



ORIGINAL RESEARCH PAPER

General Surgery

EFFICACY OF USG IN DIAGNOSING APPENDICITIS: A SINGLE CENTRE STUDY

KEY WORDS: Acute appendicitis; USG; Appendicectomy

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ABSTRACT

Appendicitis is one of the most common emergency disease requiring operative interventions. At the same time many other diseases mimick acute appendicitis but do not require operation. USG can help in the diagnosis of acute appendicitis in emergency settings. In this study we have shown how USG can help in the diagnosis of acute appendicitis and can prevent unnecessary operation.

INTRODUCTION:

Acute appendicitis remains one of the most common acute abdominal surgical diseases. Acute appendicitis poses a significant diagnostic challenge in emergency care especially to the surgeon concerned.

AIMS AND OBJECTIVE:

The aim of this study rotates around the accuracy of preoperative diagnosis of acute appendicitis by USG. Simple appendicitis can progress to perforation, which is associated with a much higher morbidity and mortality and surgeons have therefore been inclined to operate when the diagnosis is probable rather than wait until to certain (Br. J. Surg. 76:7749).

A clinical decision to operate leads to the removal of normal appendix in 15-30% of cases. This proportion may be reduced by observing equivocal cases for a period of time, a practice that seems to be safe for most patients (Br. J. Surg. ii : 551-553).

It has been claimed that diagnostic aid can dramatically reduce the number of appendicectomies in patient without appendicitis, the number of perforation and time spent in hospital. Graded compression ultrasonography is diagnosis of acute appendicitis has greatly improved the ability to diagnose acute appendicitis. The accuracy offered by sonography should keep negative appendectomy ration to below 10%.

Appendicitis in young children is difficult to diagnose pre-operatively since these patients cannot provide a history.

Acute appendicitis during pregnancy also presents diagnostic problems particularly during 3rd trimester when caecum and appendix is pushed towards Rt. Upper abdomen.

Appendicitis in young women also introduces a number of specific differential diagnosis particularly those involving tubo-ovarian disorders.

So in this study an attempt has been made to confirm the diagnosis of acute appendicitis or other pathological conditions of the Rt. Iliac Fossa mimicing acute appendicitis preoperatively hence minimizing the rate of negative appendectomies.

Supporting Clinical and laboratory evaluation graded compression sonography has suggested as an accurate way to establish the diagnosis of appendicitis. The sonographic diagnosis of acute appendicitis has a reported sensitivity of 79% to 96% and a specificity of 86% to 98%. (Principles of surgery Scharlic 7th ed. Vol-2, pg.-1385)

Procedure proper:

This study includes 100 cases of pain in the right iliac fossa admitted and managed either surgically or conservatively in a professional unit of surgical department of Mata Gujri Memorial Medical College & Lions Seva Kendra Hospital, Kishanganj, Bihar.

This study aims at:-

- To confirm the cause of right iliac fossa pain prior to exploration.
- Use of Ultrasonography is diagnosis of right iliac fossa pain.
- Avoidance of unnecessary removal of non-pathological appendix.

Age: The present study comprises of 100 cases of right iliac fossa pain. The youngest one to 11 years of age while the oldest 60 years of age.

It has been shown that of the 100 cases there were 64 cases diagnosed ultrasonographically to be having appendicitis.

The age incidence of appendicitis is shown in the table below:-

Table Showing The Age Distribution In The Present Series Having Appendicitis

AGE GROUP (in years)	NUMBER OF CASES	PERCENTAGE (%)
01 – 10	0	0
11 – 20	24	38
21 – 30	24	38
31 – 40	09	14
41 – 50	06	9
51 – 60	01	2
TOTAL	64	100

RADIOLOGICAL FINDING:

Graded compression sonography has been suggested as an accurate way to establish the diagnosis of appendicitis. The sonographic diagnosis of acute appendicitis was a reported to have a sensitivity of 79 to 96% and a specificity of 86 to 98%. In diseased condition the findings may vary from:

1. Increased diameter > 6mm in anteroposterior direction.
2. Appendicolith if found almost nearly establishes the diagnosis.
3. Thickening of the wall of appendix with interruption of submucosal continuity.
4. Periappendiceal fluid, especially in acute condition.

If the study is found to be inconclusive for supplementing the

diagnosis, then we can utilize the increased specificity approx 88% of the ultrasonography to exclude other conditions like right ureteric stone, right tubo-ovarian pathologies and other anterior abdominal wall or retroperitoneal pathologies causing right iliac fossa pain. In the present series we have aimed to ultrasonographically diagnose the cause of right iliac fossa pain in 100 patients. By the help of ultrasonography this study has found 64% cases of Appendicitis, 17% cases of Right Tubo-Ovarian pathology, 13% cases of Colitis and 6% cases of Right Ureteric Stone.

Out of the 100 cases in this series 64 were diagnosed to have acute appendicitis. On being subjected to appendectomy there were 59 cases who had a surgically proven inflamed appendix but 5 cases had an apparently normal appendix surgically sacrificed due to a false positive ultrasonography report.

In the present series 64 cases of USG proven appendicitis had undergone appendectomy. Of these 59 cases were apparent surgically proven to be suffering from appendicitis, where as 5 cases were subjected to unnecessary appendectomy due to a USG proven appendicitis which did not co inside with the intra operative finding of appendix.

Hence producing a negative appendectomy rate of 7.8%

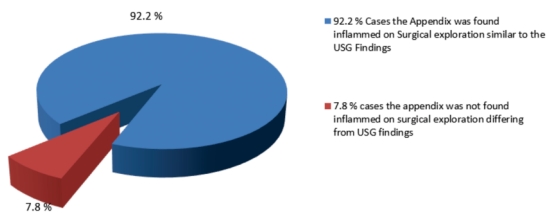
RESULT

As in this study we are loading forward to the rate of ultrasonography in the diagnosis of acute appendicitis it has been found that is the diagnosis of acute appendicitis ultrasonography has the following results:-

- 1. Diagnostic Sensitivity → 82.61%
- 2. Diagnostic Specificity → 89.19%
- 3. Positive Predictive value → 82.61%
- 4. Negative Predictive value → 89.19 %
- 5. Diagnostic Accuracy → 86.67%
- 6. False Positive Error Rate → 10.81%
- 7. False Negative Error Rate → 17.39%

EFFICACY OF ULTRASONOGRAPHY IN DIAGNOSING APPENDICITIS

Negative Appendectomy Rate of 7.8% found in this series.



DISCUSSION:

AA is dangerous risk due to its life-threatening complications. So, careful assessment is compulsory in a surgery department to curtail preventable complications of AA. Repeated clinical examinations are beneficial to reach to the correct diagnosis. [1]

The diagnostic sonographic finding in acute appendicitis is the noncompressibility of the appendix with a diameter greater than 6mm. An appendix not visualized by USG is considered normal by many authors. But Abu-Yousef demonstrated visualization of a normal appendix with a hypo echoic wall of 2mm thick in two out of 68 patients. Based on the data presented by Ibrahim M et al (Kuwait) concluded that in his series graded compression ultrasound did not significantly reduce the rate of negative appendectomies. [2]

Abdominal ultrasonography (USG) has a definitive role in the diagnosis of acute appendicitis, establishes an alternative diagnosis in patients with acute right lower abdominal pain and reduces the number of negative laparotomies [3,4,5]

John et al [6] reviewed a total 140 cases of appendicitis in which they could diagnose 70 cases as appendicitis by USG. The overall specificity and sensitivity were found to be 88.09% and 91.37% respectively, which showed that USG has a high specificity and sensitivity in diagnosing appendicitis. The overall specificity and sensitivity rates were at par with the values drawn by Skanne et al [7], Hahn et al [8], Tarzan Z et al [9] and Puylaert et al [10], whose specificity values varied from 90- 100% and sensitivity ranges varied from 70- 95%.

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