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Role of Ultrasonography in Different Diagnostic Conditions in Acute Abdominal Pain in Male Population

A. K. M. Anowar Hossain[1]*, Md. Nazrul Islam Mollah[1], Mohammad Ali Kabir[1], Zereen Sultana Deepa[1], A. K. Al-Miraj[2]

[1]Assistant Professor, Department of Radiology & Imaging, (BSMMU), Dhaka, Bangladesh
[2]Research Assistant, Department of Vascular Surgery, (BSMMU), Dhaka, Bangladesh

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***Corresponding Author**
A. K. M. Anowar Hossain

AssistantProfessor, Department of Radiology & Imaging, (BSMMU), Dhaka, Bangladesh

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A B S T R A C T

Introduction:Ultrasound is the equipment used to diagnose the disease. Abdominal pain can be classified as visceral, somatoparietal or referred pain that can be a manifestation of a wide array of systemic and local causes. An ultrasound scan could be a medical test that uses high-frequency sound waves to capture real time images of the organ. Different sorts of transducer or probe are used to supply the USG image. ***Purpose***: The aim of this study is to evaluate the role of ultrasonography in different diagnostic conditions of abdomen**.** ***Methodology*:** A quantitative prospective study was performed to assess the role of ultrasonography in abdominal pain in male patients who undergoes abdominal ultrasonography in the radiology department of BSM Medical University Dhaka, Bangladesh from February 2023 to March 2024. Total 90 male patients were selected according to the inclusion criteria of this study. Patients will be signing a consent before the investigation. History was taken from patients prior to investigation. Abdominal ultrasound was performed. ***Result*:** Out of 90 male patients, out of which 21 (23.3%) patients have fatty liver, 12 (13.3%) patients have right renal calculus, 9 (10%)patient have left renal calculus, 3(3.3%)patient have B/L renal calculus, 5 (5.5%) patients have acute pancreatitis, 3 (3.3%) patients have acute appendicitis, 2 (2.2%) patients have liver abscess, 7 (7.7%) patients have cyst, 7 (7.7%) patients have ascites, 19 (21.1%) patients have cholelithiasis and 1 (1.1%) patient have normal. Sonography play key role in to visualized gross primary investigation in abdomen. ***Conclusion*:** The study concludes uses of USG should be perform as a primary investigation for all patients. This study has shown a relatively high sensitivity, specificity and diagnostic accuracy of USG in cases of acute abdomen in a careful hand. USG is currently considered the preferred initial imaging technique for patients who are clinically suspected of having fatty liver, renal calculus, acute pancreatitis, acute appendicitis, ascites, cyst, liver abscess and cholelithiasis etc.

Keywords: USG, B/L, appendicitis, cholelithiasis, fatty liver, cyst.

INTRODUCTION

Abdominal pain can be classified as visceral, somatoparietal or referred pain that can be a manifestation of a wide array of systemic and local causes. More common causes are cholecystitis, acute appendicitis, bowel obstruction, visceral perforation, mesenteric ischemia and ischemic colitys in elderly patients. However acute abdomen can represent a wide spectrum of conditions, ranging from a benign and self-limiting disease to a surgical emergency. Nevertheless, only one quarter of patients who have previously been classified with an acute abdomen actually receive surgical treatment, so the clinical dilemma is if the patients need surgical treatment or not and, furthermore, in which cases the surgical option needs to be urgently adopted [1, 2]. USG study used for the male and feminine patients to find out the pathologies. Ultrasound abdomen is one of the tests that's commonly employed in symptoms of abdominal pain. It is especially useful for soft tissue, solid organ, and fluid-filled anatomy [3]. Ultrasound imaging of the abdomen uses sound waves to form the image of structure within the abdomen.The patient will usually present with sudden onset of abdominal pain with associated nausea or vomiting. Most patients with acute abdomen appear ill [4]. The Radiologist or technologist should obtain a complete history of the patient. This could be generally the corners of an accurate diagnose. A very detailed history taken from the patient about any previous diagnostic, pathology, or other reports must be present

to the patient so that comparison easily is done. This could be providing important information [5]. Abdominal pain is the most common symptom. Abdominal USG includes some pathologies like the 2 differentials diagnose of acute abdominal pain including appendicitis, ulceration urinary stones inflammatory bowel disease, biliary colic cholecystic, and pancreatitis [6]. Acute abdomen may be a condition that demands urgent attention and treatment. The acute abdomen may be common causes of abdominal pain or appendicitis, gastroesophageal reflux disease (GERD), pancreatitis, gallbladder disease, diverticulitis, and tiny bowel obstruction, an infection, inflammation, vascular occlusion, or obstruction. Ultrasound is additionally useful for the Diagnose of solid organ conditions including acute cholangitis, acute cholecystitis, acute pancreatitis, or bowel disease. CT is that the 1st line procedure suggests to the patient but CT is an invasive procedure or high-cost price but USG is a non-invasive procedure or cheap cost so that we preferred USG for the suspected patient. during this case, abdominal ultrasound is that the 1st line procedure to judge its utility and limitation in determining the Diagnose of patients presenting with abdominal symptoms [7]. However, although CT emerging as a modality of choice for evaluation of the acute abdomen, ultrasonography (US) remains the primary imaging technique in the majority of cases, especially in young and female patients, when the limitation of the radiation exposure should be mandatory, and often associated with conventional radiography, limiting the use of CT in cases of nondiagnostic US and in all cases where there is a discrepancy between the clinical symptoms and negative imaging.

Materials and Methods

A quantitative prospective study was performed to assess the role of ultrasonography in abdominal pain in male patients who undergoes abdominal ultrasonography in the radiology department ofBSM Medical University Dhaka, Bangladesh from February 2023 to March 2024. 90 male patients were selected according to the inclusion criteria of this study. Patients will be signing a consent before the investigation. History was taken from patients prior to investigation. Abdominal ultrasound was performed.

Selection Criteria: In this study following patients under inclusion and exclusion criteria, Data collected after completion of scan and reporting. Male patients with findings under ultrasonography were included in this study, 75 patients with acute abdominal pain, 15 patients traumatic, All IPD and OPD male patient, Age (15-70years) were taken under inclusion criteria. Post-operative patients, female patient were taken under as exclusion criteria.

Data Analysis: The purpose of data analysis is to categorize, organize, manipulate, and summarize the data that have been collected. The current study used a quantitative design. In this context, quantitative data refer to numbers that are collected and then interpreted using statistics. Numerical data are described in a meaningful manner thereby enabling any researcher to understand interrelationships that exist. Data analysis aims to describe statistical analysis results but does not comment on them. In this study, an analysis was done on the basis of the Mode frequency of findings.

RESULTS

Total of 90 patients data used in this study who complain of acute abdominal pain during the period of study. The result of the scan collected and master chart is prepared. We found that 21.1% patients have acute abdominal pain was due to cholelithiasis, 13.3% patients have right renal calculus, 10% patients have left renal calculus, 3.3% patients have acute appendicitis, 5.5% patients have acute pancreatitis, 23.3% patients have fatty liver, 2.2% patients have a liver abscess, 7.7% patients have ascites, 7.7% patients have B/L renal calculus, 3.3% patients have cyst and 1.1% patients have normal. In rest 98.8% of patients' ultrasound help to diagnose the problem of acute pain.

Table 1: Shows the analysis of results of USG scan of patients having acute abdominal pain and age range 15-70 years

Diagnose	Male	Female	Total
Cholelithiasis	19	0	19
RightRenal Calculus	12	0	12
Left RenalCalculus	9	0	9
Acute Appendicitis	3	0	3
Acute pancreatitis	5	0	5
Fatty liver	22	0	22
Normal Scan	1	0	1
Liver abscess	2	0	2
Ascites	7	0	7
Cyst	7	0	7
B/LRenal Calculus	3	0	3

Table 2: Shows the analysis of results of USG scan of patients having acute abdominal painand age range 15-40 years

Diagnose	Male	Female	Total	Percentage %
Cholelithiasis	7	0	8	16.6%
RightRenal Calculus	8	0	9	18.7%
LeftRenal Calculus	7	0	8	16.6%
Acute Appendicitis	2	0	2	4.1%
Acute Pancreatitis	1	0	1	2.1%
FattyLiver	12	0	14	29.1%
NormalScan	0	0	0	0%
Liver Abscess	0	0	0	0%
Ascites	2	0	2	4.1%
Cyst	3	0	3	6.2%
B/LRenal Calculus	1	0	1	2.1%

Patients were categorized to the analysis of the result of the study in two age groups which were 15- 40years and 40-70 years. Only these two groups were made because of all patients age within this age range. In the age of group 15-40 years, there were a total of 48 male patients. Four most common assessments in this group were fatty liver in 29.1% patients, left renal calculus 16.6%, right renal calculus 18.7 % and cholelithiasis 16.6% patients, rest of the patients were diagnosed with several other findings like B/L renal calculus 2.1%, pancreatitis 2.1%, cyst 6.2%, ascites 4.1%, liver abscess 0% and appendicitis 4.1%, etc.

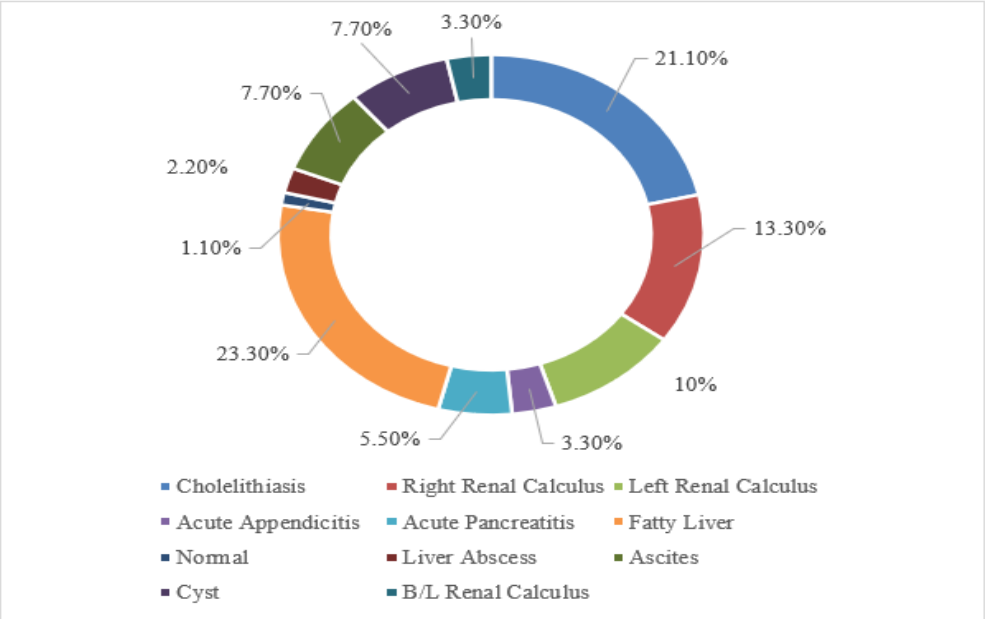

Fig 1: Shows the analysis of results of USG scan of patients having acute abdominal pain

Table 3: Shows the analysis of results of USG scan of patients having acute abdominal pain and age range 40-70 years

Diagnose	Male	Female	Total	Percentage%
Cholelithiasis	10	0	11	26.2%
RightRenal Calculus	3	0	4	9.5%
LeftRenal Calculus	1	0	1	2.3%
Acute Appendicitis	1	0	1	2.3%
Acute Pancreatitis	3	0	4	9.5%
FattyLiver	7	0	8	19.0%
NormalScan	1	0	1	2.3%
Liver Abscess	2	0	2	4.7%
Ascites	4	0	4	9.5%
Cyst	3	0	4	9.5%
B/LRenalCalculus	2	0	2	4.7%

And in the age group 40-70 years, there were a total of 42 male patients. Two most common assessments in this group were Cholelithiasis in 26.2%, fatty liver 19.0% rest of the patients were diagnosed with several other findings like B/L renal calculus 4.7%, pancreatitis 9.5%, cyst 9.5%, ascites 9.5%, appendicitis 2.3% and liver abscess 4.7% etc.

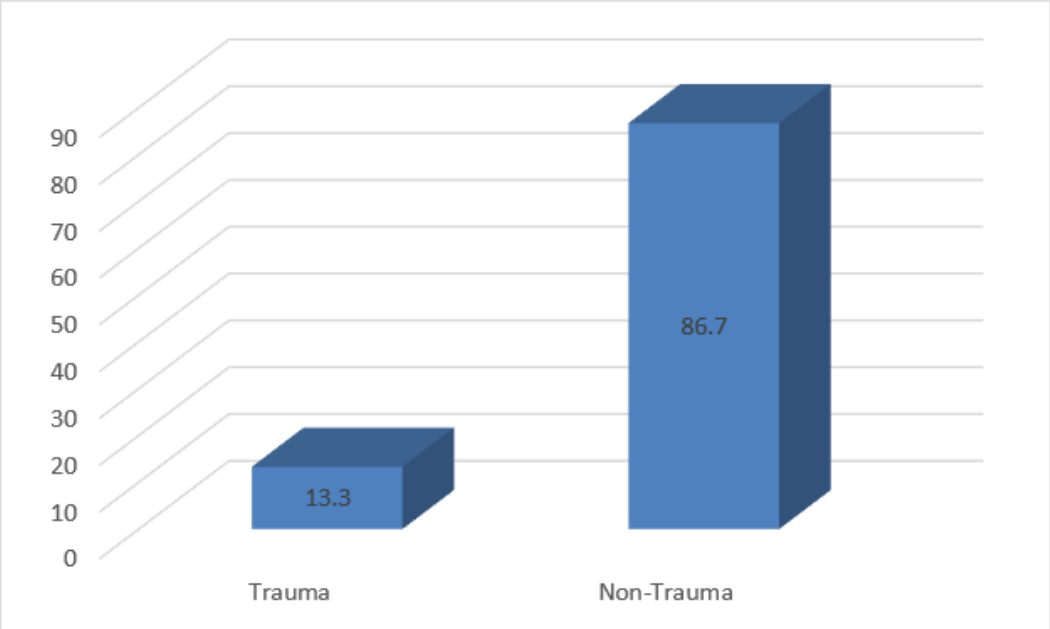

Fig 2: Represents the percentage of male and female patients undergo USG abdomen having acute abdominal pain

DISCUSSION

The most common US technique used to examine patients with acute abdominal pain is the graded-compression procedure [8]. With this technique, interposing fat and bowel can be displaced or compressed by means of gradual compression to show underlying structures. Furthermore, if the bowel cannot be compressed, the non-compressibility itself is an indication of pathology (inflammation such as appendicitis, intussusception, malignancy or luminal distension resulting from obstruction) [9]. In this study assessment of acute abdominal pain in ultrasonography was done. This study is inspired by research conducted by M. Antonietta Mazzei et al., [10] who performed a study on the role of US examination in the management of acute abdomen. Acute abdomen is a medical emergency, in which there is sudden and severe pain in the abdomen of recent onset with accompanying signs and symptoms that focus on abdominal involvement. Ultrasound imaging of the abdomen uses sound waves to produce pictures of the structures within the upper abdomen. It is used to help diagnose pain or distention (enlargement) and evaluate the kidneys, liver, gallbladder, bile ducts, pancreas, spleen and abdominal aorta. It can represent a wide spectrum of conditions, ranging from benign and self-limiting disease to a surgical emergency [11, 12]. Nevertheless, only one-quarter of patients who have previously been classified with an acute abdomen actually receive surgical treatment an ultrasound test uses high-frequency sound waves to create images of the patient's internal organs. Imaging tests can identify abnormalities and help doctors diagnose conditions. An abdomen ultrasound is a type of ultrasound used by doctors to examine abdominal organs [13-17]. This includes the organ liver, pancreas, gallbladder, kidneys, intestines, etc. in this study most common Diagnose is finding out in the male patients taken as samples of age group between 15 to 70 years. And Fatty liver was the most common finding after the calculation of results. This may need clinical as well as surgical treatment to be done [18-20]. This study performed here because no study was done before on the topic of acute abdomen pain assessment. This study has shown a relatively high sensitivity, specificity and diagnostic accuracy of USG in cases of acute abdomen in a careful hand [21]. USG is currently considered the preferred initial imaging technique for patients who are clinically suspected of having fatty liver, renal calculus, acute pancreatitis, acute appendicitis, ascites, cyst, liver abscess and Cholelithiasis etc. And the most common reason for acute abdominal pain as per this study is Fatty liver, 23.3% of patients having Fatty liver when USG was performed. 1.1% of patients have a normal scan with no findings. In rest 98.75% patient's ultrasound help to diagnose the problem of acute painble shows the analysis of results of USG scan of patients having acute abdominal pain [22, 23]. Sonography remains a very effective, complementary, non-invasive method for evaluating children with acute abdominal pain, especially those with suspected appendicitis or intussusception. The five steps to palpating of the abdomen include: 1) Wash and warm your hands, 2) Communicate with the patient and palpate the most painful area last, 3) Palpate with light pressure then deep pressure, 4) Palpate all four quadrants, 5) Use a one- or two-handed technique. Considering the wide range of causes causing multiple differential diagnoses, as well as the limited

time of the health team in the emergency department for diagnostic and therapeutic measures, particularly in time-sensitive clinical conditions, ultrasound can be given by EMP as a diagnostic aid, which is considered to improve the overall diagnosis and treatment of patients, thereby reducing complications and complications.

CONCLUSION

It is concluded that ultrasound is the best modality to rule out the problems at an earlier stage so that treatment can be started on behalf of reports of Ultrasonography scan in patients of acute abdominal pain, as it is fast and safe to patients, it does not include any ionizing radiation so female patients of reproductive age go through scan without any risk. The study concludes uses of USG should be performing as a primary investigation for all patients.

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