



**CASE SERIES ON SPECTRUM OF ACUTE APPENDICITIS IN A SECONDARY
HEALTH CARE FACILITY**

Vivek Kumar Garg¹, Manjula Sharma*² and Shamsher Singh³

¹Department of Radiodiagnosis, NSCB Zonal Hospital Mandi, Himachal Pradesh, India.

²Medical Officer, Civil Hospital, Sundernagar, Himachal Pradesh, India.

³Department of Surgery, SLBS GMCH Nerchowk, Mandi, Himachal Pradesh, India.

***Corresponding Author: Dr. Manjula Sharma**

Medical Officer, Civil Hospital, Sundernagar, Himachal Pradesh, India.

Article Received on 15/11/2021

Article Revised on 05/12/2021

Article Accepted on 25/12/2021

ABSTRACT

Acute appendicitis is one of the most common surgical emergencies that is dealt by day-to-day surgical practice. Diagnosis of acute appendicitis is still a challenging work and requires carefully combining history, clinical examination and imaging modalities. The clinical presentation of acute appendicitis becomes more challenging due to variable positions of appendix. A high index of suspicion along with imaging can prevent the delay in the diagnosis and the associated complications of the disease. In this case series we present 5 cases of acute appendicitis, presented with variable clinical profile.

KEYWORDS: Acute appendicitis, ultrasonography, clinical profile, appendicectomy.

INTRODUCTION

Acute appendicitis is one of the most common surgical emergency in general surgery^[1], accounting for roughly 10% cases of all the surgical emergencies.^[2] In men overall life time occurrence is approximately 12% and approximately 25% in women.^[3] Overall mortality rate in acute appendicitis is 0.3% in non-perforated appendix and 6.5% in perforated appendix.^[4] Depending upon patient history and clinical examination, diagnosis of acute appendicitis can be established clinically, however diagnosis of acute appendicitis is not always clinically clear since the specificity of symptoms (periumbilical pain migrating to right iliac fossa, nausea and anorexia) is between 37% to 53%.^[5] Missing appendicitis can present with severe consequences with increase in patient mortality and morbidity.^[6] The diagnosis of acute appendicitis becomes more difficult at the extremes of ages and if the patient is pregnant.^[7] Negative laparotomy rate ranges between 15-35%.^[8] Thus it is recommended in multitude of literature work that imaging modalities like ultrasonography, CT scan should be used in doubtful cases of acute appendicitis and thus to reduce negative laparotomy rates. In our rural health care setup, ultrasonography alone remains most simple, easily accessible, non-invasive modality and has shown to reduce negative laparotomy rate to 8.9% with significant improvement in diagnostic accuracy in clinically equivocal cases.^[9] Keeping in mind the importance of imaging modalities, we present 5 cases of acute appendicitis, presented in the department of Surgery, NSCB Zonal Hospital Mandi.

Case 1. Case of subhepatic appendix

20 years old, otherwise healthy male presented to emergency department with acute onset of pain abdomen in right upper quadrant. The pain was associated with few episodes of vomiting, fever and constipation. The pain was continuous, non-radiating and associated with mild dysuria and fever. On clinical examination, patient was mildly dehydrated with mild feverish feeling and tachycardia. The right hypochondrium and right lumbar areas were tender, with minimal tenderness in the other quadrants. No guarding or rigidity was detected.

Initial lab work up showed leucocytosis. Ultrasound(USG) showed a non-compressible blind-ended distended aperistaltic tubular structure with a "Target" appearance, showing positive probe tenderness sign on compression and a fecolith at its medial end. Minimal amount of fluid collection was noted around the tip and in the lateral subhepatic region (Fig. 1). A diagnosis of an abnormally located perforated appendix with minimal surrounding fluid was noted. Patient was subjected to emergency laparotomy. During exploration, an abnormally high lying cecum was observed in the right hypochondrium. The appendix was located immediately medial to the ileocecal junction craniocaudally with the tip trailing superiorly in Morison's pouch. Appendectomy was performed and followed by proper lavage and placement of drain. The patient had an uneventful recovery and was later followed up in outpatient clinic.



Figure 1: Transverse view showing a round non compressible and aperistaltic structure in RIF, suggesting enlarged appendix.

2. Acute appendicitis in a pregnant patient

27 years old, primi gravida at 26 weeks of gestation, presented with pain involving right iliac fossa (RIF) and adjacent lower abdomen to the emergency department. Patient was initially kept with possibilities of preterm labour or right ureteric colic with urinary tract infection. However with in matter of 2 hours pain became more generalised with 2 episodes of vomiting. On examination, pain was elicited at Mc Burney's point with presence of guarding and rigidity. Vitals of the patient were noted with BP of 130/74mmHg, respiratory rate of 24/min. Blood counts of the patient showed leucocytosis.

Patient was then referred to department of Radiodiagnosis for antenatal and abdominal USG. USG showed a single live intrauterine foetus with presence of a blind ending non compressible tubular structure with maximum diameter of approximately 14mm in RIF. Minimal surrounding free fluid was also noted. Given the probable diagnosis of Acute appendicitis, patient consented for laparotomy under spinal anaesthesia. Intra-op findings included a ceecal appendix in high left para-cecal position of 10 x 1 cm diameter, necrotic walls in 2/3 ends, base in good condition and 15 cc of inflammatory fluid (Fig. 2)

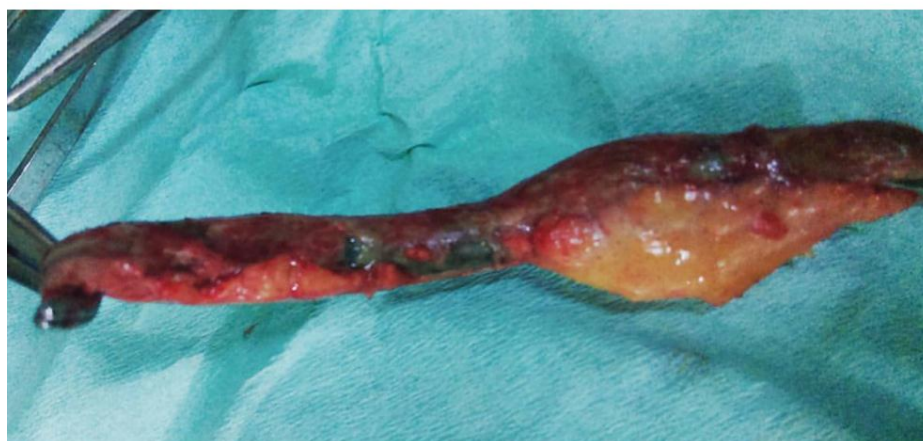


Figure 2: Excised surgical specimen: ceecal appendix.

Case 3: Perforated appendix in a young child

12 years old male child presented with intermittent fever, lower quadrant pain with non-bilious vomiting. There was no diarrhoea, changes in bowel habits, rashes, or toxic ingestions reported. Physical examination of the patient revealed mild tenderness at Mc Burney's point but no rebound tenderness or guarding. Laboratory testing revealed WBC, $17.9 \times 10^9/L$ with a differential of 73.2% neutrophils, 14.7% lymphocytes, and CRP 114.9 mg/L. Keeping in view of above described clinical and laboratory findings, a provisional diagnosis of Acute

appendicitis was kept. USG of the patient was suboptimal due to gross distension of overlying bowel loops. CECT of the patient then performed showing long tubular structure with surrounding fat stranding in RIF with presence of an appendicolith measuring ~2cm in the distal end of the enlarged appendix (Fig.3). Considering the diagnosis of acute appendicitis, an emergency surgery was performed. The appendix was enlarged, inflamed, and perforated. Appendectomy and abdominal drainage were performed. The patient recovered well in the post-operative period.



Figure 3: Inflamed and thickened appendix with appendicolith in distal lumen and surrounding fat stranding.

Case 4: Case of appendicular Phlegmon

40 years old male presented with severe pain and tenderness in lower abdomen with few episodes of bilious vomiting for last 5 days. On examination, tenderness was noted at Mc Burney's point. Laboratory findings were suggestive of leucocytosis. Ultrasound of the patient showed an ill-defined non compressible tubular structure with mural discontinuity and

surrounding anechoic collection and inflamed fat. CECT of the patient showed an inflamed appendix with foci of mural discontinuity and reactive mural thickening of adjacent ileal loops and sigmoid colon, suggestive of perforated appendix with localised collection or appendiceal phlegmon formation (Fig.4). Patient received antibiotics with an interval appendicectomy after 4 weeks.



Figure 4: Inflamed appendix with mural discontinuity and localised surrounding collection.

Case 5: Case of acute diverticulitis mimicking as acute appendicitis

63 years old male patient presented to the emergency department with severe pain in right iliac fossa region. His complaints started nearly 10 days ago and were aggravated in the last two days. He had lack of appetite, but no nausea-vomiting. The abdominal examination showed rebound and guarding in his right lower quadrant. The biochemical parameters were measured to show CK: 667 U/L CK-MB: 25 U/L LDH: 649 IU/L and the other parameters were normal. The WBC count was measured at 18,600. Urgent ultrasound of the patient showed compressible appendix with mild free fluid in visualised abdomen. CECT of the patient showed mild appendiceal thickening at the base with gross fat stranding surrounding a thickened caecum along with

presence of few inflamed diverticuli and air foci within (Fig. 5). Based on CECT, possibility of ceecal diverticulitis was kept. The decision was made to perform emergency laparotomy. His appendix was seen to be normal during the operation. The cecum was highly inflamed with few enlarged diverticuli without perforation were also noted. Decision was made to perform right hemicolectomy.

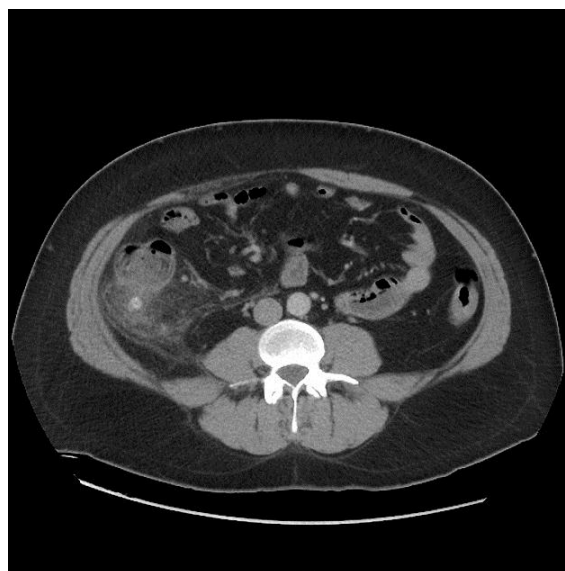


Figure 5: Inflamed caecum with surrounding fat stranding and a hyperdense diverticulum suggestive of ceecal diverticulitis.

DISCUSSION

Acute appendicitis is the most common cause of acute abdomen in young adults. Appendectomy is the most frequently performed urgent abdominal operation by general surgeons. Various anatomical positions of the appendix are well established, which in the decreasing order of incidence include retrocaecal (74%), pelvic (21%), paracaecal (2%), subcaecal (1.5%), preileal (1%), and postileal (0.5%).^[10]

Classical features include periumbilical pain that migrates to the right iliac fossa, anorexia, fever, and tenderness and guarding in the right iliac fossa. Atypical presentations are particularly common in preschool children. Diagnosis is based on imaging findings and clinical presentation. As relying alone on clinical symptomatology leads to higher rates of negative laparotomies, role of imaging modalities has increased tremendously for proper diagnosis of acute appendicitis. diagnostic scoring systems have been developed in an attempt to improve the diagnostic accuracy of acute appendicitis. The most prominent of those scores is that developed by Alvarado.^[11] The modified Alvarado score is a more simplified and practical version of the original one and has been widely accepted after it was successfully tested in different studies.^[12] Above mentioned cases clearly demonstrate heterogeneity within clinical presentation acute appendicitis.

CONCLUSION

Acute appendicitis is one of the most common surgical emergencies that is dealt by day-to-day surgical practice. Diagnosis of acute appendicitis in our setting is still based on high index of suspicion following clinical evaluation. Combining this with laboratory findings and ultrasound scan has yielded an acceptable negative appendectomy rate. We advocate routine use of ultrasound along with clinical evaluation and laboratory

tests for the timely diagnosis of acute appendicitis and an early surgical intervention to prevent complications.

REFERENCES

1. Saeed K, Mehboob F, Azam V. Role of abdominal sonography in the diagnosis of acute appendicitis. *Rawal Med J.*, 2009 Jul 1; 34: 138–40.
2. Kumar V, Cortan RS, Robbins S L: *Appendicitis*, Robbins Basic Pathology, 5th Edn., 1992. P520.
3. Flum DR, Koepsell T. The clinical and economic correlates of misdiagnosed appendicitis: nationwide analysis. *Arch Surg Chic Ill 1960.*, 2002 Jul; 137(7): 799–804; discussion 804.
4. Schwarz A, Bölke E, Peiper M, Schulte am Esch J, Steinbach G, van Griensven M, et al. Inflammatory peritoneal reaction after perforated appendicitis: continuous peritoneal lavage versus non lavage. *Eur J Med Res.*, 2007 May 29; 12(5): 200–5.
5. Wagner JM, McKinney WP, Carpenter JL. Does this patient have appendicitis? *JAMA.*, 1996 Nov 20; 276(19): 1589–94.
6. Kazarian KK, Roeder WJ, Mersheimer WL. Decreasing mortality and increasing morbidity from acute appendicitis. *Am J Surg.* 1970 Jun; 119(6): 681–5.
7. Leung AKC, Sigalet DL. Acute abdominal pain in children. *Am Fam Physician.* 2003 Jun 1; 67(11): 2321–6.
8. Addiss DG, Shaffer N, Fowler BS, Tauxe RV. The epidemiology of appendicitis and appendectomy in the United States. *Am J Epidemiol.* 1990 Nov; 132(5): 910–25.
9. Ramachandran P, Siviti CJ, Newman KD, Schwartz MZ. Ultrasonography as an adjunct in the diagnosis of acute appendicitis: a 4-year experience. *J Pediatr Surg.* 1996 Jan; 31(1): 164–7; discussion 167–169.
10. Publishers CBS, Ltd204 DP, Delhi 110 092 PIA. *Bailey & Love's Short Practice of Surgery*, 27th Edition [Internet]. Routledge & CRC Press. [cited

2021 Dec 17]. Available from:
<https://www.routledge.com/Bailey--Loves-Short-Practice-of-Surgery-27th-Edition/Williams-OConnell-McCaskie/p/book/9781498796507>

11. Alvarado A. A practical score for the early diagnosis of acute appendicitis. *Ann Emerg Med.*, 1986 May; 15(5): 557–64.
12. Macklin CP, Radcliffe GS, Merei JM, Stringer MD. A prospective evaluation of the modified Alvarado score for acute appendicitis in children. *Ann R Coll Surg Engl*, 1997 May; 79(3): 203–5.