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A RETROSPECTIVE STUDY ON OUTCOMES OF BLUNT TRAUMA ABDOMEN IN A TERTIARY CARE HOSPITAL

General Surgery

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ABSTRACT

Background: The abdomen is a commonly injured body region and frequently requires the care of a surgeon for definitive management. Inspite of improved imaging techniques it is still associated with high morbidity and mortality. Road traffic accident (RTA) is the most common mode of injury to cause blunt abdominal trauma. Diagnostic modalities like FAST and CT scans have caused a significant change in the trends regarding management from surgical to a more conservative approach. **Aim:** The aim of the study is to evaluate the outcomes of blunt trauma abdomen in context of age, sex, mode of injury, clinical presentation, role of investigation and management of patients presenting with blunt abdominal trauma. **Materials and Methods:** This is a retrospective study conducted in Kanyakumari Government Medical College from December 2022 to December 2023 based on 60 cases of blunt abdominal trauma. **Results:** In our study, road traffic accidents (RTA) were the most common cause of blunt abdominal trauma (67%) with 80% patients being males. FAST and CT abdomen were the most sensitive investigation for hollow viscous injury and solid organ injuries, respectively. In our study Spleen is the most common organ involved . Most of the solid organ injuries can be managed non- operatively whereas hollow viscous injury needs laparotomy. The most common cause of death was septicaemia. **Conclusion:** RTAs form the most common mode of injury; hence, measures should be taken to prevent these accidents and care of the victims at the accident site. Rapid diagnosis, early and timely referral, adequate and trained staff, close and careful monitoring, early wise and skilled decision to go for operative or non-operative management can help save many lives.

KEYWORDS

Blunt injury abdomen, Road traffic accidents, Mortality

INTRODUCTION

The abdomen is a commonly injured body region and frequently requires the care of a surgeon for definitive management. In the setting of blunt trauma, solid organs often sustain contusion or laceration, causing bleeding that may require surgical management. Furthermore, blunt forces can cause rup- ture of hollow viscera due to rapid compression of a segment of in- testine containing fluid and air[1]. Even though the abdomen remains one of the most critical and vulnerable anatomic regions in blunt trauma, a standard, systematic approach of the entire patient must always be conducted—without exception[2]. Abdomen is a diagnostic black box[3]. India is the leading country in the number of deaths due to Road traffic accidents[4]. The spleen, in alternation with the liver, is the first or second most commonly injured abdominal organ, and isolated splenic injury comprises approximately 42% of abdominal trauma[5].

Blunt trauma to the abdomen needs to be carefully evaluated to increase the chances of patient survival. Swift use of diagnostic modalities and vigorous therapy to attend immediate life- threatening problems should be administered. Focused assessment with sonography for trauma or FAST has emerged as a useful tool in the evaluation of blunt injury abdomen. Unavailability or unaffordability of diagnostic modalities mandate opening the abdomen for diagnosis rather than waiting[6]. Non operative management (NOM) for blunt abdominal trauma was found to be highly successful and safe. Over the past several decades, rates of nonoperative management in splenic trauma has increased from roughly 40% to 70% with coincident decreases in mortality among the higher grades of injury. In view of increasing number of vehicles and consequently road traffic accidents (RTAs), this study has been chosen to study the cases of blunt abdominal trauma.

MATERIALS AND METHODS

A retrospective study of 60 cases of blunt abdominal trauma patients presenting to Kanyakumari Government Medical College from December 2022 to November 2023. Data collected from medical records department about resuscitation, clinical history, examination, laboratory test, X ray, ultrasonography (FAST) was done to arrive at the diagnosis. CT scan was done in most of the cases. Patients were categorised to stable vs unstable. The progress of patients was closely monitored and decision was taken to either continue with conservative management or to undertake laparotomy. Patients who did not respond to conservative management and were hemodynamically unstable and continued to deteriorated espitead equate resuscitation or had evidence of bowel and solid organ injury were taken for immediate laparotomy. Inferences were made for various variables like age, sex, etiology, signs and symptoms, time of presentation of the patient, operative managements, post operative complications and mortality.

RESULTS

A total of 60 patients were observed and the observations were interpreted in form of charts and tables.

About one third of the patients were of > 40 years (38%) followed by 31 -40 years age (28%), 21-30 (22%) and <20 (12%) years (table 1). Among all the patients, 48(80%) were males (table 2). About three fourths of the patients had RTA (67%) followed by assault(23%) and self fall (10%) as their mode of injury (table-3).

Spleen was found to be the most commonly organ injured (35%). Liver was found to be the second most commonly organ injured(25%) (figure- 4).

Fig 1: Age Distribution

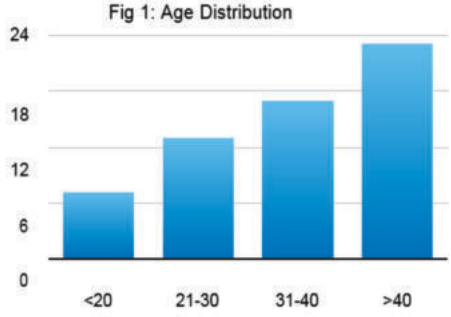

Table-1 : Age Distribution

Age in years	No. (n=60)	%
<20	7	12
21-30	13	22
31-40	17	28
>40	23	38

Table 2 : Gender Distribution

Gender	n (=60)	%
Male	48	80
Female	12	20

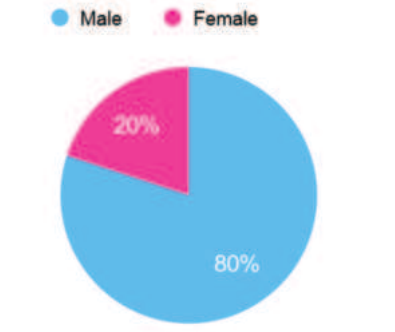

Fig-2 : Pie chart showing gender distribution

Table 3 : Mode Of Injury

Mode of injury	No(n=60)	%
RTA	40	67
Assault	14	23
Self fall	6	10

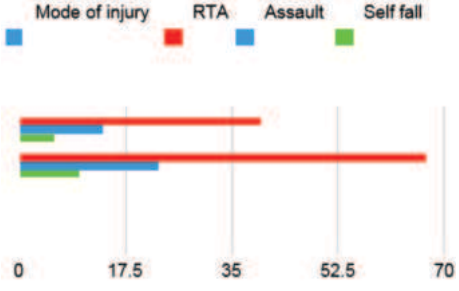

Fig-3 : Barchart showing mode of injury

Table-4: Depicts The Commonly Injured Organ

Organ injured	No (n=40)	%
Spleen	14	35%
Liver	10	25%
Small bowel	8	20%
Large bowel	1	2.5%
Pancreas	0	0
Kidney	2	5%
Urinary bladder	1	2.5%
Mesentry	4	10%

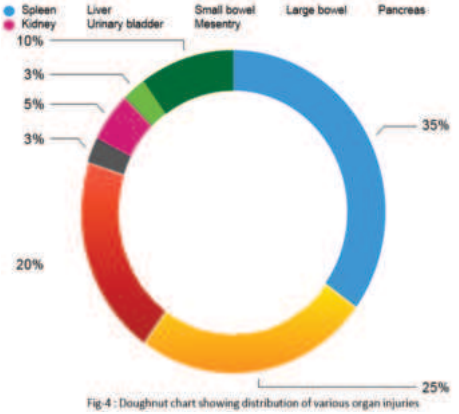

Fig.4 : Doughnut chart showing distribution of various organ injuries

Table 5 : Management Of Abdominal Injury

Management	No.(n=60)	%
Surgery	23	38
Conservative	37	62

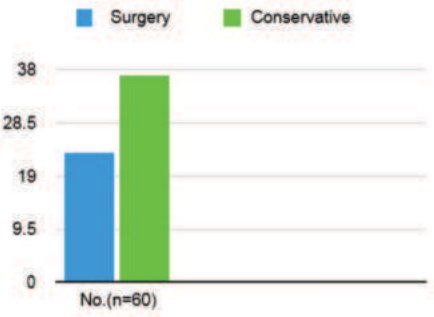

Fig 5 : Barchart showing management of blunt abdominal trauma

In our study mortality was observed in 6 cases , 1 in intra - operative period. Commonest cause was irreversible shock (2 cases), followed by cardiopulmonary arrest (1). Splenic injury, hepatic laceration accounted for the above. Post operative complication most commonly encountered was septicaemia (3).

DISCUSSION

Trauma is one of the most common causes of death in the young population. Blunt abdominal trauma (BAT) is very common, and the prevalence of intra-abdominal injury following it has been reported to be as high as 12–15%. The mechanisms resulting in BAT were motor vehicle collision (73 %), motorcycle collision (7%), auto-pedestrian collision (6%) and fall (6%).[7]

The abdomen is the third most common injured region, in 25% of cases which required surgical interference. Abdominal trauma is classified as either blunt or penetrating.

Penetrating abdominal trauma is easily diagnosed, while blunt trauma complications can be missed if the clinical signs are not evident.[8]

Hemodynamic instability, disturbed level of consciousness and presence of other injuries in the skull, chest, pelvic bones or extremities, all explain the need of an accurate and rapid imaging tool to diagnose associated abdominal visceral injuries[9].

Present study was carried out in the Kanyakumari government medical college, TamilNadu with the objective to study blunt trauma abdomen with respect to management and outcome in a tertiary care hospital.

A total of 60 blunt trauma abdomen patients were included in the study. About one third of the patients were of > 4 0 years (38%) followed by 31-40 years age (28%), 21-30 (22%) and <20 (12%) years. Anarase and Anarase (2019)[10] found that of the 260 patients of blunt trauma abdomen, the most common age group was 21-40 years. In the study by Umare et al (2018)[11], the most cases of blunt abdominal trauma were between the age group of 11-40 years (76%). Rahman and Das (2018)[13] found that the commonest age group was 21 to 30 years comprised about 39% of BAT patients. The average age was 30.82 years. Shah et al (2017)15 studied 34 patients of BAT. 29.4% of patients were in the age group of >20-30 years with the mean age 35.29 ± 15.84 years. Majority of patients were males (80%) in this studyAs in this study, Anarase and Anarase (2019)13 found that male predominance (62.70%) seen in patients of blunt abdominal trauma. Umare et al (2018)[11] also found that males were predominantly affected of blunt abdominal trauma. About half of the patients sustained RTA (67%) followed by assault (23%) and self-fall (1p%) in the present study. Anarase and Anarase (2019)[10] also found that road traffic accidents were the predominant cause of trauma.

In the study by Rahman and Das (2018)[13], the most common cause of BAT was found to be road traffic accidents (67%) which was slightly higher than the present study. Shah et al (2017)[12] also found that road traffic accident was responsible for 79.4% of blunt abdominal trauma cases. Arumugam et al (2015)[14] showed that road traffic accidents (61%) were the most frequent mechanism of injury followed by fall

from height (25%) and fall of heavy object (7%). Ultrasound i s non-invasive, portable investigation using non ionizing radiation, repeatable, and easily performed in the emergency unit, at the same time with resuscitation methods.

Focused abdominal sonography for trauma (FAST) is a fast examination method that could demonstrate intraperitoneal fluid. Several studies found this technique to be sensitive (79–100%) and specific (95.6– 100%), particularly in hemodynamically unstable patients.[15]

In the present study, spleen was the most commonly injured organ (35%). Liver was the second most common organ injured (25%) followed by small bowel (20%).

In this study, conservative management was done in more than half of patients (62%). With respect to operative management, Splenectomy (13.3) followed by Bowel perforation repair was done in more than half of patients that were operated (11.6%) and Peri hepatic packing for liver trauma (6.66%). Anarase and Anarase (2019)[10] showed that the commonest procedure done was Splenectomy (34.8%). Umare et al (2018)[11] showed that 58% patients of BAT were managed conservatively while operative interventions were required in 42% patients. Common surgeries performed in the studied cases included splenectomy (28.57%), primary closure of perforation (23.80%) and resection and anastomosis (19.04%). Rahman and Das (2018)[13] showed that 53.52% of patients having solid organ injured were managed conservatively. Out of 60 operative cases, 25 (41.7%) cases were operated within 3-6 hours. Shah et al (2017)[12] showed that 9 (26.5%) patients underwent exploratory laparotomy. 25 were selected for non-operative management. This study found that the mortality was observed in 10% of patients. Shah et al (2017)[12] found that mortality was among 8.8% BAT patients. Arumugam et al (2015)[14] found that the overall mortality was 8.3% and late mortality was observed in 2.3% cases mainly due to severe head injury and sepsis. The predictors of mortality were head injury, ISS, need for blood transfusion, and serum lactate levels.

CONCLUSION

It was observed that road traffic accidents was the most common cause of blunt abdominal trauma in this study, involving age group more than 40 years most commonly. Males sustaining blunt abdominal trauma outnumbered the females. Diagnostic investigations like FAST, and CT scan form an important tool in the management of these trauma patients. Among the solid organs, spleen and liver were the most commonly injured organs and bowel injury was also seen in a significant number of patients. As stated before, conservative approach is preferred over surgical approach as it is safe and effective if followed judiciously. Strict adherence to the traffic rules, improving the road conditions, pedestrian lights, pedestrian overpasses etc may reduce the chances of accidents and therefore abdominal trauma. Delayed presentation, involvement of more than one intra-abdominal organ, presence of extra-abdominal injuries and associated co- morbid diseases increases the morbidity and mortality in these patients. Early diagnosis, aggressive resuscitation and timely surgical intervention may improve the outcome in trauma patients.

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Ethical Approval: The study was approved by the ICMR APPROVED Ethics Committee.

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