

Diagnostic Accuracy of Ultrasonography in Acute Abdomen Cases

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Abstract

Background: Ultrasonography is an easy to use, cheap and reliable imaging modality. It involves minimal radiation exposure and can predict need for surgical intervention in most of the cases. Acute abdomen is an emergency condition which in most of the cases requires surgical intervention. Ultrasound evaluation can prove to be of much use in such cases. **Aims and Objectives:** The aim of the present study was to evaluate the diagnostic accuracy of Ultrasonography in cases of acute abdomen. **Subjects and Methods:** All the cases of acute abdomen presenting to the ER which were sonographically evaluated were included in our study. The USG findings were correlated with laparoscopic findings. The data was collected in MS Excel and presented as numbers and percentages in the form of tables and figures. Sensitivity, Specificity were calculated and analysed. **Results:** There was an equal gender distribution in our study. Tenderness was the most common clinical feature and observed in 86% of the study population. This was followed by abdominal pain, which was observed in 81% of patients. Fever was a symptom in almost 64% of patients. Rigidity was depicted in 59% patients. 54% patients complained of vomiting. Abdominal Distension was observed in 14% of the study population. The sensitivity of USG in diagnosis of Acute Appendicitis, Acute Pancreatitis, Cholecystitis, Liver Abscess and Renal Calculi was 100%. The specificity of USG in diagnosis of Acute Appendicitis, Acute Pancreatitis, Liver Abscess and Renal Calculi was 100%. **Conclusion:** Ultrasound abdomen has good diagnostic accuracy in acute abdomen cases and can be helpful in evaluation of most of the acute abdomen cases presenting to the Emergency Room

Keywords: Ultrasonography, Acute Abdomen, USG Abdomen, Emergency Radiology.

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Introduction

Ultrasound or Ultrasonography is a medical imaging modality which uses sound waves to produce radiological images of the internal organs/structures of the body.^[1] During the scan a water based gel is applied over the skin of the area being scanned. The sonographer uses a probe called transducer to capture the radiographs. Ultrasonography places the patient at a lesser risk of radiation when compared to other imaging modalities. Ultrasound abdomen is a test which is used to visualize the intra-abdominal anatomical structures.^[2]

Acute abdomen can be described as a condition of abrupt onset severe intensity abdominal pain which requires emergency medical/surgical intervention.^[3] Most of the cases require surgical intervention.^[4] Acute abdomen is the most common presentation at a Surgical ER. These cases present a diagnostic dilemma to the treating Emergency Physician and require a combination of proper history, a through clinical examination and necessary radiological evaluation to arrive at an accurate diagnosis.^[5]

Ultrasonography is an easy to use, cheap and reliable

imaging modality.^[6] It involves minimal radiation exposure and can predict need for surgical intervention in most of the cases. Acute abdomen is an emergency condition which in most of the cases requires surgical intervention. Ultrasound evaluation can prove to be of much use in such cases.^[2] The aim of the present study was to evaluate the diagnostic accuracy of Ultrasonography in cases of acute abdomen.

Subjects and Methods

Study Setting: Meenakshi Medical College, Hospital and Research Institute, Enathur, Tamil Nadu.

Study Design: The present study was Hospital Based Prospective Study.

Sample Size: The present study included 22 cases of acute abdomen presenting to the Emergency Department.

Inclusion Criteria: All the cases of acute abdomen presenting to the Emergency Department of our Hospital.

Exclusion Criteria: Gynecological causes and cases which did not consent after treatment were excluded from our study.

All the cases of acute abdomen presenting to the ER which were sonographically evaluated were included in our study. The USG findings were correlated with laparoscopic findings. The data was collected in MS Excel and presented as numbers and percentages in the form of tables and figures. Sensitivity and Specificity were calculated and analysed.

Results & Discussion

Table 1: Gender Distribution

Gender	No. of Patients
Male	11(50%)
Female	11(50%)

From the above table, there was an equal distribution of gender in our study population.

Table 2: Clinical Features

Clinical Feature	No. of Patients
Pain	18(81%)
Tenderness	19(86%)
Vomiting	12(54%)
Fever	14(64%)
Distension	3(14%)
Rigidity	13(59%)

From the above table, pain was a symptom in 81% patients, tenderness was depicted in 86% patients, 54% of study population complained of vomiting, fever was symptom in 64% patients, distension was complained by 14% patients and rigidity was observed in 59% patients.

Table 3: Diagnoses

Diagnoses	No. of Patients	USG Diagnosis	Sensitivity	Specificity
Acute Appendicitis	5	5	100%	100%
Acute Pancreatitis	1	1	100%	100%
Calculus Cholecystitis	3	2	66.6%	100%
Liver Abscess	4	4	100%	100%
Renal Calculi	5	5	100%	100%
Others	4			

The above table depicts the various confirmed diagnoses and USG diagnoses along with sensitivity and specificity values.

Acute abdomen is a common presentation in the Emergency Department. The present study aimed to study the diagnostic efficacy of USG in evaluation of acute abdomen cases. The present study was carried out at Meenakshi Medical College, Hospital and Research Centre, Tamil Nadu and included 22 cases of acute abdomen which presented to the ER, there was an equal gender distribution in our study. Similar results were also observed in study done by Deshmukh et al⁸. Tenderness was the most common clinical feature and observed in 86% of the study population. This was followed by abdominal pain, which

was observed in 81% of patients. Fever was a symptom in almost 64% of patients. Rigidity was depicted in 59% patients. 54% patients complained of vomiting. Abdominal Distension was observed in 14% of the study population. Similar results were obtained by Deshmukh et al.⁸ The sensitivity of USG in diagnosis of Acute Appendicitis, Acute Pancreatitis, Cholecystitis, Liver Abscess and Renal Calculi was 100%. The specificity of USG in diagnosis of Acute Appendicitis, Acute Pancreatitis, Liver Abscess and Renal Calculi was 100%. Similar results were obtained by Andrews et al.⁹ Further research is required in this area and we hope that our results add to existing literature.

Conclusion

Ultrasound abdomen has good diagnostic accuracy in acute abdomen cases and can be helpful in evaluation of most of the acute abdomen cases presenting to the Emergency Room.

Ethical Clearance: Ethical Clearance was obtained from the Institutional Ethical committee prior to commencement of the study.

Conflict of Interest: Nil

Source of Funding: This study was self-funded.

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