

Original article:

Study of importance of ultrasonography in acute abdominal pain patients at tertiary care hospital

¹Dr. Abhijeet D. Nagapurkar, ²Dr. Ankit Patel, ³Dr. Nikit Mehta

¹ Assistant Professor, ²Junior Resident, ³ Associate Professor.

Bharati Vidyapeeth [Deemed to be University] Medical College and Hospital, Sangli, Maharashtra, India.

Corresponding author*

Abstract:

Introduction: Acute abdominal pain is a common clinical problem in the emergency and non-emergency setting of 5 to 10% of all referrals to the emergency department. Ultrasonography is one of the most prevalent test that usually requested in terms of diagnostic process of a patient with acute abdominal pain. With this view present study was planned to study of ultrasonography role in abdominal pain cases in adults.

Materials and methods: this study work is done in the Department of Radiology of Bharati Vidyapeeth (Deemed to be University) Medical College & Hospital, Sangli. The sample size was 100 patients included in our study that were by the expert. Here we have included cases of abdominal pain complaints visiting the OPD and emergencies referred to the causality department, which continues to refer for investigation into our department.

Results: In this study ultrasonography was diagnosed in 84% of patients. Three patients were not properly diagnosed and in 13 patients further investigation was needed to confirm the diagnosis. In our study, the causes of acute abdominal pain range from life-threatening complications to behavioral problems. Acute appendicitis, kidney / ureteric stones, diverticulitis, cholecystitis, and intestinal obstruction are common causes of severe abdominal pain. Other important but rare conditions that can cause severe abdominal pain include perforated viscus and intestinal ischemia.

Conclusion: Due to the relatively low cost, as well as the lack of ionizing radiation or the need for alternative substances, the USG has played a key role in diagnosing abdominal pain even in modern clinics. Ultrasound is very good for organ system thinking. It helps to identify certain organ lesions and their precise measurement which is helpful in following and responding to treatment. Ultrasonography is also helpful in diagnosing other diseases and reducing the risk of severe laparotomy.

Keywords: Ultrasonography, abdominal pain, acute abdomen, emergency care.

Introduction:

Acute abdominal pain is a common clinical problem in emergency and non-emergency cases accounting for 5 to 10% of all referrals to the emergency department. Studies have shown that these different diagnostic problems are common in these complaints. Considering the widespread prevalence of this complaint in patients and the wide range of its different diagnoses, this study was designed and evaluated with the aim of investigating the causes of acute abdominal pain by focusing on the position of ultrasound as a diagnostic tool in an emergency. 1

The widespread spread of this complaint and its many causes, from chronic illness to life-threatening illness, require careful management of those patients; as its misdiagnosis can lead to harmful and legal issues. 2 It is clear that timely diagnosis of the cause may lead to better management and ultimately a better outcome for patients.

Identifying the cause of abdominal pain begins with a history and physical / clinical examination, giving the physician the power to determine the need for further investigation. 3 Ultrasonography is one of the most common diagnostic tests performed in terms of a diagnostic procedure for a patient with severe abdominal pain. With this in mind the current study was designed to study the role of ultrasonography in cases of abdominal pain in adults.

Material and methods:

The present observational study work was carried out in Department of Radiology, of Bharati Vidyapeeth (Deemed to be University) Medical College & Hospital, Sangli. The sample size was 100 patient included in our study which was verified and confirmed by the statistician. Herewith we included cases of abdominal pain complaints visiting to OPD as well as as emergency cases referred to the causality department, which both further send for investigations to our department. The patients that were referred from Medicine & surgery Department were also included in present study. The obstetrics cases, Pediatric cases were excluded from present study. The equipment was real-time ultrasonographic apparatus (Phillips) which uses a frequency of C 5-2 (Convex), L 12-3 (Linear) MHz for abdominal ultrasonography and 8-4 MHz for Trans-Vaginal - Trans-Rectal ultrasonography. The routine ultrasonography was done by us. Results were tabulated and analyzed using SPSS software. Version 22. And MS excel sheet.

Results:

In our present study out of 100 cases, 43 were female patients while 57 were male patients. The mean age range was 41.33+12.09 years in our study.

The majority patients were from lower socioeconomic group.

Table 1) Distribution of diagnosed cases

	Number of cases (N= 100)	Percentage
Acute appendicitis	42	42
Cholecystities	23	23
Bowel obstruction cases	4	4
Bowel ischemia	2	2
Kidney stone	21	21
Other causes	8	8
Total cases	100	100

Table 2) Overall Diagnostic Accuracy of Ultrasonography in Acute Abdominal Conditions

USG	No. of patients	Percentage
Diagnostic	84	84%
Mis-diagnostic	3	3%
Other investigations required	13	13%

Discussion:

In this study ultrasonography was diagnostic in 84% of patients. Three patients were misdiagnosed and in 13 patients other investigations were required for confirmation of diagnosis. In our study, the causes of acute abdominal pain range from life-threatening to benign self-limiting disorders. Acute appendicitis, kidney stone, diverticulitis, cholecystitis and bowel obstruction are common causes of acute abdominal pain. Other important but less frequent conditions that may cause acute abdominal pain include perforated viscus and bowel ischemia.

There are a few studies that look at the various parameters we have analyzed. Al Ajerami [3] in his study of acute appendicitis found complete sensitivity and ultrasound clarity, using the result of surgery as a gold standard, to be 84.8% and 83.3% respectively. Allemann et al reported that in USG surgeons operating on patients with severe abdominal pain the appropriate diagnostic ratio ranged from 348 patients (70%) to 414 patients (83%). In a similar study, USG was found to have a sensitivity to 94% and 99% specificity in diagnosing biliary tract disease. Mishra et al [5] in their study of abdominal pain photography had 13 cases of appendicitis. The USG was diagnosed at 11 with a sensitivity and specificity of 91.6% and 97%. Zoller et al [6] in their meta-analysis showed that USG has 85% sensitivity and 96% specificity in diagnosing malignant appendicitis. Mc Grath et al [7] in their study of USG's first role in the management of abdominal pain concluded that it was very useful in diagnosing gynecological diseases. Manfredi et al [8] concluded that USG in acute pancreatitis is a good clinical trial in patients suspected of biliary pancreatitis and a mild clinical course but advanced CT is preferred in patients with acute pancreatitis.

Conclusion:

Due to relatively low cost, and absence of ionizing radiation or need for contrast materials, US has maintained an important role in the evaluation of the acute abdomen even in today's modern clinical practice. Ultrasound is very good for organ system thinking. It helps to identify certain organ lesions and their precise measurement which is helpful in following and responding to treatment. Ultrasonography is also helpful in diagnosing other diseases and reducing the risk of severe laparotomy.

References:

1. Cartwright SL, Knudson MP: Evaluation of acute abdominal pain in adults. Am Fam Physician. 2008 Apr 1;77(7):971-8.

2. Stoker J, van Randen A, Laméris W, Boermeester MA. Imaging patients with acute abdominal pain. *Radiology*. 2009 Oct;253(1):31-46. doi: 10.1148/radiol.2531090302.
3. Al-Ajerami Y. Sensitivity and specificity of ultrasound in the diagnosis of acute appendicitis. *East Mediterr Health J*. 2012 Jan;18(1):66-9.
4. Allemann F, Cassina P, Rothlin M, Largiader F: Ultrasound scans done by surgeons for patients with acute abdominal pain. *Eur J Surg* 1999 Oct;165(10):966-70.
5. Mishra DS, Magu S, Sharma N, Rattan KN, Tiwari AD, Rohilla S. Imaging in acute abdomen. *Indian J Pediatr*. 2003 Jan;70(1):15-9.
6. Zoller WG, Kellner H, Schwerek WB. Value of ultrasound in diagnosis of acute appendicitis. *Bildgebung* 1996 Jun;63(2):78-82.
7. McGrath FP, Keeling F. The role of early sonography in the management of the acute abdomen *Clin Radiol*. 1991 Sep;44(3):172-4.
8. Manfredi R, Brizi MG, Canade A, Vecchioli A, Marano P. Imaging of acute pancreatitis. *Rays* 2001 Apr-Jun; 26(2):135-42.