



EVALUATION OF ULTRASONOGRAPHY AS A SIMPLE DIAGNOSTIC TOOL IN CASES OF ACUTE APPENDICITIS.

General Surgery

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ABSTRACT

Aim of our study is to evaluate the ultrasonography as a simple effective tool in diagnosing cases of acute appendicitis. Our study is a prospective study conducted over 50 patients, admitted in emergency department with clinical symptoms and signs of acute appendicitis. Ultrasonography has sensitivity 89.47 specificity of 83.33%, positive predictive value of 94.44% negative predictive value of 71.42% and diagnostic accuracy of 88% in diagnosing cases of acute appendicitis in our study. So ultrasound can be use as reliable, safe, inexpensive tool in diagnosis of appendicitis.

KEYWORDS

INTRODUCTION:

The first known appendectomy was performed in 1736 by Claudius Amyand in London. Acute appendicitis is a still a common disease and despite of modern era of medicine definite diagnosis of acute appendicitis is a still a challenging task. Lifetime risk for person to develop appendicitis is 6 to 10 percent¹. Teubner A et al describe about 26% of abdominal surgeries is accounted by appendectomy². Early diagnosis of acute appendicitis is very important as delay may lead to perforation, gangrene or abscess formation, which significantly increases morbidity and mortality³. Although CT scan is more accurate for appendicitis it is expensive and not easily available^{4,5}. Ultrasonography is a rapid relatively inexpensive and safe way to diagnose cases of acute appendicitis and has a role in reducing morbidity and mortality. It is easily available, inexpensive, can be performed rapidly, can be done over pregnant women and does not required contrast agents⁶. The present study is designed for evaluating ultrasonography as its diagnostic accuracy for diagnosing cases of acute appendicitis.

MATERIALS AND METHODS:

The study was conducted over 50 patients of age group 14 to 60 years presented to emergency at department of surgery, Nalanda Medical College and Hospital, Agamkuan, Patna with signs and symptoms of acute appendicitis over period of 1.5 yrs.

Inclusion criteria: All patients with right iliac fossa pain presenting to emergency department clinically suspected of having acute appendicitis and who underwent appendectomy.

Exclusion Criteria: (A) Patients having previous history of abdominal surgery, (B) Female patients with urine pregnancy test positive, (C) Patients having associated comorbidities like diabetes, cardiac disease, liver disease, tuberculosis, renal disease, (D) Patients having appendicular lump.

Patients presented to emergency department with clinical suspicion of acute appendicitis (right iliac fossa pain, vomiting, raise temperature, right iliac fossa tenderness, localized guarding, rebound tenderness) was admitted and all necessary investigation done (like CBC, RBS, LFT, KFT, X- Ray abdomen, ECG), IV antibiotics started and patient sent for ultrasonography. Ultrasound was said positive if presence of thickening of appendix wall or periappendiceal fluid collection or presence of appendicolith or presence of non-compressible appendix > 6 mm in antero-posterior diameter was present. Patients were also

evaluated on basis of other scoring systems like Alvarado, Lintula, and Ripasa score for acute appendicitis. On the basis of clinical diagnosis and other scoring systems suggests acute appendicitis then emergency appendectomy was done in these patients and obtained specimen sent for histopathological examination for proven signs of inflammation. If there were no histopathological proven signs of inflammation in the specimen, the patients were said to had underwent a negative appendectomy. Statistical analysis was done and result was concluded.



RESULTS:

A total 50 patients were studied having following age distribution

Table. 1 Age Distribution Of Patients Under Study

Age Groups	No. of Patients	Percentage
14 – 20	24	48
21 – 30	16	32
31 – 40	5	10
41 – 50	4	8
51 – 60	1	2
Total	50	100

Table. 2 Histopathology Findings Result

Findings	No. of Patients	Percentage
Appendicitis	38	62
Normal appendix	12	24
Total	50	100

Out of 50 Specimen of appendix sent for histopathology showing disease in 38 patients and 12 patients showing negative for appendicitis.

Table. 3 Frequency distribution of ultrasonography scan result

Ultrasonography Result	No. of Patients
Positive	36
Negative	14
Total	50

Histopathology result was taken as a final proof of appendicitis, ultrasonography results were compared. Out of 50 patients, 36 patients were found positive and 14 patients were found negative in ultrasonography scan. Out of these 36 positive patients 34 having diseases (true positive) and 2 was found negative for disease (false positive). Out of 14 patients found negative by ultrasonography 4 having disease (false negative) and 10 are true negative. Diagnostic accuracy of ultrasonography scan was calculated based on histopathological examinations.

Table. 4 Diagnostic accuracy of ultrasonography scan result

	Total %
Sensitivity	89.47
Specificity	83.33
Positive predictive value	94.44
Negative predictive value	71.42
Diagnostic accuracy	88

DISCUSSION:

Acute appendicitis is a still a common problem despite its incidence is reducing probably due to change in dietary habits and frequent use of antibiotics. Most common age group having disease in our study is between 14 to 20 years. In our study ultrasonography picked up 34 of 36 diseased appendix and 10 out of 12 non disease appendix. Thus sensitivity of ultrasound is 89.47% and specificity of 83.33%, Positive predictive value 94.44% and negative predictive value of 71.42% with diagnostic accuracy of 88%. Yashwant et al 2017 found that USG has sensitivity of 88.6% and specificity 92% with PPV and NPV was 98% and 52.3%⁷. Kurane et al (2008) compared Modified Avarado score and USG and reported USG sensitivity of 82%, specificity of 89.61%, negative predictive value 89.13% and diagnostic accuracy 86.67%⁸. Thus our study also shows that ultrasound has high diagnostic value in diagnosing cases of acute appendicitis.

CONCLUSION:

Acute appendicitis is the most common cause of an 'acute abdomen' in young adults that requires emergency surgery. Early diagnosis and timely intervention is a key for successful treatment. Although CT abdomen is known to be most accurate but due to its high cost, radiation exposure and it is not easily available, Ultrasonography will play a key role; as it is safe, easily available and cost effective tool if combined with clinical signs and symptoms, its having high degree of diagnostic accuracy in diagnosing cases of acute appendicitis. Ultrasonography can significantly reduce the negative appendectomy rate.

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