ASCARIS LUMBRICOIDES - A RARE CAUSE OF ACUTE APPENDICITIS

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ABSTRACT

Acute appendicitis is a common surgical emergency, typically caused by luminal obstruction due to fecaliths, lymphoid hyperplasia, or neoplasms. Parasitic infections, particularly Ascaris lumbricoides, are an uncommon but recognized cause of appendicitis, often leading to diagnostic challenges in non-endemic regions. We report the case of a 48-year-old female who presented with acute right lower quadrant pain lasting two days, associated with mild nausea but no fever or vomiting. Laboratory investigations revealed mild leukocytosis with eosinophilia. Contrast- enhanced computed tomography (CT) of the abdomen and pelvis demonstrated a prominent appendix (8.1 mm) with mild wall enhancement but no significant periappendiceal inflammation or perforation, suggestive of early appendicitis. Laparoscopic appendectomy was performed, revealing a yellowish tubular structure protruding from the appendiceal lumen. Histopathological examination confirmed the presence of Ascaris lumbricoides within the appendix, confirming a rare parasitic etiology of appendicitis. The patient had an uneventful postoperative recovery and was discharged with a course of albendazole. This case highlights the importance of considering parasitic infections as a differential diagnosis in appendicitis, particularly in endemic or travel- related cases. Radiologists and clinicians should remain vigilant for atypical causes of appendicitis to guide appropriate management.

Keywords: Ascaris lumbricoides, Appendicitis, Parasitic Infection, CT Imaging, Laparoscopic Appendectomy

INTRODUCTION

Acute appendicitis is one of the most common causes of acute abdomen worldwide and is a frequent indication for emergency surgery. The condition typically results from obstruction of the appendiceal lumen, leading to increased intraluminal pressure, ischemia, and bacterial overgrowth. The most frequently implicated causes include fecaliths, lymphoid hyperplasia, foreign bodies, and neoplasms. However, parasitic infestations remain an underrecognized and relatively rare etiology of appendicitis, despite their significant prevalence in endemic regions. Parasitic appendicitis poses unique diagnostic and therapeutic challenges, requiring a high index of suspicion in appropriate

clinical settings. [1]

Ascaris lumbricoides is the most common intestinal helminthic infection worldwide, affecting an estimated 1.2 billion people, particularly in tropical and subtropical regions with poor sanitation and inadequate hygiene practices. Transmission occurs via ingestion of infective eggs from contaminated food, water, or soil. The larvae hatch in the intestine, migrate to the lungs, and then return to the gastrointestinal tract, where they mature into adult worms. While Ascaris lumbricoides primarily resides in the small intestine, its potential to migrate into the biliary tract, pancreatic duct, and appendix has been well documented. However, its role in causing acute appendicitis remains uncommon and is often overlooked in non-endemic regions.[2]

Several mechanisms have been proposed for how Ascaris lumbricoides contributes to appendicitis. Mechanical obstruction of the appendiceal lumen by adult worms or their eggs can lead to inflammation, bacterial overgrowth, and subsequent appendiceal wall compromise. Additionally, the parasite's movement within the intestinal tract can induce mucosal irritation, resulting in appendiceal inflammation even in the absence of true luminal obstruction. In some cases, an immune-mediated response triggered by Ascaris antigens has been suggested to play a role in appendiceal pathology. Despite these theoretical mechanisms, the exact pathophysiological contribution of Ascaris lumbricoides to appendicitis remains an area of ongoing research. [3]

The clinical presentation of Ascaris-associated appendicitis does not significantly differ from that of conventional acute appendicitis. Patients typically present with right lower quadrant pain, nausea, vomiting, fever, and leukocytosis. However, a history of recurrent abdominal pain, unexplained eosinophilia, or previous parasitic infections may raise suspicion. In endemic regions, parasitic infections are a well-recognized cause of appendicitis, whereas in non-endemic areas, the diagnosis is often made intraoperatively or during histopathological examination of the resected appendix. [4]

Radiological investigations, particularly ultrasonography (USG) and computed tomography (CT), can provide valuable diagnostic clues. Sonographic findings suggestive of parasitic appendicitis may include an echogenic linear structure within the appendiceal lumen with posterior acoustic shadowing, representing the worm. CT imaging may reveal a dilated, thick- walled appendix with a tubular filling defect, consistent with the presence of an intraluminal worm. However, in many cases, imaging findings may be indistinguishable from conventional appendicitis, necessitating a high degree of clinical suspicion and further confirmation via stool examination or surgical exploration. [5]

Surgical intervention remains the primary treatment modality for appendicitis, including cases

associated with parasitic infections. Laparoscopic appendectomy is preferred due to its minimally invasive nature, faster recovery, and lower complication rates. Intraoperative identification of a worm within the appendix can guide additional management, including postoperative anthelminthic therapy. Albendazole or mebendazole is commonly prescribed to eradicate any remaining parasites and prevent recurrence or further complications. [6]

The global burden of parasitic appendicitis varies widely, with higher incidence rates reported in developing countries where parasitic infections are endemic. Several retrospective studies and case series have documented the prevalence of Ascaris lumbricoides in appendicectomy specimens, ranging from 0.2% to 2.3%. However, due to underreporting and limited awareness, the actual burden may be higher than documented. Improved sanitation, public health initiatives, and deworming programs have contributed to reducing the prevalence of helminthic infections, yet sporadic cases continue to be reported even in developed nations. [7]

Complications of Ascaris-associated appendicitis can be significant if left untreated. Migration of worms into the peritoneal cavity may lead to peritonitis, abscess formation, or secondary bacterial infections. Additionally, in cases where appendicitis is associated with a high parasitic burden, concurrent involvement of the hepatobiliary or pancreatic systems may be present, requiring more extensive surgical or medical intervention. Given these potential complications, early diagnosis and prompt treatment are essential to prevent adverse outcomes. [8]

Despite its rarity, clinicians should consider parasitic infections as a differential diagnosis in cases of appendicitis, particularly in patients with a history of travel to endemic regions, unexplained eosinophilia, or chronic intermittent gastrointestinal symptoms. Stool examination, serologic testing, and histopathological analysis of appendicectomy specimens can aid in confirming the diagnosis. Additionally, screening for coexisting parasitic infections may be warranted to prevent further gastrointestinal complications. [9,10]

This study aims to highlight a rare case of Ascaris lumbricoides causing acute appendicitis in a 48-year-old female, emphasizing the importance of considering parasitic infections in the differential diagnosis of appendicitis. We present the radiological, surgical, and histopathological findings of this case and discuss its implications for clinical practice. Through this case, we aim to contribute to the growing literature on parasitic appendicitis and enhance awareness among clinicians and radiologists regarding this uncommon but important entity.

Case Report

A 48-year-old female presented with acute right lower quadrant pain persisting for two days. The pain was non-radiating and associated with mild nausea, but there was no history of vomiting, fever, or bowel disturbances. Physical examination revealed localized tenderness in the right iliac fossa without signs of peritonitis. Laboratory investigations showed mild leukocytosis with eosinophilia. A contrast-enhanced CT scan of the abdomen and pelvis was performed using oral and intravenous contrast. The study revealed a preileal appendix measuring 8.1 mm in diameter, demonstrating mild wall enhancement but no significant periappendiceal inflammatory changes, abscess, or perforation. No appendicolith was identified. The remainder of the bowel and abdominal structures appeared unremarkable. Given the clinical and imaging findings suggestive of early appendicitis, the patient underwent laparoscopic appendectomy. Intraoperatively, a yellowish tubular structure was observed emerging from the appendiceal lumen. Surgical retrieval and subsequent histopathological examination confirmed the presence of *Ascaris lumbricoides* within the appendix, indicating a rare parasitic etiology of appendicitis. The patient had an uneventful postoperative recovery and was treated with a course of albendazole.

Figure 1: Laparoscopic View of *Ascaris lumbricoides* Emerging from the Appendiceal Lumen in a

Case of Parasitic Appendicitis

DISCUSSION

Parasitic appendicitis caused by *Ascaris lumbricoides* is rare, and our case contributes to the growing evidence of this unusual etiology. Our patient presented with right lower quadrant pain lasting two days, mild nausea, but no fever or vomiting. This presentation aligns closely with that reported by Castañeda et al. (2022), where the diagnosis of parasitic appendicitis was incidental, as the patient did not have significant systemic symptoms (Castañeda et al., 2022).[11]

In contrast, Ruelas-Contreras and Caballero-Concha (2023) reported a 7-year-old child with fever and intense pain migrating from the mesogastrium to the right lower quadrant, a more classical presentation of appendicitis (Ruelas-Contreras & Caballero-Concha, 2023).[12] Similarly, Khan et al. (2024) documented an 8-year-old child with pain, nausea, and anorexia, but in their case, a foreign body was also present, making the diagnosis more complex (Khan et al., 2024).[13] Unlike our case, which had a mild presentation, Yazıcıoğlu et al. (2016) reported a more severe case requiring open laparotomy due to significant inflammation, highlighting that parasitic appendicitis can range from mild to severe forms (Yazıcıoğlu et al., 2016).[14]

Our patient exhibited mild leukocytosis with eosinophilia, a finding that supports the parasitic etiology. Küpeli et al. (2014) emphasized that eosinophilia should raise suspicion of parasitic involvement, though it is not always present (Küpeli et al., 2014). [15] Radiologically, our patient's CT scan showed mild wall enhancement of the appendix (8.1 mm diameter) without significant periappendiceal inflammation or perforation, suggesting early appendicitis. This imaging finding is similar to those reported by Castañeda et al. (2022) and Ruelas-Contreras & Caballero-Concha (2023), where no appendicolith or severe inflammation was observed. [11,12] However, in contrast, Niang et al. (2022) described a case where ultrasound detected multiple intestinal worms, including one near the inflamed appendix, aiding preoperative diagnosis (Niang et al., 2022).[16]

During surgery, our patient had a yellowish tubular structure protruding from the appendiceal lumen, which was later confirmed as *Ascaris lumbricoides*. This finding is consistent with multiple reports, including those by Castañeda et al. (2022), Ruelas-Contreras & Caballero- Concha (2023), and Yazıcıoğlu et al. (2016), where the worm was either found within the appendix or extending into the cecum.[11,12,14] However, our case contrasts with Niang et al. (2022), who described a perforated appendix with an adult *Ascaris lumbricoides* partially within the lumen, suggesting a more advanced stage of the disease.[16] Similarly, Khan et al. (2024) reported a unique case where a foreign body

coexisted with *Ascaris lumbricoides*, complicating the pathology.[13] Histopathologically, our case confirmed the presence of *Ascaris lumbricoides*, as did all other reports, reinforcing the importance of postoperative examination for definitive diagnosis.

Our patient underwent laparoscopic appendectomy followed by albendazole therapy, with an uneventful postoperative recovery. This management approach aligns with most cases in the literature, including those by Castañeda et al. (2022) and Küpeli et al. (2014), where antiparasitic treatment was given to prevent recurrence. [11,15] In contrast, cases with more severe presentations or complications, such as perforation, required open surgery, as seen in Yazıcıoğlu et al. (2016) and Niang et al. (2022).[14,16]

CONCLUSION

Our case highlights *Ascaris lumbricoides* as a rare but important cause of acute appendicitis, emphasizing the need for clinicians to consider parasitic infections in the differential diagnosis, especially in endemic or travel-associated cases. Compared to previous reports, our patient had a milder clinical presentation, reinforcing that parasitic appendicitis may not always manifest with severe symptoms. Imaging findings were consistent with early appendicitis, and laparoscopic appendectomy with antiparasitic therapy resulted in a favorable outcome, as observed in similar cases. The intraoperative identification of the parasite was crucial for definitive diagnosis. Given the increasing global travel and migration, awareness of atypical appendicitis etiologies is essential for timely diagnosis and appropriate management. Further research is warranted to establish standardized diagnostic and treatment protocols for parasitic appendicitis.

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