



ROLE OF ULTRASOUND IN EXAMINATION OF BLUNT ABDOMINAL TRAUMA

Dr. D. Raj Sudheer

Final year Post Graduate, Department of Radiodiagnosis, GEMS AND Hospital, Andhra Pradesh, India

Dr. B. R. Nagaraj*

MD(RD),DMRD, Professor and HOD Department of Radiodiagnosis, GEMS AND Hospital, Andhra Pradesh, India *Corresponding Author

ABSTRACT

➤ Ultrasound has widely been used to assess patients with blunt abdominal trauma and detect free fluid in the abdomen.

- Ultrasonography is very useful and highly reliable screening modality in patients with blunt abdominal injury.
- Ultrasound has several advantages in the setting of trauma. It is portable, integrates easily into the resuscitation of trauma victims without causing delay in therapy, is noninvasive, and has no associated morbidity.

KEYWORDS : Ultrasound, Trauma, Abdomen, Injury, Diagnosis**INTRODUCTION:**

- Blunt injuries of Abdomen constitute cases where there are injury to one viscus or more without any external penetrating injury.
- The detection of Blunt abdominal trauma (BAT) is a frequent diagnostic problem leading to delayed treatment thereby substantially increasing morbidity & mortality in trauma patients.
- The present study outlines the role of Ultrasonography in the evaluation of Blunt abdominal trauma in detection of free fluid & solid visceral organ injury thereby helping the Clinician/Surgeon in proper management of the case.

AIMS&OBJECTIVES:

To evaluate the sensitivity of Ultrasound imaging in detecting Hemoperitoneum& Intra-peritoneal visceral organ injury.

- To evaluate the role of ultrasound in follow up of patients with blunt abdominal trauma.

MATERIALS&METHODS:

- A prospective study carried out on 80 patients with history of Blunt abdominal trauma over a period of 6 months referred to Radio diagnosis department, Great Eastern Medical School&Hospital.

Whole Abdominal Ultrasound is performed along prime focus on FAST. (Focussed assessment with Sonography in Trauma) examination.

All the patients included in the study were subjected to transabdominal Ultrasound.

- Imaging was done with Mindray DC-80 Ultrasound machine.

Inclusion criteria:

Suspected intra-abdominal injury
Multi trauma patient with altered sensorium (i.e., secondary to drugs, alcohol, head trauma)
Multi trauma patient with spinal cord injury
Unexplained hypotension in trauma patients
Multi trauma patient undergoing general anesthesia for orthopedic, neurosurgical, or other injuries

Exclusion Criteria:

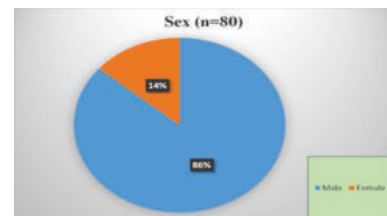
Patients with stab wounds and gunshot wounds.
Obvious need for emergency laparotomy.

II. RESULTS

In our study, 80 patients of Blunt abdominal trauma were evaluated over a period of six months (from Jan 2023 to June 2023).

Male predominance was noted.

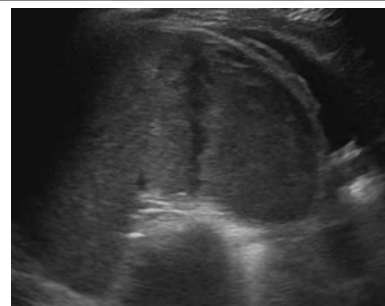
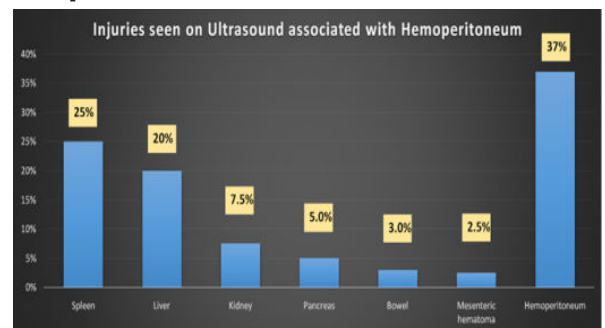
The accuracy of Ultrasound in detecting free fluid in this study was 100%.



Injury to the visceral organs identified on ultrasonography were confirmed per-operatively wherever surgical intervention is needed.

Among the visceral organs, spleen is the most common organ injured.

Splenic injury seen in 25% of cases, liver injury seen in 20% of cases, kidney injury seen in 7.5% of cases, pancreas injury seen in 5% of cases, bowel perforation seen in 3% of cases, mesenteric hematoma seen in 2.5% of cases. Hemoperitoneum seen in 37% of cases.

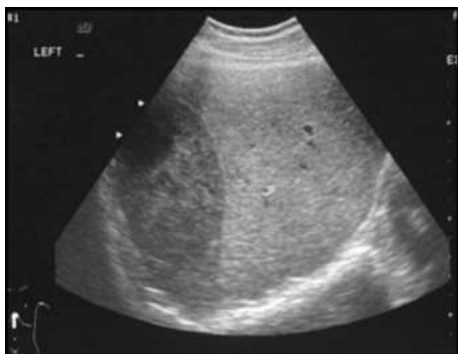


CASE 1: A. Ultrasound image showing laceration at upper

pole of spleen, perisplenic collection noted. Hemo peritoneum present.



B. Intra operative confirmation of splenic laceration.



CASE-2. Ultrasound image in a case of Blunt abdominal trauma showing sub-capsular hematoma in right lobe of liver.



CASE-3 Ultrasound image in a case of Blunt abdominal trauma showing laceration at mid-pole of right kidney.



CASE-4 Plain Radiograph showing gas under the right dome of diaphragm (Pneumoperitoneum) in a case of terminal ileal perforation after sustaining Blunt abdominal trauma

III. DISCUSSION

Blunt abdominal trauma is still a major diagnostic challenge because of low sensitivity of clinical examination in detecting intra-abdominal injuries.

Timely management is very important as blood loss is time dependent & diagnostic procedures must be quick and accurate so as to facilitate further management.

The most important objective in management of patient with blunt abdominal trauma is to ascertain whether or not laparotomy is needed.

Ultrasonography examination is non invasive, rapid to perform, relatively inexpensive, portable for bed side evaluation in the emergency room, free from radiation and can be repeated at any time without contraindications.

In this series, a total number of 80 cases of blunt abdominal trauma were evaluated by real time sonography.

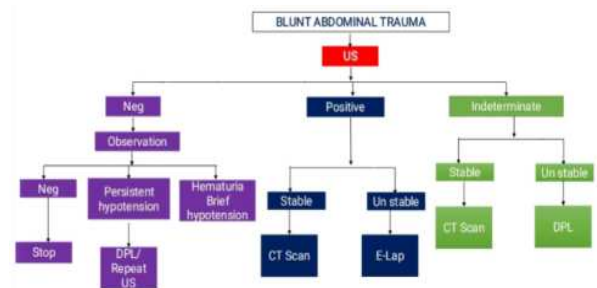
In our series, out of 80 patients there were 69 male and 11 female patients. Thus an overall male predominance (86%) over female was found. The higher incidence of males could be attributed to more outdoor nature of occupation, alcohol addiction and involvement in violence in males than compared to females.

BAT- Blunt abdominal trauma

US- Ultrasound

DPL- Diagnostic peritoneal lavage

E-Lap- Emergency laparotomy



IV. CONCLUSION:

This study highlighted the accuracy of Ultrasonography in detecting the presence of free fluid and injured organs thus aiding the clinician in contemplating the planning and management in patients with blunt abdominal trauma.

It is noted that ultrasonography is very useful and highly reliable screening modality.

It is not only cheap and noninvasive but also rapid to perform, portable for bed side evaluation in the emergency room, without any radiation to patient, requires no administration of contrast medium and can be repeated at any time without contraindication.

REFERENCES:

1. John R Richards, John P McGahan. Focussed assessment with sonography in trauma; RSNA, 2017.
2. Massimo Valentino, Carla Serra, Gianna Zironi et al. Blunt abdominal trauma: Emergency Sonography for Detection of Solid organ injuries. AJR 2006; Vol-186.
3. Textbook of diagnostic ultrasound; Carol M. Rumack.
4. Soto M, Yoshii H. Reevaluation of ultrasonography for Solid organ injury, blunt abdominal trauma. J Ultrasound Med 2004; 23:1569-1582.
5. Richards JR, Knopf NA, Wang L, McGahan JP. Blunt abdominal trauma in children : evaluation with emergency US. Radiol 2002; 222:749-54.
6. Vos PM, Mathieson JR, Cooperberg PL. The spleen. Chapter 5. In : Diagnostic ultrasound , vol. I. Rumack CM, Wilson SR, Charboneau JW, Johnson JA ed., 3rd edn., Elsevier Mosby, St Louis, Missouri 2005; pp.163-165.
7. Polletti PA, Kinkel K, Vermeulen B, Imray F, Unger PF, Terrier F. Blunt abdominal trauma: should US be used to detect both free fluid and organ injuries? Radiol 2003; 227:95-103.