Parasitic Infestation as an Unusual Cause of Acute Appendicitis: A Two-Case Series

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Abstract

Acute appendicitis is frequently attributed to luminal obstruction caused by fecaliths, lymphoid hyperplasia, or neoplasia. Both cases were caused by parasitic infestation. The first case is a 13-year-old girl diagnosed clinically with acute appendicitis, and an emergency appendicectomy was performed. Histopathological assessment of the appendix revealed Enterobius Vermicularis adult worms and eggs, and she was treated with albendazole and discharged well. The second case is a 44-year-old gentleman who was diagnosed with acute appendicitis and underwent emergency appendicectomy. Histopathological assessment revealed the body of a parasite, and he was treated with albendazole and discharged in good condition. Parasitic appendicitis came with typical appendicitis symptoms, and a local study revealed that children's stool samples showed more than 1 parasitic presence, with the highest recorded parasites being Trichuris Trichiura and Ascaris Lumbricoides. Poor sanitation and insufficient access to safe water are major risk factors for parasitic illnesses in the community. The exact mechanism by which parasites cause appendicitis remains unknown. Parasitic infestation is an unusual etiology for appendicitis and remains a public healthcare challenge in tropical countries.

Keywords: *Appendix, appendicitis, parasite, surgery, tropical medicine.*

INTRODUCTION

Acute appendicitis is frequently attributed to luminal obstruction caused by fecaliths, lymphoid hyperplasia, or neoplasia. Parasitic appendicitis is a rare etiology and has been infrequently reported in the literature [1]. The relationship between intestinal parasites and appendiceal disease remains controversial. Parasites may contribute to the development of acute appendicitis through luminal obstruction, mucosal irritation, lymphoid hyperplasia, and subsequent inflammation [1]. Nevertheless, numerous studies have demonstrated that parasites are frequently identified in appendectomy specimens without accompanying histological evidence of acute inflammation, suggesting that their presence may represent an incidental finding rather than a direct etiological factor [2].

CASE PRESENTATION

Case 1

A 13-year-old girl presented with a 2-day history of migratory right iliac fossa pain associated with anorexia, vomiting, low-grade fever, and rebound tenderness over the right iliac fossa. Laboratory investigations revealed a white blood cell value 15x10^3/µL with a neutrophil count of 11.8 x10^3/µL and eosinophil count was not performed.

An abdominal radiograph showed no significant abnormalities. She was clinically diagnosed with acute appendicitis and underwent an emergency laparoscopic appendicectomy. Intraoperative findings revealed an inflamed appendix, and appendicectomy was performed according to the institution's standard protocol (**Fig. 1**).

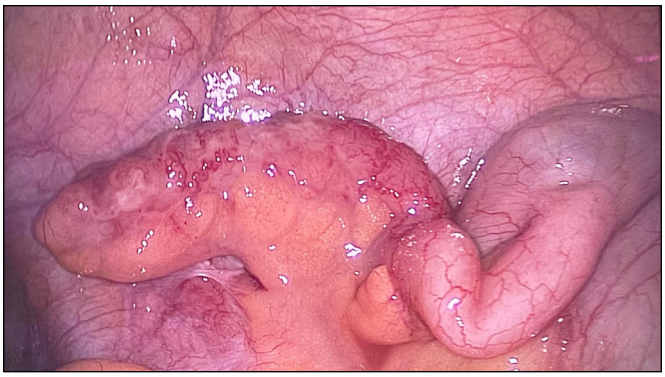


Fig. (1): Laparoscopic Image of Inflamed Appendix.

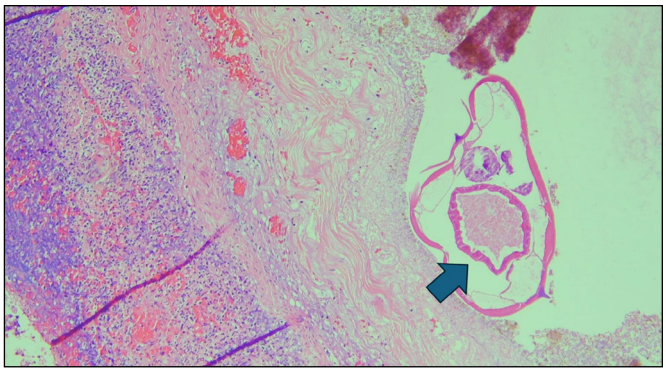


Fig. (2): Cross section of an adult worm (arrow) within the appendix lumen (100x magnification).

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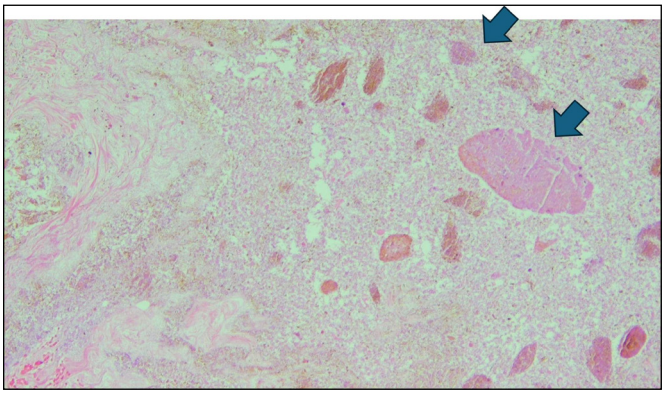


Fig. (3): Outlines of degenerated Enterobius eggs (arrow) admixed.

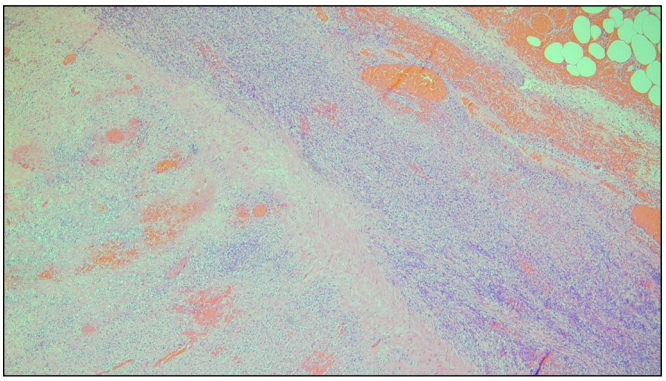


Fig. (4): Appendiceal wall displaying extensive mucosal ulceration and dense transmural neutrophilic infiltration (40x magnification, H&E stain).

Her postoperative recovery was uneventful, and she was discharged the following day.

Histopathological examination demonstrated an inflamed appendix with extensive mucosal ulceration. Infestation by adult Enterobius vermicularis worms and eggs was identified within the appendiceal lumen (**Figs. 2-4**). The patient was prescribed oral albendazole 400 mg once daily for 3 days. She remained well at the 2-month outpatient follow-up.

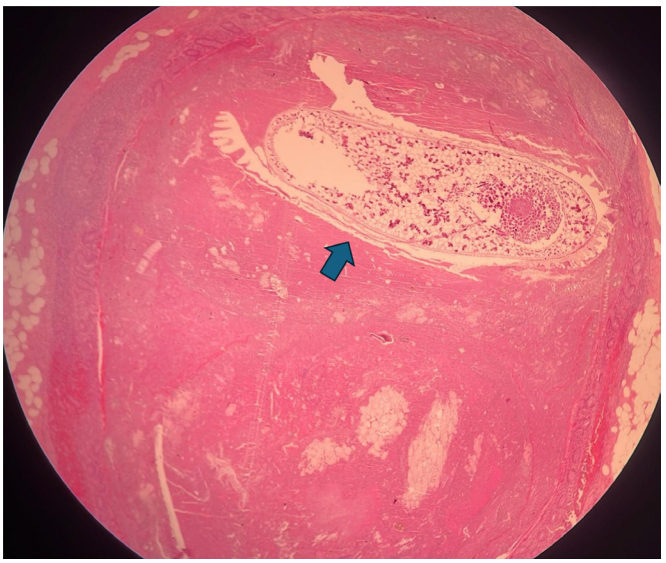


Fig. (5): Section of appendix including body of parasite (arrow) (100x magnification, H&E Stain).

Case 2

A 44-year-old gentleman presented with a 2-day history of migratory right iliac fossa pain associated with nausea. Physical examination revealed tenderness over the right iliac fossa with rebound tenderness. Laboratory investigations demonstrated a white blood cell value $16x10^3/\mu L$ with a neutrophil count of $10.5 x10^3/\mu L$ however, eosinophil count was not measured. An abdominal radiograph showed no significant abnormalities.

The patient underwent an emergency open appendicectomy. Intraoperatively, an inflamed appendix was identified. He had an uneventful postoperative recovery and was discharged the following day.

Histopathological examination of the appendiceal specimen revealed a parasitic body on microscopic examination with Hematoxylin and Eosin (H&E) staining (**Fig. 5**). The findings were reviewed and confirmed by a histopathologist; however, the exact species of the parasite could not be identified.

The patient was subsequently prescribed oral albendazole 400 mg once daily for 3 days and was discharged from surgical follow-up after completion of treatment.

METHODS

This case series was conducted at a tertiary referral centre in Kelantan, Malaysia. Both cases were referred from general practitioner clinics to the Emergency Department for further management.

Both patients underwent appendicectomy based on clinical suspicion of acute appendicitis. The cases were identified retrospectively after routine histopathological examination of the resected appendiceal specimens demonstrated parasitic appendicitis. Following histopathological confirmation, the cases were selected for preparation as a case series because of the rarity of this condition.

Clinical information, including demographic characteristics, presenting symptoms, laboratory and imaging findings, operative details, histopathological results, postoperative management, and follow-up outcomes, was obtained through retrospective review of the patients' medical records and histopathology reports.

Written informed consent for publication of the clinical details and accompanying histopathological images was obtained from both patients (and from the legal guardian for the paediatric patient). Both patients were reviewed in the surgical outpatient clinic approximately 1–2 months after surgery for histopathological review, completion of anthelmintic treatment, and assessment of postoperative recovery before discharge from follow-up.

DISCUSSION

Parasitic appendicitis presents with typical symptoms of acute appendicitis. It calls for additional considerations

in endemic areas. Parasitic infestation of the appendix is rare, with parasites identified in approximately 1-2% of appendectomy specimens worldwide, although prevalence varies according to geographic region and endemicity [1]. Based on a study conducted among aboriginal children in Kelantan, most stool samples showed more than 1 parasite, with Trichuris trichiura and Ascaris lumbricoides showing the higher prevalence of intestinal parasitic infections [3]. This differs from the worldwide prevalence, in which Enterobius vermicularis had the highest prevalence among all helminth infections [3]. Poor sanitation and inadequate access to safe water are major risk factors for parasitic illnesses in the community [3, 4]. The exact mechanism of pinworm causing appendicitis remains controversial. One theory hypothesized that adult pinworms and eggs may obstruct the appendiceal lumen and cause appendicitis similar to the effect of faecolith [5]. Parasitic infections of the appendix are generally diagnosed postoperatively through histopathological evaluation because preoperative clinical and imaging findings are nonspecific [6]. Although peripheral eosinophilia may suggest an underlying parasitic infestation, it is inconsistently observed in parasitic appendicitis and should not be relied upon as a diagnostic marker [5]. Histopathological examination remains the gold standard for diagnosis. The pathologic alterations may range from lymphoid hyperplasia to acute phlegmonous inflammation with potentially fatal consequences including gangrene and peritonitis [6]. Appendectomy alone is insufficient treatment for appendiceal E. vermicularis infestation; postoperative anthelmintic therapy and simultaneous treatment of household contacts are recommended to prevent reinfection [7].

In our case series, both patients presented with typical appendicitis presentation with findings of parasitic infestation despite living in an urban area with treated water supply.

CONCLUSION

Parasitic appendicitis represents a rare and frequently underrecognized cause of acute appendicitis. Given the limitations of preoperative diagnosis, routine histopathological evaluation of appendectomy specimens remains indispensable for identifying underlying parasitic infestation. Clinicians and pathologists should maintain a high index of suspicion for parasitic etiologies, particularly in endemic areas, to ensure timely diagnosis, appropriate anthelmintic treatment, and effective prevention of recurrence and household transmission.

CONSENT FOR PUBLICATION

Written informed consent was obtained from the patient and the patient's legal guardian for publication of this case report and accompanying images.

CONFLICT OF INTEREST

The authors declare that they have no competing interests.

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GENERATIVE AI AND AI-ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

During the preparation of this manuscript, the authors used ChatGPT (OpenAI, San Francisco, CA, USA) to assist with language editing, grammar correction, and improvement of manuscript readability. The authors reviewed and edited all content generated by the tool and take full responsibility for the accuracy, integrity, and originality of the final manuscript.

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