

Original Research

Assessment of clinical presentation and pattern of visceral injury in patients of blunt abdominal trauma

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ABSTRACT:

Background: The study was planned to evaluate the clinical presentation and pattern of visceral injury in patients of blunt abdominal trauma. **Materials & methods:** The present study was conducted on 100 patients admitted in the surgical ward, with blunt trauma abdomen (BAT). On presentation, an assessment of the vital functions was done. Primary survey was focus on the ABC of resuscitation i.e. restoration of airway, breathing and circulation. Simultaneously recording detailed history including demographic profile, mode of presentation, time of presentation, clinical profile and haematological investigations like Hb, BT,CT, TLC ,DLC, RBS, Blood Urea, serum creatinine, serum electrolytes, serum amylase was done. Clinical profile was recorded separately. **Results:** Mean age of the patients was 32.8 years. In 55 percent of the patients, age group was 21 to 40 years. Majority proportion of patients were males and mode of trauma was road traffic accident. Abdominal distension, Abdominal tenderness, Pain abdomen, Guarding, Hematemesis, Haematuria, Pallor, Obliteration of liver dullness, shifting dullness and Hematoma/ Bruise/Abrasion were seen in 78 percent, 95 percent, 100 percent, 39 percent, 10 percent, 12 percent, 58 percent, 41 percent, 15 percent and 5 percent of the patients respectively. **Conclusion:** Unlike penetrating abdominal trauma, where management is largely determined clinically, the diagnosis of blunt abdominal injury by clinical examination is unreliable, particularly in patients with a decreased level of consciousness. Confirmation of the presence or absence of injury therefore relies largely on the use of diagnostic adjuncts. Late diagnosis and missed injuries are associated with poor outcome.

Key words: Abdominal, Blunt, Trauma, Visceral

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INTRODUCTION

Blunt abdominal trauma (BAT) is a frequent emergency and is associated with significant morbidity and mortality in spite of improved recognition, diagnosis and management. Trauma is the second largest cause of disease accounting for 16% of global burden. The World Health Organization estimates that, by 2020, trauma will be the first or second leading cause of years of productive life lost for the entire world population.¹⁻⁴ Abdominal trauma, especially those caused by blunt force is a leading cause of morbidity and mortality in all age groups, but it is one of the most challenging conditions emergency department physicians encounter because of varied presentations. The difference in severity between presenting symptoms

and actual injuries in a significant number of cases makes the rapid diagnosis and management for such patients more complex. While managing abdominal trauma patients, it should be kept in mind that a seemingly minor injury can also be a cause for major intra-abdominal organ injuries, and rapid yet efficient detection of such injuries should be the goal to significantly improve the patient outcomes.⁵⁻⁸

MATERIALS & METHODS

The present study was conducted on 100 patients admitted in the surgical ward, with blunt trauma abdomen (BAT). On presentation, an assessment of the vital functions was done. Primary survey was focus on the ABC of resuscitation i.e. restoration of airway, breathing and circulation. Simultaneously

recording detailed history including demographic profile, mode of presentation, time of presentation, clinical profile and haematological investigations like Hb, BT,CT, TLC ,DLC, RBS, Blood Urea, serum creatinine, serum electrolytes, serum amylase was done. Clinical profile was recorded separately. All the results were analysed by SPSS software. Chi- square test and One Way ANOVA were used for assessment of level of significance. P- value of less than 0.05 was taken as significant.

Mean age of the patients was 32.8 years. In 55 percent of the patients, age group was 21 to 40 years. Majority proportion of patients were males and mode of trauma was road traffic accident. Abdominal distension, Abdominal tenderness, Pain abdomen, Guarding, Hematemesis, Haematuria, Pallor, Obliteration of liver dullness, Shifting dullness and Hematoma/ Bruise/Abrasion were seen in 78 percent, 95 percent, 100 percent, 39 percent, 10 percent, 12 percent, 58 percent, 41 percent, 15 percent and 5 percent of the patients respectively.

RESULTS

Table 1: Distribution of subjects according to age

Age group (years)	Frequency	Percentage
<20	10	10
21-40	55	55
41- 60	15	15
>60	20	20
Total	100	100

Table 2: Distribution of subjects according to aetiology

Aetiology	Frequency
RTA	79
FFH	15
Alleged assault	6
Total	100

Table 3: Distribution of subjects according to clinical signs and symptoms

Sign/ Symptom	Frequency
Abdominal distension	78
Abdominal tenderness	95
Pain abdomen	100
Guarding	39
Hematemesis	10
Haematuria	12
Pallor	58
Obliteration of liver dullness	41
Shifting dullness	15
Hematoma/ Bruise/Abrasion	5

Table 4: Distribution of subjects according to FAST

FAST	Frequency	Percent
Absent	4	4
Present	96	96
Total	100	100.0

DISCUSSION

Several high quality prospective and retrospective studies have shown non-operative management of solid organ injury to be safe and effective, and this strategy is now accepted into mainstream practice. In parallel, a paradigm shift has occurred in imaging algorithms, with greater emphasis being put on the detection of specific findings, rather than the mere detection of intraperitoneal fluid, which does not predict the need for intervention.⁵ The greater availability of computed tomography and ultrasound in emergency departments has contributed to changes in practice, but it has also created new controversies—

diagnostic peritoneal lavage is now rarely performed, but the diagnosis of hollow viscus injury by imaging alone remains contentious. The spleen and liver are the most commonly injured organs as a result of blunt trauma. Clinical examination alone is inadequate because patients may have altered mental status and distracting injuries. Initial resuscitation along with focused assessment with sonography in trauma (FAST) and computed tomography (CT) abdomen are very beneficial to detect those patients with minimal and clinically undetectable signs of abdominal injury and are the part of recent management guidelines.

Approach to trauma should be systemic and prioritize.⁶⁻¹⁰

Iqbal Y, Taj MN, Ahmed A, Ur Rehman Z et al (2014) determined the validity of assessment with sonography for trauma (FAST) scans in the evaluation of BAT in comparison to Computed tomogram/Exploratory laparotomy (CT/FLAP). The validity of FAST scan in comparison to CT/ELAP was documented. Their study included 100 patients with suspected blunt abdominal trauma. The mean age was 31.52 ± 16.79 years with 88% males. Road traffic accidents accounted for 80% cases and 20% were due to fall. Seventy percent were hemodynamically stable and 30% were unstable. Haemodynamically unstable patients had significantly more positive FAST scans and more positive CTIELAP ($p < 0.05$). Of the total, 52% had positive CTIELAP and 54% had positive FAST scan. Majority (28%) had splenic injury. A positive scan had a statistically significant probability of a confirmed blunt abdominal trauma on CT/ELAP; $p = 0.00$, OR = 8.095, 95% CI = 3.3-19.8. FAST scan had a sensitivity, specificity, positive predictive value and negative predictive value of 76.92%, 70.83%, 74.07% and 73.9% respectively. FAST scan had lesser accuracy as compared to previously published local and international data. More work is required before it can be routinely utilized to triage the blunt abdominal trauma patients to laparotomy.¹¹ Karki OB (2015) determined the validity of CT scan as an accurate diagnostic tool and its role in management of patients with blunt abdominal trauma. Demographic data, mechanism of trauma, management and outcomes were studied. Organ injuries were graded using the Organ Injury Scale guidelines. Most of the patients in our study were in the age group of 21-40 years with an M: F ratio of 2.3:1. Road traffic accident (47.5%) was the most common mechanism of injury. Spleen (27.5%) was the commonest organ injured. CT scan was superior to FAST scan and had sensitivity of 97.3% specificity 75% positive predictive value 98.6%. FAST scan had sensitivity of 78.9%, specificity 50%, positive predictive value 96% with p-value of 0.0034. 81% of patients were conservatively managed. In conjunction with close clinical monitoring, CT scan is reliable in the evaluation and management of blunt abdominal trauma patients.¹² Doklestić K, Djukić V, Ivančević N, Gregorić P et al (2015) determined the options for surgical management of severe liver trauma as well as the outcome. In this retrospective study 70 polytraumatic patients with severe (American Association for the Surgery of Trauma [AAST] grade III-V) blunt liver injuries were operated on at the Clinic for Emergency Surgery. Mean age of patients was 48.26 ± 16.80 years; 82.8% of patients were male. Road traffic accident was the leading cause of trauma, seen in 63 patients (90.0%). Primary repair was performed in 36 patients (51.4%), while damage control with perihepatic packing was done in 34

(48.6%). Complications related to the liver occurred in 14 patients (20.0%). Liver related mortality was 17.1%. Non-survivors had a significantly higher AAST grade ($p=0.0001$), higher aspartate aminotransferase level ($p=0.01$), lower hemoglobin level ($p=0.0001$), associated brain injury ($p=0.0001$), perioperative complications ($p=0.001$) and higher transfusion score ($p=0.0001$). The most common cause of mortality in the "early period" was uncontrolled bleeding, in the "late period" mortality was caused by sepsis and acute respiratory distress syndrome. Patients with high-grade liver trauma who present with hemorrhagic shock and associated severe injury should be managed operatively.¹³

CONCLUSION

Unlike penetrating abdominal trauma, where management is largely determined clinically, the diagnosis of blunt abdominal injury by clinical examination is unreliable, particularly in patients with a decreased level of consciousness. Confirmation of the presence or absence of injury therefore relies largely on the use of diagnostic adjuncts. Late diagnosis and missed injuries are associated with poor outcome.

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