

# A Rare Cause of Acute Appendicitis: *Enterobius vermicularis*

## Nadir Bir Akut Apandisit Sebebi: *Enterobius vermicularis*

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### ABSTRACT

Acute appendicitis is the most common intra-abdominal pathology that requires emergency surgery in general surgery clinics. The aetiology of acute appendicitis includes both infectious and non-infectious causes. Although parasitic diseases are rare in developed countries, they are more common in developing countries. The association between acute appendicitis and parasitic infections is unclear, and whether parasites are the cause of acute appendicitis is still under debate. In addition, many appendix parasites are encountered after appendectomy. In this study, we report a rare case of acute appendicitis caused by *Enterobius vermicularis*.

**Keywords:** Appendicitis, parasite, *Enterobius vermicularis*

### ÖZ

Akut apandisit, genel cerrahi kliniklerinde en sık acil cerrahi girişim gerektiren batın içi patolojidir. Akut apandisit etiyolojisinde hem enfeksiyonlar hem de enfeksiyon dışı nedenler yer almaktadır. Paraziter hastalıklar gelişmiş ülkelerde ender görülmesine rağmen gelişmekte olan ülkelerde daha sık rastlanılmaktadır. Akut apandisit ile parazit enfeksiyonları arasındaki bağlantı net değildir. Parazitlerin akut apandisit sebebi olup olmadığı konusu halen tartışılmakla beraber, yapılan appendektomi ameliyatları sonrasında apendiks lümeninde çok sayıda parazite rastlandığı da bilinmektedir. Bu çalışmada, patoloji sonucuna göre *Enterobius vermicularis*'in neden olduğu, nadir görülen bir akut apandisit olgusu sunulmuştur.

**Anahtar Kelimeler:** Apandisit, parazit, *Enterobius vermicularis*

### INTRODUCTION

Acute appendicitis is the most common intraabdominal pathology requiring urgent surgical intervention in general surgery clinics (1). Patients frequently present with anorexia and abdominal pain localized to the right lower quadrant within hours (2). The etiology of acute appendicitis includes both infections and non-infectious causes. Many non-infectious events in the right lower quadrant may mimic the clinical picture of acute appendicitis. Parasitic infections in the lumen of the appendix may mimic the acute appendicitis clinic by obstructing the lumen without causing an acute inflammation of the appendix (1,3,4). Although parasitic diseases are rare in developed countries, they are more common in developing countries. *Enterobius vermicularis* (*E. vermicularis*) is the most

common human parasite. *E. vermicularis* is both the most common parasitic agent in the gastrointestinal tract and the most common cause of gastrointestinal infection worldwide and it also causes appendicitis among parasitic diseases (5,6).

*E. vermicularis* is an intestinal parasite that is located in the last part of the small intestine, the first part of the cecum and colon, which is more common in the cold climate regions of the underdeveloped countries and frequently affects children (1,4). The most common spread in humans is the fecal-oral route and the eggs remain alive in the clothes and beds for two to three weeks, making it easy to spread (7). While itching is the most common symptom in perianal region in *E. vermicularis* infections; ileocolitis, enterocutaneous fistula, urinary tract infection,

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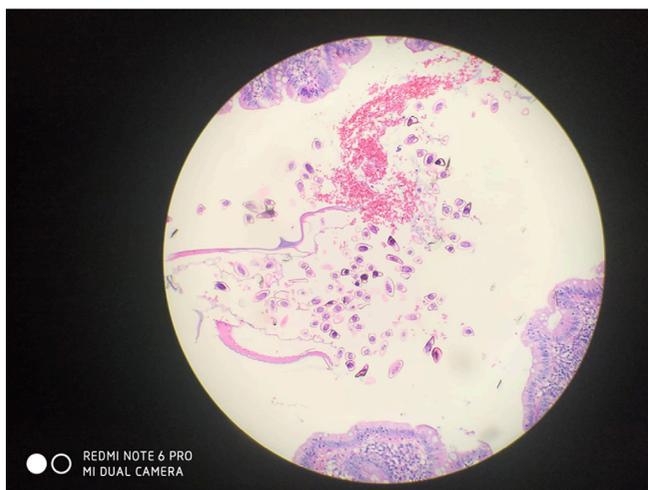
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appendicitis, and mesenteric abscess may also be encountered (8). While the presence of *E. vermicularis* in the appendix may cause symptoms similar to appendicitis, histological evidence of acute inflammation is often not found (9,10). Although the connection between acute appendicitis and parasitic infections is unclear and whether parasites are the cause of acute appendicitis is still debated, it is known that many appendicectomy luminescent parasites are encountered after appendicectomy operations (2,11). In this case report, we aimed to present a rare case of acute appendicitis caused by *E. vermicularis*.

## CASE REPORT

A twenty-five-year-old female patient with no known concomitant disease was admitted to the emergency department with the complaint of abdominal pain that had started 1 day ago. As a result of the examinations performed, we were consulted. Physical examination of the patient revealed tenderness and rebound findings in the right lower quadrant. White blood cell sphere: 11.900/ $\mu$ L, hemoglobin: 12.3 g/dL, hematocrit: 37.6, and biochemical values were normal. In the abdominal ultrasonography of the patient, a significant luminal structure was observed in terms of acute appendicitis with a diameter of 7.5 mm adjacent to the cecum. The patient was consulted with anesthesia and laparoscopic appendicectomy was performed. The patient was discharged without any complication on the first postoperative day. On the 3<sup>rd</sup> day after discharge, she was re-admitted due to abdominal pain anorexia. The patient's hemogram, biochemistry, C-reactive protein and abdominal ultrasonography were normal. Considering the pathology result of the patient, it was thought that abdominal pain may be due to parasites present in the intestine. The pathological result of the patient was reported as reactive lymphoid hyperplasia and parasite egg in the lumen (Figure 1). The patient was treated with infectious diseases for planning medical treatment.



**Figure 1.** Parasitic eggs of *Enterobius vermicularis* in lumen at 200 magnification in hematoxylin-eosin stained appendicitis sections

## DISCUSSION

Acute appendicitis is one of the most common emergency surgical pathologies. Nowadays, this disease can be fully cured

by laparoscopic or open surgery. Parasitic infections are among the reasons that can mimic the acute appendicitis clinic. Acute appendicitis like right lower quadrant pain, nausea and vomiting may be seen clinically. Radiological imaging methods and laboratory findings are not helpful in differentiating the diagnosis of parasitic acute appendicitis. The definitive diagnosis is made by histopathological examination of the appendix and parasite eggs in the lumen. Acute appendicitis is seen more frequently especially in puberty and in males (7-9). Lymphoid hyperplasia in children, faecalitis in adults, tumors in the elderly are the most common causes of obstruction of the appendix lumen (8,9). *E. vermicularis* is a common parasite located worldwide in the cecum and appendix vermiformis. In the study of Yildirim et al. (10) reported that four patients (3.8%) had *E. vermicularis* and one patient (1%) had *Entamoeba histolytica* in the appendix lumen after 104 appendicectomy operations. Pehlivanoglu et al. (11) examined 3.222 appendicectomy materials and the frequency of *E. vermicularis* was 0.74%. Karatepe et al. (12) found normal histology in the histopathologic examination of appendicectomies due to parasitic infection. Gastrointestinal infections due to *E. vermicularis* are among the most common helminth infections worldwide (13). Hasan et al. (14) have extensively examined whether *E. vermicularis* causes appendicitis, and researchers suggest that it is a clinical mimetic of appendicitis but does not produce typical inflammation. This infection is most commonly seen in children aged four to five years, but Kurt et al. (13) reported that appendicectomy was most commonly detected in the 2<sup>nd</sup> and 4<sup>th</sup> decades of *E. vermicularis*. A female patient in the third decade (15). The finding of females having higher prevalence of *E. vermicularis* (58.1% of cases) comes in agreement with *E. vermicularis* being more common in girls (16). It is known that the incidence of *E. vermicularis* varies between 0.2% and 41.8% in patients with appendicitis symptoms (17). The role of *E. vermicularis* in the cause of acute appendicitis remains controversial. Appendicectomy alone is not an adequate treatment for patients whose appendicectomies are found to contain *E. vermicularis* since surgery cannot eliminate the cause and will result in only one condition, anti-helminthic drugs should be recommended to patients after surgery (14,18).

In conclusion, it is reported that inflammatory changes are rare in cases where parasite is detected in the appendix lumen (5,10). In our study, the presence of *E. vermicularis* causes acute inflammation of the appendix lumen. It is important because it is a rare cause of acute appendicitis which needs medical treatment.

### \* Ethics

**Informed Consent:** Retrospective study.

**Peer-review:** Internally peer-reviewed.

### \* Authorship Contributions

Surgical and Medical Practices: T.G., Concept: M.P., F.İ.T., Design: M.P., T.G., Data Collection or Processing: M.P., T.G., Analysis or Interpretation: T.G., F.İ.T., Literature Search: M.P., F.İ.T., Writing: M.P.

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