

Acute appendicitis caused by worm infestation in a 11-year-old girl - A case report

¹Dr. Vasanthbalan SB, ^{*2}Dr. Sairam, ³Dr. Ragupathy, ⁴Dr. Ramalakshmi

¹Post Graduation, Department of General surgery, Sree Balaji Medical College, Chennai
Email: vasanthbalan83@gamil.com, ORCID ID- 0009-0001-7852-8644

^{*2}Senior resident, Department of General surgery, Sree Balaji Medical College, Chennai
Email: Sairamkr1995@gmail.com , ORCID ID- 0000-0003-1592-3783

³Professor, Department of General surgery, Sree Balaji Medical College, Chennai
Email: dr.traghupathy@gmail.com ORCID ID- <https://orcid.org/0000-0001-6623-6751>

⁴Professor, Department of General surgery, Sree Balaji Medical College, Chennai
Email: ramadoctor2003@gmail.com ORCID ID- <https://orcid.org/0000-0001-8762-6847>

Abstract

Appendicitis remains the most prevalent cause of acute abdominal pain requiring surgical intervention and is widely recognized as the most common indication for emergency gastrointestinal surgery. This is particularly evident in the pediatric population, where appendicitis constitutes the leading cause of emergency abdominal procedures. While the pathogenesis of appendicitis is most often attributed to luminal obstruction caused by fecaliths, mucus plugs, or lymphoid hyperplasia, less common etiologies such as intestinal parasitic infestations have also been reported, albeit rarely, as causative factors. In this article, we describe an unusual case of acute appendicitis secondary to worm infestation by *Enterobius vermicularis* in an 11-year-old girl. The patient presented with classical clinical features, including right-sided abdominal pain, fever, and episodes of vomiting. On physical examination, marked tenderness was elicited in the right iliac fossa, accompanied by positive rebound tenderness, suggestive of peritoneal irritation. Based on clinical findings and evaluation, a provisional diagnosis of subacute appendicitis was made. Given the clinical presentation, the patient was planned for emergency laparoscopic appendectomy. Intra-operatively, the appendix was found to be retrocaecal in position and showed signs of inflammation. Notably, a live worm consistent with *Enterobius vermicularis* was identified within the appendiceal lumen, indicating parasitic infestation as the underlying cause of obstruction and inflammation. The surgical procedure was completed successfully without complications. The postoperative course was uneventful, with the patient showing good recovery. She was managed with appropriate postoperative care, including anti-helminthic treatment, and was discharged in stable condition on the fourth postoperative day. This case highlights the importance of considering rare etiologies such as parasitic infections in the differential diagnosis of appendicitis, especially in pediatric patients, and underscores the role of timely surgical intervention in ensuring favorable outcomes.

Keywords: *Enterobius vermicularis*, acute appendicitis, worm infestation, children

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Introduction

Appendicitis is the most prevalent cause of abdominal pain and the commonest indication for emergency gastrointestinal surgery overall, with the lifetime incidence in the range of 7-14%; mostly occurring in the age of 10-30 years.¹ Especially in children, it is the most common reason for emergency abdominal surgery.² Blockage of the appendicular lumen by faecal matter, mucus, tumours or hypertrophied lymphatic tissues leading to inflammation is the primary aetiology of acute appendicitis.³ In adults, the commonest causes are infections, fecaliths, and tumors.⁴ In the paediatric population lymphoid hyperplasia is the common cause— reactive hyperplasia is often misdiagnosed as

acute appendicitis.⁵ Parasitic infection of the appendix, though reported, is rare.⁶

Enterobius vermicularis, commonly called pinworm, is around 10 mm in length, usually found in hemicolon and adjacent bowel.⁷ Over 200 million people are estimated to be affected by pinworm infection, with around 4% to 28% children infected.^{8,9} Infection occurs via the fecal-oral route and the patient is usually asymptomatic. Pruritus in the perianal region may be present in some.¹⁰ Worm in the appendix may mimic acute appendicitis, with or without histological evidence of acute inflammation; chronic inflammatory infiltrates and eosinophilia may be seen.¹¹

Case Presentation

*Author for Correspondence: **Dr. Sairam**

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A 11-year-old presented to the out-patient department with complaints of right-side abdominal pain for the past 2 weeks. She also had fever (99° F) and 2-3 episodes of vomiting. She also had a history of nausea and anorexia (weight: 28 kg). On examination, tenderness was elicited on the right iliac fossa (RIF) and suprapubic region. Rebound tenderness was present. There was no guarding/rigidity observed.

The blood investigations showed: increased neutrophils count (76.4%) and absolute neutrophils count (8.65×10^9 /L), reduced lymphocytes count (14.9%), anaemia (Haemoglobin-10.3%, Haematocrit- 31%, Red Blood Cells- 3.89 million/cumm). The prothrombin time (PT-

INR) was 1.12 seconds. Serum urea was 12 mg/dl and creatinine 0.5 mg/dl; Sodium- 134.2 mEq/L; total bilirubin 1.2 mg/dl and direct bilirubin 0.4 mg/dl.

The urine routine investigations showed the pH to be 8, with microscopy revealing 12-14 RBCs per HPF; 4-5 pus cells/HPF.

The abdominal ultrasound did not show any significant abnormality, except for mild probe tenderness in the RIF. CT scan showed inflammation of appendix (acute appendicitis) (Figure 1).

The "MANTRELS" score was calculated to be 9 as shown:

S.No.	Parameter	Score
1	Migratory RIF Pain	0
2	Anorexia	1
3	Nausea	1
4	RIF Tenderness	2
5	Rebound tenderness	1
6	Elevated temperature	1
7	Leucocytosis	2
8	Shift of WBC count to the left	1
9	Total	9 (out of 10)

A diagnosis of subacute appendicitis was made and the patient was taken up for emergency laparoscopic appendectomy. Intra-operatively, it was observed that the appendix was retro-caecal in position, inflamed, and a worm was present (Figure 2,3). The post-operative period was uneventful and the patient was discharged well on the 4th day. The patient was prescribed 2 doses

of Tab. Albendazole 15 days apart for deworming. The patient was followed up for a period of one year. During follow-up visits, she was found to have no further instances of discomfort, nausea, or fever. Her appetite improved. The results of the biopsy revealed signs of appendicitis with worm-Enterobius vermicularis. (Figure 4)

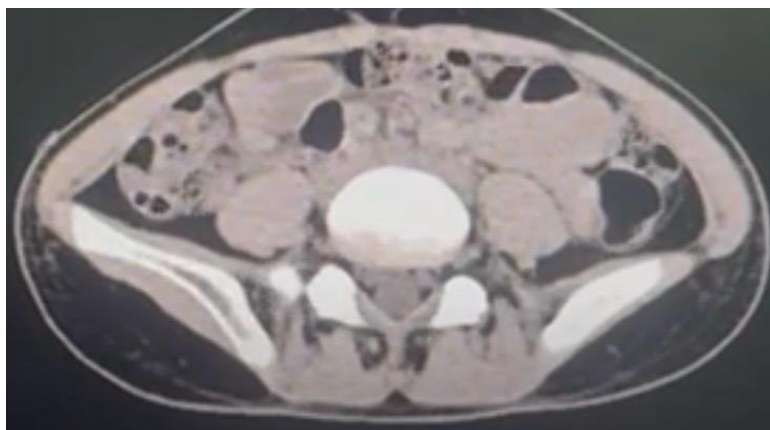


Figure 1: CT image showing inflammation of appendix (acute appendicitis)

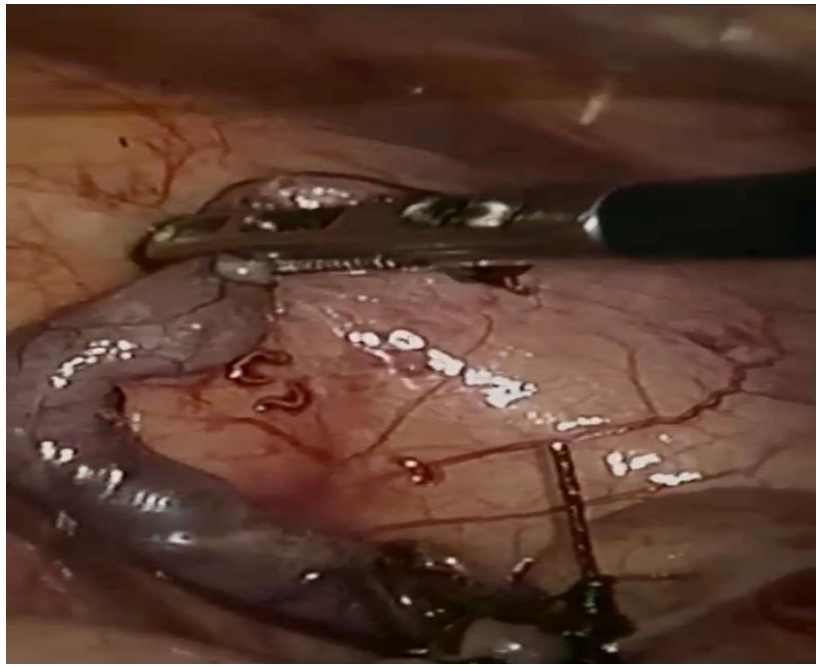


Figure 2: Intra-operative image showing pin worm

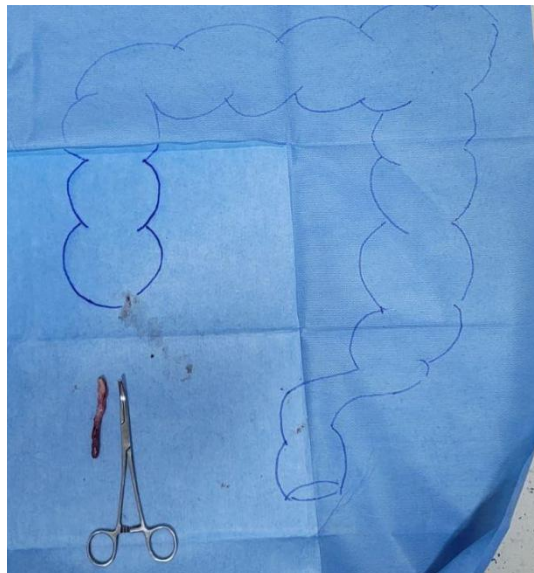


Figure 3: Postoperative image; diagnosis: acute appendicitis due to worm infestation

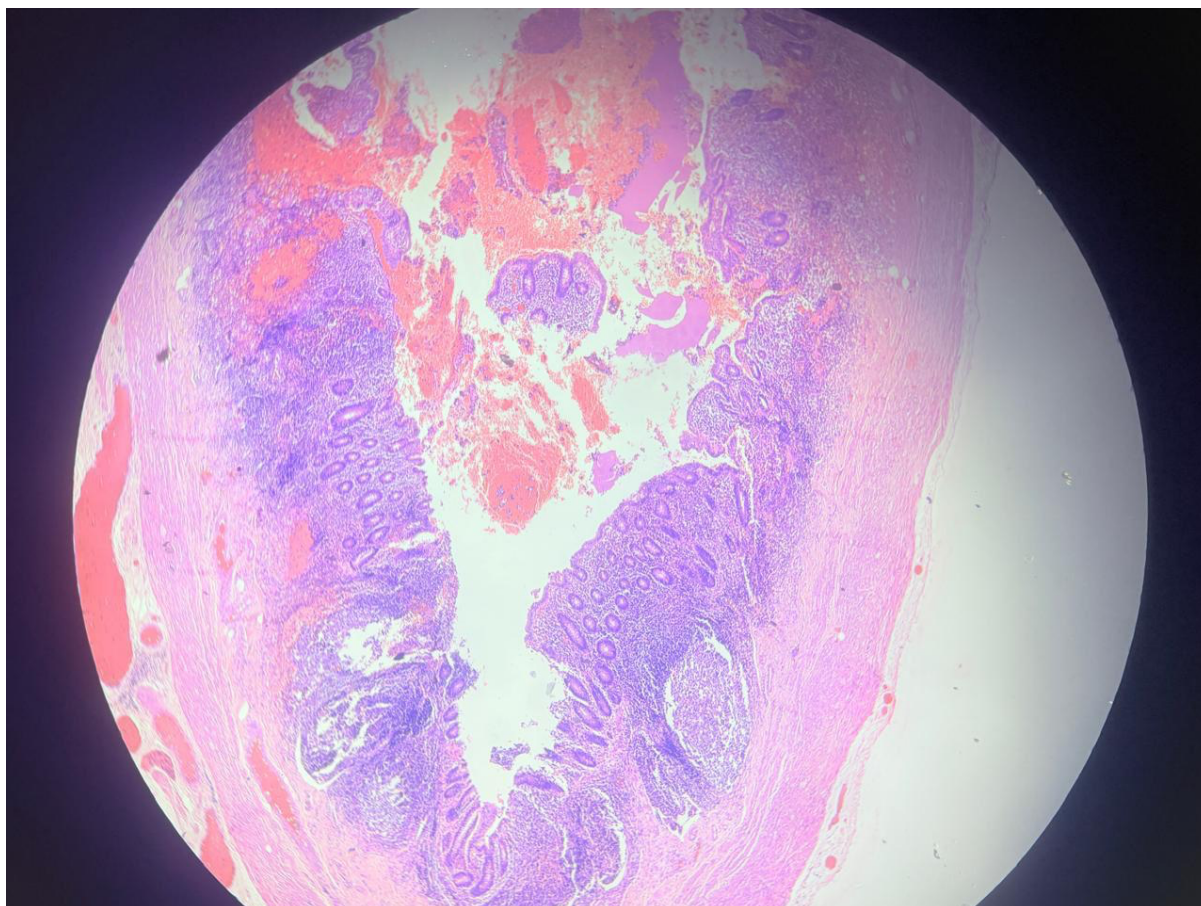


Figure 4: HPE showing acute appendicitis

Discussion

The most common helminth infection occurring globally is the gastrointestinal infection caused by *Enterobius vermicularis*.¹² Though it is seen in all ages, it is commonly known to occur in children aged five to fourteen years.¹⁰ The present case is similar to this—acute appendicitis caused by worm infestation in a girl, 11 years of age, presented with complaints of right abdominal pain, fever, vomiting.

Infection by pinworm mimicking appendicitis has been well-documented; however, without pathologic findings. Whether the appendicitis is primary infection caused by the parasite or the worm is an incidental finding during appendectomy is an ongoing debate.¹³ Cases of pinworm infestation are reported as an etiology causing acute appendicitis.^{14,15}

When clinical features are minimal or absent as in the case of *E.vermicularis* infestation and the histopathology is not reliable, the diagnosis can be made with imaging. In the present case, the abdominal ultrasound did not show any significant abnormality, except for mild probe tenderness in the RIF. CT showed features of acute appendicitis.

Surgical removal of the appendix by laparotomy or laparoscopy is a conventional intervention performed for acute appendicitis. In the present case, a diagnosis of subacute appendicitis was made and the patient was taken up for emergency laparoscopic appendectomy. Post-operative management includes deworming and

health education awareness regarding hand hygiene, food-handling practices, as the commonest route is faeco-oral. In a country like India where open-air-defecation is still prevalent this gains all the more importance. Additionally, the family members have to be screened as they share the kitchen and have similar eating habits. Our patient was prescribed 2 doses of Tab. Albendazole 15 days apart for deworming. The patient was followed up for a period of one year.

Conclusion

In the present case we report acute appendicitis caused by worm infestation- *Enterobius vermicularis*, in a 11-year-old girl who was taken up for laparoscopic appendectomy, administered Albendazole post-operatively, and followed up for one year. This emphasizes early diagnosis and accurate identification of the cause of acute appendicitis, which is important for starting appropriate anti-microbial therapy. Moreover, in cases of enterobiasis the possibility of it developing into acute appendicitis has to be considered.

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