



Appendicitis by *Enterobius vermicularis* presenting with recurrent abdominal pain and eosinophilia

A case report

Ann. Ital. Chir.

Published online (EP) 29 February 2016

pii: S2239253X16024348

www.annitalchir.com

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Appendicitis by *Enterobius vermicularis* presenting with recurrent abdominal pain and eosinophilia. A case report

INTRODUCTION: *Enterobius vermicularis* (EV) is the most common parasitic infection in developed countries. *Enterobius vermicularis* infestation of the appendix can cause symptoms of appendiceal pain, independent of microscopic evidence of acute inflammation. The diagnosis of a parasitic infestation is generally achieved only after the pathologic examination of the resected appendices.

CASE REPORT: We present a case of a 23 year old female with enterobiasis of appendix presented with clinical features of acute appendicitis. The appendix was surgically removed and the specimen was pathologically.

CONCLUSION: We highlight that the symptoms of appendicitis can be due to *Enterobius vermicularis* infestation also without any histological evidence of acute inflammation. High index of suspicion and including parasitic origin in differential diagnosis of abdominal disturbances might hopefully

KEY WORDS: Appendicitis, Elminth, *Enterobius vermicularis* (EV)

Introduction

Parasitic infestation is an uncommon cause of chronic pelvic pain among women of reproductive age due to infection, endometriosis, or adhesive disease. *Enterobius vermicularis* (EV) is the most common human elminth, it is responsible for a widespread parasitic infection estimated to affect up to 209 million people worldwide. *E. vermicularis* infection is usually asymptomatic, but presence of these pinworms in the appendix can cause symptoms mimicking appendicitis We report a case of chronic

right-sided pelvic pain associated with appendiceal *Enterobius vermicularis* infestation. This patient was managed with appendectomy and antiparasitic therapy resulting in a complete resolution of symptoms.

Case Report

We present the case of a 23 year-old, white, nulliparous female admitted to our hospital for 3 months history of chronic intermittent pelvic pain, particularly on the right side. She had no remarkable medical anamnesis. The pain was not associated with her menses. Laboratory investigation showed a white cell count of 11800/mm³ with 11% eosinophils. The urine dip stick was negative for blood, leucocytes and nitrites. β -human chorionic gonadotropin test was negative. Transvaginal sonograph revealed no evidence of gynecologic pathology but free intraperitoneal fluid was present. Abdominal ultrasound showed dilated appendix with thickened wall (Fig. 1, 2).

Pervenuto in Redazione Ottobre 2015. Accettato per la pubblicazione Dicembre 2015

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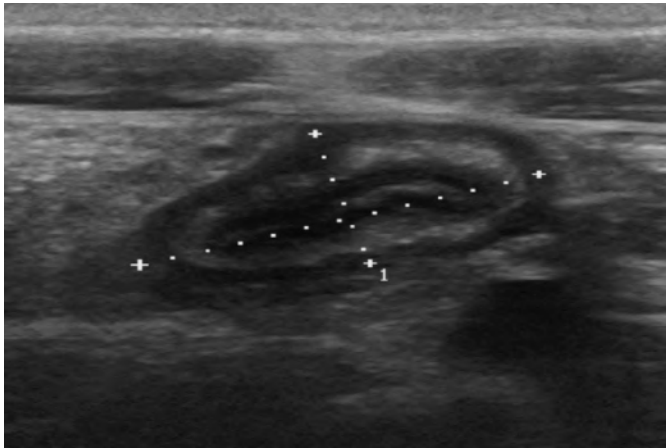


Fig. 1: Longitudinal view shows dilated appendix (long. x AP diameter: 22 x 10 mm, respectively)

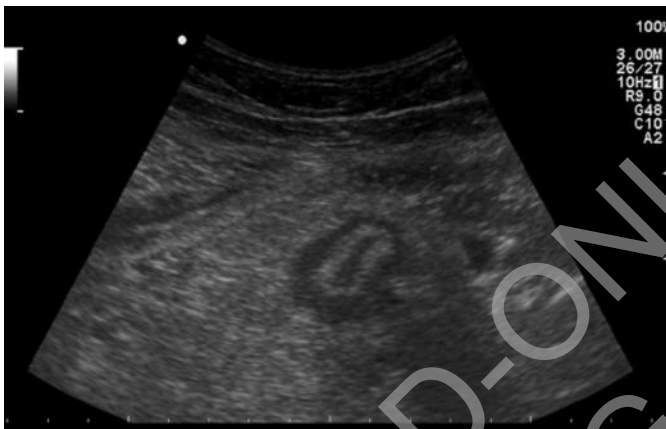


Fig. 2: Transverse section shows dilated appendix with thickened wall (arrow).

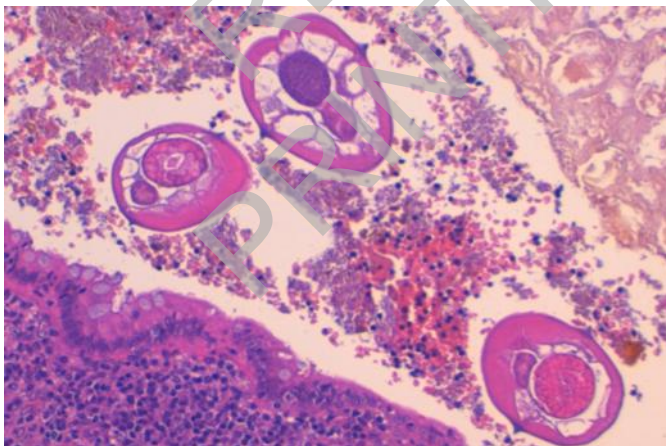


Fig. 3: Cross section of *E. vermicularis* in the appendiceal lumen. The size (about 0,1-0,2 mm) and the absence of ovaries containing developing pinworm eggs lay to male worms. The appendiceal mucosa shows inflammatory infiltration.

Due to the combination of the classic symptoms and a typical progression of symptoms coupled with right lower quadrant tenderness, surgeons performed an explorative laparoscopy and found an early acute appendicitis initiated. Furthermore appendectomy was performed. Pathology reported a specimen measuring 6 cm long with a diameter of 0.9 cm. The lumen contained parasites with features compatible with *E. vermicularis* (Fig. 3). The diagnosis was acute catarrhal appendicitis with parasitic infestation. The patient was treated with mebendazole 100 mg orally, with a second dose 14 days later. Postoperative follow-up at 2 weeks and at 3 months revealed complete resolution of her pain.

Discussion

Appendicitis be brought on by several different physiopathological processes, but luminal obstruction is considered the most important triggering factor of the underlying inflammation. Although lymphoid hyperplasia and fecaliths are the most frequently observed etiologies of luminal obstruction, other, less frequent factors have been observed. Between these unusual factors the most common are mucinous cystadenoma or mucocele, carcinoid tumor, granulomatous diseases, and enterobiasis by *Enterobius vermicularis* (EV). This elminth is one of the most common nematodes and it is responsible for a widespread parasitic infection after ingestion of eggs via contaminated hands or food. Following the ingestion of infective eggs, the larvae hatch in the small intestine then the adults settle predominantly in the colon, particularly the caecum and the terminal ileum. The infection is usually asymptomatic, but infestation may also present with perianal itching, ileocolitis, urinary tract infection, mesenteric abscesses, salpingitis and appendicitis.

The presence of this elminth in the appendix can cause pathologic changes ranging from lymphoid hyperplasia to acute phlegmonous inflammation. Furthermore, in patients with symptoms of acute appendicitis *E. vermicularis* infestation of the appendix can produce clinical features of acute appendicitis, independent of histological acute inflammation.

Retrospective studies confirmed the relationship between *Enterobius vermicularis* and the occurrence of acute appendicitis. Sas SP et al. reported that the simple presence of *E. vermicularis* in the appendix usually produces symptoms which resemble acute appendicitis although the mechanism for this does not involve mucosal invasion by the parasite ¹. Panidis et al. presented a case of a patient with right iliac fossa pain, who underwent appendectomy. Macroscopic appearance of appendix was normal, but the pathology revealed *E. vermicularis* infestation ². Wiebe et al. reported a series of patients presenting with complaints of chronic right lower quadrant abdominal pain. He showed that the incidence of appen-

diceal *Enterobius* infestation on pathological examination of the appendix was low and commonly associated with an appendix that appeared normal or showing chronic inflammatory changes. Less commonly acute inflammatory changes were present, as in our case³. We think that, even when the macroscopic appearance of a resected appendix is normal, histopathological assessment of specimens will allow early diagnosis of malign and infectious appendiceal diseases. Schnell VL et. al described a case of infestation of the fallopian tube by *E. vermicularis* in a patient underwent hysterectomy for chronic pelvic pain. The same patient had an appendectomy 5 years earlier for *E. vermicularis*-related appendicitis. The authors supposed that the tubal infestation could be caused by local spread from the infested appendiceal stump at the time of surgery or by later spread via a transperineal route to her genital tract⁴.

Our patient had a one year history of recurrent lower abdominal pains which were not associated with her menstrual cycle. A careful evaluation of symptoms such as pruritus ani, or eosinophilia on laboratory examination, could prevent unnecessary appendectomies but our patient didn't complain perianal itching and typical symptoms of a urinary tract infection were not present. A transvaginal ultrasound performed failed to determine whether the appendix was inflamed or not but it revealed the presence of free intraperitoneal fluid was present. An abdominal ultrasound showed dilated appendix with thickened wall. Early acute appendicitis initiated was confirmed by explorative laparoscopy.

The role of *E. vermicularis* as a cause of acute appendicitis remains controversial. We think that it is not clear whether the invading organism actually causes the inflammation or if the parasites are incidental findings in cases where inflammation is already present.

In our case, we have explored his gastrointestinal system for parasitic infestations following the diagnosis of appendicitis by *Enterobius vermicularis* and in his direct stool examination trophozoites of this nematode were noted. Consequently, the patient was administered oral metronidazole therapy for ten days postoperatively and complete cure was achieved.

The irritation and allergic reaction in the gastrointestinal tube caused by this parasite were considered to be responsible for the development of acute appendicitis.

Conclusion

In conclusion, the presence of *Enterobius vermicularis* usually accounts for appendiceal related pain in the absence of histological inflammation. High index of suspicion and including parasitic origin in differential diagnosis of abdominal disturbances might hopefully prevent unnecessary surgeries.

Parasitic infections rarely present with clinical manifestation of acute appendicitis, especially in adults, but

nematode infestation of the appendix as a cause of chronic right-sided pelvic pain should be considered when the more common etiologies have been ruled out.

Riassunto

Il ruolo dell'*Enterobius vermicularis* (EV) nell'eziopatogenesi dell'appendice viene discusso da oltre un secolo ma, a tutt'oggi, non è provato un sicuro rapporto di causa-effetto. Il coinvolgimento dell'appendice da parte dell'EV può restare a lungo asintomatico o provocare una sintomatologia tipica dell'appendicite acuta, anche in assenza di microscopiche evidenze d'infiammazione acuta.

Noi riportiamo il caso di una ragazza di 23 anni con ossiuriasi dell'appendice che giunge alla nostra osservazione con segni clinici tipici di un appendicopatia acuta. L'appendice, che fu rimossa chirurgicamente, conteneva al suo interno l'elminto *Enterobius vermicularis*, anche se dal punto di vista istologico non erano presenti modificazioni tissutali tipiche di una flogosi acuta.

Il nostro case report ci conferma che il coinvolgimento dell'appendice da ossiuriasi, può molto spesso provocare sintomi compatibili con un appendicite acuta, per questo motivo dovrebbe essere sempre considerato nella diagnosi differenziale dei dolori della fossa iliaca destra. Infatti, un'accurata valutazione, comprendente la ricerca di un' eosinofilia agli esami di laboratorio e di sintomi quali un fastidioso prurito perianale soprattutto notturno, potrebbe evitare l'esecuzione di appendicectomie spesso non necessarie.

Acknowledgements

We thank Dr. Daniela Tella for reviewing English language. We also thank Dr. Roberto Cotellese and Christos Antonopoulos and for reviewing the paper.

The authors would like to acknowledge the entire staff of the Service of General and Laparoscopic Surgery, "G. d'Annunzio" University in Chieti. This manuscript was prepared during the corresponding author's training and was supported by the authors.

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