

APPENDICEAL RECURRENT COLIC DUE TO ENTEROBIUS VERMICULARIS INFECTION IN A 14-YEAR-OLD FEMALE PATIENT

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Summary

Acute appendicitis due to *Enterobius vermicularis*, usually known as pinworm, is very rare and affects mostly children. According to different authors, it is controversial whether pinworms cause inflammation of the appendix or appendiceal colic only. We present a case of a 14-year-old female with three subsequent hospitalizations in 1 month due to abdominal pain in the right lower abdomen, with rebound tenderness, normal CT scan and laboratory findings. During the last hospitalization, laparoscopic appendectomy was performed. Intraoperatively multiple pinworms were found in the appendix. These were trapped by a stercolith in the appendicular base in a non-inflamed and histologically normal appendix. Two oral doses of mebendazole were administered postoperatively. Uneventful postoperative period and postoperative follow-up showed lack of symptoms six months after the operation. Despite the widespread idea that acute appendicitis due to *Enterobius vermicularis* is very rare, it should always be considered in young female patients with repeated abdominal pain in the right lower abdomen with normal laboratory and radiologic findings.

Key words: *Enterobius vermicularis*, acute appendicitis, laparoscopic appendectomy

Introduction

Enterobius vermicularis, also called pinworm, is a cause for a widespread parasitic helminthes infection, assessed to affect up to 209 million people worldwide [1]. *Enterobius ova* were found in human coprolites from 7800 BC [2]. Fabricius Hildanus was the first to report pinworms in appendix in 1634 [3]. Many authors considered this infection not to be a serious disease because of its low pathogenicity. However, *E. vermicularis* has been reported to be involved in various surgical disorders such as colitis, perianal abscess or granulomas, significant morbidity in females with ectopic infections, chronic pelvic pain, pelvic inflammatory disease. It is also associated with acute appendicitis [4]. The relationship of pinworm infection with acute appendicitis fluctuates from 0.2 to 41.8% [5]. The role of *E. vermicularis* in acute appendicitis has been discussed since it was found in the appendiceal lumen in 1898. However, revision of the literature

confirms that *E. vermicularis* infestation of the appendix is able to manifest clinical signs of acute appendicitis known in the literature as appendiceal colic.

Case Presentation

We present a case of a 14-year-old female with three subsequent hospitalizations in 14 days for abdominal pain in the right lower abdomen. Physical examination showed good general

health and fever up to 38°C on the third hospitalization. Right lower quadrant tenderness and rigidity were found on abdominal palpation during each hospitalization. The laboratory test were normal, only in the third hospitalization the white blood cell count (WBC) was 12×10^9 cells/L, with normal levels of C-reactive protein (<1 mg/L). Ultrasonography during the first hospitalization and CT scan during the second one revealed a normal appendix with no signs of appendicitis (Figure 1).



Figure 1. CT scan

On the third hospitalization, a decision for surgery was made because of the ongoing signs of abdominal pain in the right iliac fossa, tenderness, rigidity, and leukocytosis. The standard 3-port technique for laparoscopic appendectomy was applied. Intraoperatively, the appendix was found normal. The mesoappendix was dissected using LigaSure, 2 endo-loops of PDS 0 were applied to the base of the appendix –

one proximal and one distal, and the appendix was divided between them. The specimen was then removed using a bag (EndoCatch) through the 10 mm port, under direct vision.

After dividing the appendicular base, multiple pinworms were seen in the appendix, trapped inside by a stercolith located in the appendicular base (Figure 2).



Figure 2. Operative specimen

The appendix was histologically normal and non-inflamed. The lumen contained parasites with features compatible with *E. vermicularis*. The diagnosis was parasitic infestation in surgically removed normal appendices (Figure 3).

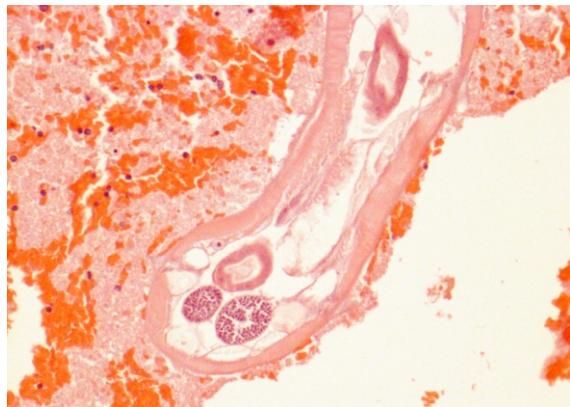


Figure 3. Histology specimen. Oblique cut of *Enterobius vermicularis* located in ileocecal appendiceal lumen. (hematoxylin-eosin 20x)

The postoperative period was smooth without any complication, and the patient was discharged from hospital on the third postoperative day.

Postoperatively, a Sellotape test (scotch tape test) was performed according to Graham's technique, and culture of parasites in feces with eggs of *E. vermicularis* was observed. During the postoperative period, the patient received antiparasitic treatment with mebendazole, a single peroral dose of 100 mg, and the absence of eggs of pinworm was confirmed with another Sellotape test 7 days after the first one. The patient received a second treatment with mebendazole after 15 days, and the same treatment was prescribed for the all family members.

Discussion

E. vermicularis is a parasite hosted by humans and approximately 1000 million people worldwide are infected [4]. It is acquired by ingesting larval eggs. In the intestine the larvae, released by the eggs, migrate to the colon and attach to the mucosa. They remain in the caecum or in the caecal appendix silently or produce obstruction of the appendicular lumen, triggering a clinicopathological picture of acute appendicitis indistinguishable from that due to other causes.

It is more frequently found in females, with a

peak in 12-year-old girls [6]. Therefore, in children and juvenile patients with abdominal pain in the right iliac fossa without analytical-radiological alterations in the ileocaecal appendix, this infectious pathology must be considered, proceeding to the subsequent medical treatment and avoiding unnecessary appendectomies.

Even though inflammation in the ileocolic part of the intestinal tract caused by *E. vermicularis* was reported in 1919, it still remains controversial whether the parasite causes acute appendicitis or only a so-called appendiceal colic [7].

One challenge to surgeons is how to avoid spillage of the pinworms during laparoscopy. Appendectomy should be performed with caution if the appendix has been found uninfamed and there is a possibility of pinworm infection and risk of abdominal contamination. Ariyathenam AV. et al. recommend placing a bag inside the abdomen next to the specimen, prior to cutting the appendix to ensure an easy transfer of the specimen into the bag. The appendix must not be detached in one swift motion because this will produce retraction on the appendiceal base and raise the probability of abdominal contamination [4]. Spillage of the parasites should also be avoided by putting 2 endoloops on both sides of the appendix base or cutting the appendix with GIA [8]. In our hospital we usually used two PDS endoloops on both sides of the appendix.

The correlation between parasitic infection of the appendix and acute appendicitis was investigated. Retrospective studies showed that *E. vermicularis* is the commonest worm found in the appendix and its existence can lead to pathologic disorders ranging from lymphoid hyperplasia to acute inflammation with life-threatening complications like gangrenous appendicitis and local or diffuse peritonitis [9, 10]. According to a retrospective study by Gialamas et al., of the 1085 appendectomies performed in Greece, 8 patients were found with pinworm infestation. Seven of them had *E. vermicularis* infection without appendicitis and only one patient showed evidence of concurrent appendiceal inflammation.

In our case the histology showed normal appendix with parasites inside the lumen.

After surgery, the drug of choice for *E. vermicularis* is mebendazole or pyrantel pamoate with albendazole as an alternative treatment. Normally the treatment for *E. vermicularis* is

mebendazole 100 mg once, repeated 2 weeks later. The drug is to be given again because it does not kill the eggs, therefore it must be administered once again to increase efficacy [11]. It is important to treat not only the patients, but also their families, as well as everyone who had contact with them in order to prevent reinfection.

Conclusions

Despite the widespread idea that acute appendicitis due to *Enterobius vermicularis* is very rare, it should always be considered in young female patients with repeated abdominal pain in the right lower abdomen with normal laboratory and radiologic findings. Precautions should be taken during surgery prevent spillage of pinworms in the abdominal cavity.

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