

## Role of Elevated Liver Enzymes in the Diagnosis of Liver Injury in Blunt Abdominal Trauma

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### Abstract

The liver is the second most commonly injured organ following blunt abdominal trauma. The stable patient with minimal physical findings with a history of blunt abdominal trauma presents a challenge for diagnosis of liver injury. This study was conducted to determine the usefulness of hepatic transaminases in predicting the presence of liver injury and its severity following blunt abdominal trauma. In this study we included all patients who had sustained blunt abdominal injury and were treated in hospitals attached to bmcri between November 2018 to October 2020. The grading of the liver injury was verified using CT scans or surgical findings. All patients with blunt abdominal trauma underwent the required blood tests and were included in the study. In patients with blunt abdominal trauma, abnormal hepatic transaminase levels are associated with liver injuries. Patients with ALT >57 U/l and AST >113 U/l are strongly associated with liver injury and require further imaging studies and close management.

**Key words:** Liver injury; Blunt trauma; Transaminase; Computed tomography; Retrospective study.

### Introduction

The liver is the second most commonly injured organ

following blunt abdominal trauma and associated injuries contribute significantly to mortality and morbidity. Early diagnosis of the nature and extent of intra-abdominal organ injuries may result in significant reduction of morbidity and mortality<sup>1</sup>. Focused abdominal sonography for trauma (FAST) is able to sensitively detect free fluid in the abdomen and pelvis, but its numerous limitations have been recognized. When there are parenchymal injuries of the liver only, with no free fluid, the sensitivity is even lower. Computed tomography (CT) is the standard diagnostic modality for stable trauma patients with a suspected abdominal injury.<sup>2,3</sup> However, accurate diagnosis of significant injuries could be delayed as not all health institutions worldwide have ready access to CT scans. The high cost of a CT scan does not permit its widespread use in screening all patients with blunt abdominal trauma.<sup>4</sup>

Should an association between laboratory tests and liver injuries exist, early identification of patients with liver injuries could be achieved. The present study was undertaken to determine the accuracy of selected laboratory tests in predicting the presence of liver injury and its severity following blunt abdominal trauma.

### Materials and Methods

All patients admitted to surgical wards of hospitals attached to bmcri with blunt trauma abdomen.

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### Inclusion criteria

1. Patients who are willing to give consent.
2. Patients whose lab tests are performed within 24 hours of the injury.

### Exclusion criteria

1. Patients who suffered penetrating injuries.
2. Patients who are died due to trauma.
3. Required lab tests are not performed within 24 hours of the trauma.

Method of collection of data:

Study design: prospective, absorvational, cross sectional.

study period: 2 years from November 2018 to October 2020.

Place of study :the study was conducted in all patients admitted to surgical wards of hospitals attaced to BMCRI.

Sample size: 50 .

Patients are subdivided into two groups : patients with and without liver injuries.

Liver injury grade was determined using the organ injury scale American association of surgery and trauma(AAST). in this study, minor liver injuries were classified as AAST grades 1 to 3 ,Major liver injuries were classified as AAST grades 4 and 5. (table no. 1),(chart 1)

The results for AST aspartate aminotransferase. alanine amimotransferase ALT, alkaline phosphatise (ALP) lactate dehydrogenase (LDH) Bilirubin, Y-glutamyl transpeptidase (GGT) c-reactive protein (CRP) Wbc count the values are collected and and are compared with the reference ranges.<sup>5</sup>

### Discussion

The liver continues to be the second most commonly injured organ in blunt abdominal trauma. radiographic imaging and biochemical tests are used to asses liver injury.

Elevation of serum liver enzymes ast and alt is known to be associated with blunt abdominal trauma presumably as these transaminase are present in high concentration in hepatocytes they are released in to the circulation in large quantities following acute traumatic hepatocellular injury .we also found a trend that more severe the liver injury of the patients,the higher the liver enzyme level . Even where patients whose liver enzyme levels are at lower leves and liver injury cannot be ruled out, they may still provide clues concerning liver

injury ,particularly in patients with high-grade liver injury<sup>6</sup>(chart 1).

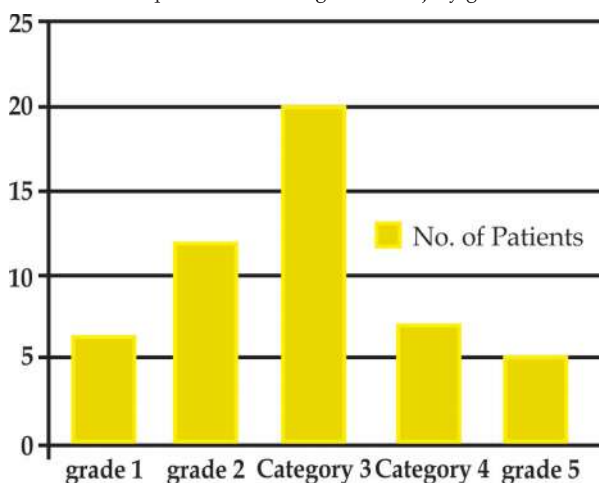
### Results

out of 50 patients with blunt abdominal trauma whose lab lft and cbc are done there was a preponderance of males.most of the blunt abdominal trauma was due to RTA.more patients with abdominal non liver injuries underwent exploratory laparotomy than those with liver injuries.patients with liver injury were graded according to the severity of their liver injury.(table no 1),(chart 1)

**Table 1:** Of Patients according to the grade of liver injury.

Grade 1	6 patients
grade 2	12 pateints
grade 3	20 patients
grade 4	7 patients
grade 5	5 patients

**Chart 1:** No. of patients according to liver injury grade.



### Conclusion

This study suggests that , in patients with blunt abdominal trauma, abnormal transaminase leves are associated with liver injury patients with raised AST and ALT are strongly associated with liver injury .

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