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Original Research Paper

General Surgery

CLINICAL EVALUATION AND OUTCOME OF BLUNT TRAUMA ABDOMEN- AN INSTITUTIONAL EXPERIENCE

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ABSTRACT

Background- Blunt trauma of the abdomen is still considered one of the most common emergencies that haunts the accident and emergency departments. Blunt injury abdomen remains the leading cause of death in all age groups. Road traffic accidents and fall from height are the most common cause of mode of injury. Injury to solid organs liver and spleen are most commonly noted. As the presentation to emergency department differs due to co existence of other injuries like head injury and fractures. Need a proper clinical vigilance to rule out possible blunt injury abdomen patients. This study is done to evaluate the incidence according to age and sex and possible mode of injury and presentation in patients. This study analyses the imaging needed and treatment options in a blunt injury abdomen and its outcome.

Method- This is a Prospective Observational Descriptive study was conducted in tertiary care center in Kadapa from January 2020 to January 2021. Study was done on 54 patients with blunt abdominal injuries who reported to emergency department. Patients were selected for the study based on following inclusion and exclusion criteria.

Results- Total Fifty four patients were admitted with blunt abdominal trauma and other injuries at Emergency department. It was noted, majority of the patients belonging to the 21-30 years age group (34.5%) with male sex predominance. Road traffic accidents amounted to 52% as major mode of injury. Patients were evaluated with imaging modality. Of all the patients most common organ injured were spleen (23) followed by liver in 15 patients and pancreas in 6 patients. In our study 40 patients managed conservatively and 10% of conservative management succumbed to death. Remaining 14 patients underwent surgical intervention for splenic injury in 7 patients and hallow viscus injury in 5 patients.

Conclusion- As blunt injury abdomen is the leading cause of death in trauma, high clinical suspicion index is needed for early intervention. With timely evaluation and intervention, the mortality and morbidity can be reduced. With our study it was noted conservative management in hemodynamically stable patient with intensive care has better outcome.

KEYWORDS :

INTRODUCTION

Blunt trauma of the abdomen is still considered one of the most common emergencies that haunts the accident and emergency departments. Most often, injuries to internal organs in the abdomen are missed, which significantly increases morbidity and mortality with every moment of delay in diagnosis[1]. When we consider abdominal injuries intoto, we find that blunt trauma accounts for 85% of the cases presenting to the emergency department [2]. Seen in about 16% of cases of blunt trauma abdomen, trauma is the leading cause [2]. Abdomen, world over, is the 3rd most injured region of the body, with spleen and liver being the most common organs involved [2]. Despite the high morbidity and mortality, only 25% of cases require surgical intervention[3].

Unlike other injuries, clinical examination in blunt trauma abdomen is often inconclusive, as the injuries may be concealed, and patient may have associated altered sensorium and other injuries that divert out attention away from the abdomen[2]. A careful history of the mode of injury, including onlooker description of the events, if available, can be particularly helpful in identifying hidden dooms in the abdomen. Aggressive resuscitation, radiological evaluation (FAST scan and CT scan) help in early diagnosis of such injuries. In those patients with refractory hypotension and life threatening blood loss is suspected, damage control laparotomy is done at the earliest to prevent further hemorrhage and sepsis [3].

METHODS AND MATERIALS

This is a prospective study of 54 patients of blunt trauma abdomen presenting to the Emergency department of Government general hospital, Kadapa from January 2020 to January 2021. Patients were recruited from the Emergency department once there was a documented blunt abdominal trauma after a written informed consent for participating in the study if they satisfied the inclusion criteria.

Inclusion Criteria-

1. Patient's age >18 years
2. Those who gave consent to be included in the study
3. Patietns with history of blunt abdominal trauma to the emergency department.

Exclusion Criteria-

1. Moribund patients
2. Pediatric age group
3. Patients that are dead on arrival
4. Patients unwilling for inclusion study

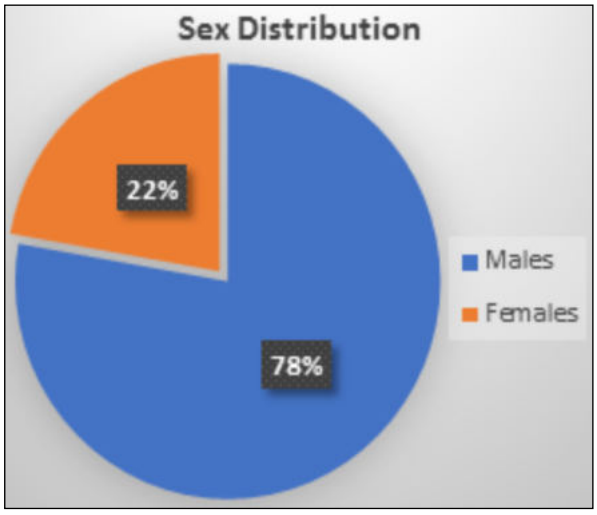
New Injury Severity Score (NISS) was applied for all patients satisfying the inclusion criteria. Score of <16 was mild, 16-24 moderate and>24 was severe injury respectively (4). The systolic BP was categorized into two categories: ≥ 90mmHg and<90mmHg. GCS was recorded for all patients and was categorized as mild (13–15), moderate (9–12), and severe (3–8).

In a semi-structured pro forma, the demographic details, time of presentation, mode of injury, clinical examination, physical findings, and the results of the radiological assessment were recorded. The details of the diagnosis, hemodynamic stability,

and the immediate management plan (conservative vs surgical) was also recorded. Those patients that underwent surgical intervention, the details of the intra-operative findings and the procedure performed was noted. Any evidence of post-operative complications, associated extra-abdominal injuries and mortality was recorded. Patients in which non-operative management failed, the details of the damage control surgeries were recorded.

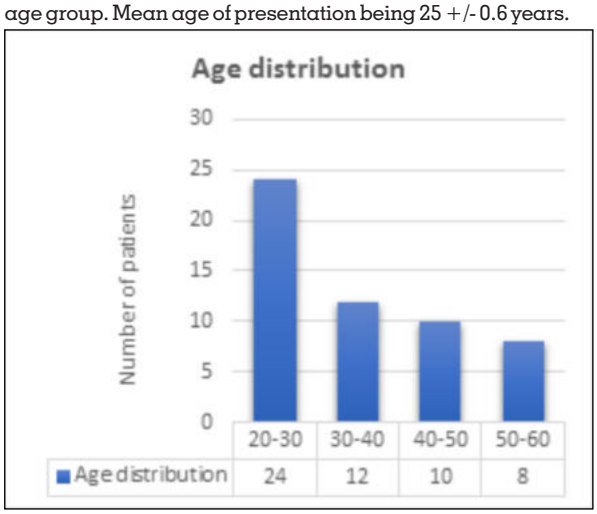
RESULTS

This study included 54 blunt trauma patients. 42 (78.4%) were males and 12 (21.6%) females.



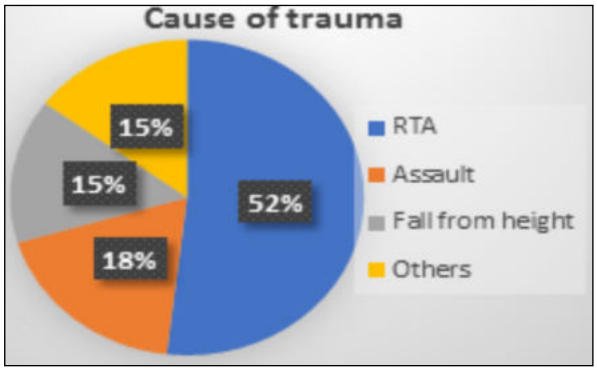
Age Distribution

Majority of the patients in our study belonged to 21-30 years age group. Mean age of presentation being 25 +/- 0.6 years.



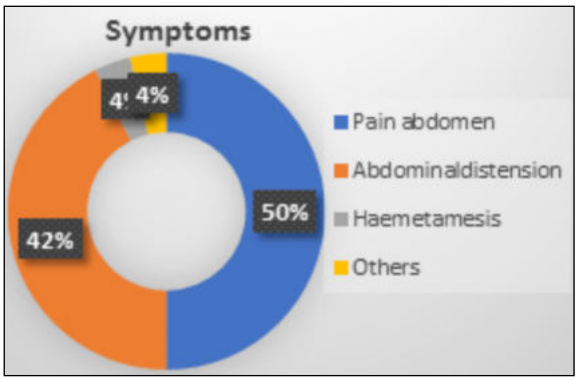
Cause Of Injury

The leading cause of blunt injury abdomen in our study was road traffic accidents involving both vehicular injuries and pedestrian trauma accounting for 52% of the patients (28).



Clinical Features

Majority of patients presented with pain abdomen (27 patients) followed by abdominal distension (23 patients).



Among the clinical signs evaluated, diffuse abdominal tenderness and guarding was found in 37 (69.6%) patients, whereas 24 patients (44.4%) were in hypovolemic shock.

In this study, 26 (48.1%) patients had severe injuries on the NISS scale. A total of 17 (31.4%) patients had moderate head injuries and 5 (9.25%) patients had severe head injuries on the GCS. On admission, 11 (20.37%) patients had a systolic blood pressure<90mmHg.

Investigations

All patients coming to the emergency department with suspected abdominal injury underwent FAST scan. Forty patients had hemorrhage noted on the scan. Those patients that had abdominal injury, with a normal or inconclusive FAST scan underwent CT abdomen and pelvis. In two patients, due to hemodynamic instability, diagnostic peritoneal aspiration was performed, which revealed a bloody tap.

Out of the 54 patients with blunt trauma abdomen, 40 were managed conservatively, while remaining 14 underwent emergency laparotomy. Of these, 2 were negative laparotomies. Seven patients required splenectomy for Grade IV splenic laceration. Of those 7, two had additional retroperitoneal hematomas.

Four patients (3 duodenal perforation and 1jejunal perforation) underwent laparotomy and repair of the perforation. In one patient in whom there was a mesenteric tear with gangrene of the bowel, resection of the involved bowel with end to end anastomosis was performed. Of all the patients presenting to the emergency, spleen was the most common organ injured (23) followed by liver (15) and pancreas (6).

Organs Injured	No of cases
Spleen	23
Liver	15
Pancreas	6
Kidney	1
Perforation	
Duodenum	3
Jejunum	1
Mesenteric Tear	1

Extra Abdominal Injuries

Chest (25) was the most commonly injured extra abdominal region, followed by extremities (23) and head (22).

Post-operative Complications

Out of 14 patients who underwent laparotomy, two patients developed surgical site infection (SSI) and one patient developed bile leak. SSI was treated with drainage of pus and antibiotics based on culture and sensitivity report. Patient who developed bile leak was treated conservatively. In one patient

who underwent splenectomy there was excessive bleeding from drain which required re exploration and ligation of actively bleeding short gastric vessel. The were no mortalities among the patients who underwent surgery. However, 4/40 patients who were treated conservatively succumbed to the trauma. The cause of death in these cases at autopsy found to be retroperitoneal concealed hematoma in 2 patients and intracranial hemorrhage in 2 patients.

DISCUSSION

Blunt trauma abdomen is the leading cause of morbidity and mortality in an emergency setting. However, most cases can be managed conservatively. However, management of a blunt trauma abdomen is like attempting to open a pandora's box; leaves even the best traumatologists baffled. Since the viscera in the abdomen are well hidden, the injuries are often masked. Additionally, external injuries, head injury, open fractures, and other wounds etc, may distract from the impending exacerbation of the abdominal injury.[5]

In this study, we found that the most common patients impacted by blunt trauma abdomen were males, usually following vehicular accidents. This was comparable to a study done by Kruel et al[6] and Anarase et al[7]. RTA was the most common cause of blunt trauma abdomen similar to the reported by Anarase et al[7], Rahman et al[8] and Arumugan et al[9].

Cause of injury	Present study	Anarase et al [7]	Rahman et al [8]	Arumugam et al [9]
RTA	52%	65.76%	67%	61%
Others	48%	34.24%	33%	29%

In this study, the most common presentation was pain abdomen, followed by abdominal distension. In a study done by Pariera et al [10], hemorrhagic shock was the most common presentation.

Management	Present study	Umare et al [11]	Rahman et al [8]
Conservative	83.3%	58%	53.52%
Surgical	16.7%	42%	46.48%

In this study, liver and spleen was the most common solid organ injury noted, which was similar to findings of Anarase et al[7], where they reported Spleen and Liver to be the most common viscera injured.

Mortality- Present Study	Arumugam et al [9]	Kurane et al [12]
10%	8.3%	22.22%

In our study, majority of the patients (83.3%) that were hemodynamically stable, were managed conservatively which was similar to study by Umare et al and team [11], where 58% patients were managed conservatively and Rahman et al [8] who found that 53.52% patients with solid organ injuries were managed conservatively. However, those patients with bowel perforation, grade III/IV splenic and liver injury or hemodynamic instability, were considered for early damage control surgery.

None of the patients recruited in this study succumbed to their injuries following operative management. However, there was 10% (4/40) mortality in those patients managed conservatively. In a study conducted by Arumugam et al [9] the mortality was 8.3% where as Kurane et al [12] encountered mortality which was as high as 22.22%.

CONCLUSION

Blunt trauma abdomen is a leading cause for mortality and morbidity in an emergency setting and is a challenging task due to the concealed nature of most injuries. While most injuries can be managed conservatively, haemodynamically unstable patients and patients with hollow viscus injury require early damage control surgery to prevent mortality.

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