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Case Report

A Case Report and Analysis of Intestinal Hookworm Disease Misdiagnosed as Acute Appendicitis

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Abstract

A 26-year-old unmarried female presented with a five-day history of paroxysmal lower abdominal pain, initially suspected to be acute appendicitis. Imaging studies revealed an appendicolith, gallstones, and abdominal CT findings consistent with appendicitis. Despite appropriate antibiotic treatment, the pain persisted. Further evaluation uncovered the patient's history of allergic purpura and raised suspicion for abdominal-type Henoch-Schönlein purpura. The turning point occurred when the patient noticed a long, white object resembling a worm in her stool. Subsequent stool tests confirmed the diagnosis of intestinal ascariasis. This case highlights the importance of considering parasitic infections in the differential diagnosis, especially when clinical presentations overlap with more common conditions such as appendicitis.

Keywords: Intestinal Ascariasis, Acute Appendicitis, Misdiagnosis, Parasitic Infection, Abdominal Pain, Allergic Purpura

Introduction

The human roundworm (Ascaris lumbricoides) is the most common intestinal parasite in humans, infecting over 800 million to 1.2 billion people worldwide, primarily in regions with poor sanitation [1,2]. Although the infection rate in China has significantly declined due to improved sanitation and nationwide deworming campaigns, sporadic cases of adult infections continue to be reported.

The clinical manifestations of ascariasis depend on the worm load, the site of parasitism, and the host's immune status. In children, the infection often presents with typical symptoms such as periumbilical dull pain, digestive disturbances, and malnutrition. In adults, however, due to immune tolerance or a lower worm burden, clinical manifestations are often atypical and may include complications such as biliary ascariasis, ascariasis-induced intestinal obstruction, appendiceal ascariasis, or complex symptoms resulting from ectopic parasitism (e.g., in the pelvic cavity or ovaries) [3].

What is particularly noteworthy is that some adult patients primarily present with neurological symptoms—such as insomnia, anxiety, depression, and teeth grinding—or only with recurrent periumbilical colic pain, without specific digestive tract symptoms. These cases are easily misdiagnosed as acute appendicitis, gynecological diseases, irritable bowel syndrome, or even mental disorders [4-6]. This article presents a case of an adult patient who was misdiagnosed with acute appendicitis and allergic purpura, and reviews relevant literature to analyze the causes of misdiagnosis in adult intestinal ascariasis, emphasizing the importance of systematic assessment and differential diagnosis.

Presentation of the Case

The patient is a 26-year-old unmarried female who denies any history of sexual activity. She was admitted to the hospital on February 15, 2026, presenting with intermittent lower abdominal colic lasting for five days. The abdominal pain began five days prior without an obvious cause, was paroxysmal in nature, and was

accompanied by a sensation of rectal fullness. Her medical history includes allergic purpura diagnosed one year ago, for which she has been treated with polysaccharide total extract of white peony and compound glycyrrhizin.

The patient initially visited the hematology department. An abdominal CT scan revealed a patchy high-density shadow in the appendix cavity, suggestive of a fecalith; gallbladder stones; and hepatic calcification foci. Blood tests showed a white blood cell count of 12.74 × 10^9/L, neutrophil percentage of 68.7%, and C-reactive protein level of 4.04 mg/L. Abdominal allergic purpura was suspected, and consultation with the surgical and gynecological departments was recommended to rule out acute abdominal disease.

Gastrointestinal surgery consultation examination revealed a soft abdomen with mild tenderness in the right lower quadrant, without rebound pain or muscle guarding. Imaging studies showed multiple fecal accumulations in the colon and a fecalith in the appendix. The initial diagnosis was suspected acute appendicitis. The patient received antifungal, antispasmodic, and laxative treatments, along with Cefoperazone sodium-sulbactam sodium combined with metronidazole for three days, resulting in slight relief of abdominal pain. However, on the evening of February 14, the abdominal pain recurred, and the patient was transferred to the gynecology emergency department.

Gynecological examination (including rectal examination) revealed the uterus in an anterior position, of normal size, and without tenderness. No obvious tenderness was noted in either adnexal area. Pelvic ultrasound showed a right ovarian cystic structure measuring 22 mm × 16 mm × 20 mm with no blood flow signal, and a mixed echogenic area measuring 29 mm × 19 mm × 24 mm with peripheral ring-shaped blood flow, possibly representing a corpus luteum. A small amount of pelvic effusion (18 mm) was also observed. The patient was admitted for investigation of abdominal pain with differential diagnoses including acute appendicitis, female pelvic inflammatory disease, and abdominal allergic purpura. Upon admission, comprehensive examinations were performed: white blood cell count was elevated at 15.17 × 10^9/L, neutrophils accounted for 79.1%, and hemoglobin was decreased at 114 g/L. C-reactive protein was elevated at 20.33 mg/L, while procalcitonin levels were normal. D-dimer and coagulation function tests showed slight abnormalities. Tumor marker CA-125 was within normal limits at 17.40 U/mL. On February 17, painless gastroscopy and colonoscopy revealed chronic atrophic gastritis (classified as C2) and patchy erosion of the colon, with no obvious ulcers or tumors detected.

After anti-infective therapy, regulation of intestinal flora, and laxative treatment, the patient's symptoms gradually improved. A key turning point occurred on February 19, when the patient noticed a white, slender object resembling an insect in her stool. Upon reviewing her medical history, the patient reported no recent travel but admitted to occasionally consuming unclean food. A consultation with the gastroenterology department raised the possibility of a parasitic infection, specifically intestinal roundworm disease. A complete fecal examination was performed; although no eggs were detected that day, the typical history of worm expulsion and clinical manifestations supported the diagnosis of intestinal roundworm infection. The patient was transferred to a specialized hospital for further parasitic pathogen examination and standardized deworming treatment.

Discussion

Ascaris lumbricoides is a prevalent soil-transmitted helminth that infects approximately 819 million people worldwide, with the highest burden in tropical and subtropical regions where sanitation is poor [7]. This parasitic infection is primarily transmitted through the ingestion of embryonated eggs in contaminated food or water. In endemic areas, ascariasis is often overlooked because its symptoms can resemble those of other abdominal conditions, such as appendicitis. Studies have shown that parasitic infestations, including Ascaris, are found in up to 9.8% of surgeries performed for suspected appendicitis, indicating a potential rate of misdiagnosis due to symptom overlap.

Ultrasound is commonly used to evaluate abdominal pain but has limited sensitivity for detecting adult Ascaris. Typical findings include linear echogenic structures within the intestine, which may appear as parallel bands without acoustic shadowing [8,9]. In some cases of appendicitis caused by Ascaris, echogenic linear bands may be observed in the appendix, which can be misinterpreted as fecaliths.

The patient's presentation with paroxysmal lower abdominal pain and imaging findings of an appendicolith initially led to a misdiagnosis of acute appendicitis. However, adult Ascaris lumbricoides infection can cause similar symptoms, including intermittent abdominal pain and nausea, which may mimic appendicitis. The abdominal CT scan showing a high-density shadow in the appendiceal cavity was misinterpreted as an appendicolith, although it could represent "pseudo-fecaliths" caused by worm masses or calcified eggs, which are difficult to detect on ultrasound or CT. The patient's underlying history of allergic purpura further complicated the diagnosis, as it can also cause abdominal pain, thereby increasing the challenge of differentiating between purpura-related abdominal symptoms and parasitic infections.

Key diagnostic challenges included the misinterpretation of imaging and the failure to consider ascariasis due to cognitive bias, as Ascaris infections are often associated with children [8,10,11] and are not commonly recognized in adults. This led to a delayed diagnosis until the patient noticed a worm-like object in her stool, which prompted further testing. Additionally, pelvic ultrasound findings raised concerns about gynecological conditions such as pelvic inflammatory disease, diverting attention from the possibility of a parasitic infection.

Differentiating between ascariasis and acute appendicitis is crucial. Appendicitis typically presents with persistent pain localized to McBurney's point, whereas ascariasis is characterized by paroxysmal, colicky pain that shifts with intestinal peristalsis. Abdominal findings further distinguish the two conditions: ascariasis causes diffuse tenderness and a soft abdomen, while appendicitis presents with localized tenderness, rebound pain, and muscle rigidity. In ascariasis, the white blood cell count is mildly elevated, and procalcitonin levels remain normal, unlike in appendicitis, where inflammatory markers increase significantly, especially in cases of perforation.

Conclusion

Intestinal roundworm infection in adults can mimic conditions such as acute appendicitis, pelvic inflammatory disease, and allergic purpura. This case highlights the importance of considering parasitic infections in young females presenting with acute abdominal pain, even when imaging reveals an appendiceal fecalith. A thorough medical history—including dietary habits and previous worm expulsion—combined with careful clinical monitoring and appropriate diagnostic tests, is essential for accurate diagnosis. Clinicians should expand their differential diagnosis to include parasitic infections, particularly in patients with poor dietary hygiene, and consider a trial of deworming treatment when standard tests yield negative results.

Patient Consent Statement

The patient confirmed the consense for publication of our case report.

Conflict of Interest

None.

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