22%) had grade III injury. Associated rib fracture was present in three patients.

Seven patients (21.21%) had intestinal injuries. Small gut was the most involved part of intestine. Out of seven, 4 patients (57.14%) had small gut (jejunum and ileum) injury among these two had associated mesenteric tear, 2 patient (28.57%) with stomach and duodenum injury and one patient (14.28%) had large gut involvement with associated liver injury most common associated injury was mesenteric injuries was present in three patients while retro peritoneal haematoma in one patient. Pancreas was involved in one patient (3.03%) which was associated retroperitoneal haematoma. Three patients (9.09%) had retroperitoneal injury with non-expanding haematoma. Renal involvement was present in 2 patient (6.06%) out of 2 one had grade I injury and other had grade II injury associated retroperitoneal haematoma. Only one patient (3.03%) had urinary bladder injury which was intra peritoneal.

DISCUSSION

This study of 33 cases highlights some important aspects of patients who presented with blunt trauma abdomen in accident and emergency department of Civil Hospital, Karachi which is a major city of Pakistan with many social, financial and law related situations that directly or indirectly contribute towards the increased incidents of trauma. This study found that most (57.75%) of the trauma victims are between the ages of 13 to 45 years, which are most productive years of life.

In this study 14(42.42%) patients were between the ages of 31 to 45. It was almost same as in other studies conducted, by Alli[1] in Nigeria, in India by Mohapatra[10] and by Khan[11] in Lahore. Males and female ratio is 3.7: 1 in this study. These results are very close to study done in Belgium by Ceelen[12] while with little difference of results 5.1:1 in study conducted in Lahore.[5] Approximately 54% cases were Road Traffic Accidents. Road traffic accidents are the most common factor, which lead to BAT as identified by different studies world wide, such as 62% by Mahapatra[10] and 80.6% by Edino.[13]

The next major cause was fall from height 24.24% these are more than double from study done in Liverpool Hospital by Smith[14] which shows 7% cases of fall most incidences of these fall was found to be in construction workers working in building. Violence related injury was third position in this study; 15.15% these result can be compared with the study done by Smith[14] in which 24% cases were due to violence. Industrial accidents were 6.06% mainly due to fall of heavy objects on the abdomen such as iron bar or blocks of concrete heavy wooden pieces. In this study the most common organ to be injured is the liver it was involved in 30.30% i.e. 10 cases out of 33 cases.

The study by Khan[11] showed a 21% figure for this mode of injury while in the data presented by Ghazanfer[5] it was reported as 35%. In the presented study 70% patients had grade I and II injuries where as in study done by Khan[11] in Lahore shows 60% hepatic injuries of grade I and II. Second common injured organ was spleen which was injured in 9 case (27.27%), the results of this study are almost same as in study by Smith[14] in which involvement of spleen is 25%. While in other study by Ghazanfar[5] in which splenic involvement was 56%, study by Edino[13] showed splenic involvement to be 58.1%. Third most common involved organ in blunt trauma was Gastro-Intestinal Tract (GIT) 7 cases (21.21%) in this study. Results of this study are different from study by Uppot[15], which shows involvement of GIT is only 5% of cases. This is in direct contrast to figures from this study. On the fourth place in this study is retroperitoneal haematoma (9.09%) in association with pancreas and kidneys injuries. Involvement of kidney was 6.06% in this study it is almost same as described in study by Yao[16] (11%). Mesenteric injuries in 2 patients which were associated with small bowel injuries. Urinary bladder was injured in one case which is similar to what was described by Rodder.[17]

CONCLUSION

A similar pattern of clinical presentation and visceral injuries for blunt abdominal trauma is seen, however higher percentages of surgical management could be attributed to lack of diagnostic and monitoring facilities.

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EDITOR'S NOTE

This article was submitted by the corresponding author following the demise of S. Manzar (Manzar Salim) and all other co-authors verified that S. Manzar was involved at every stage of conducting the study and writing it.