

Short Note

Enterobious vermicularis and the Appendix: Report of Five Cases

H Kazemzadeh¹, N Afshar-Moghadam², AR Meamar³, HR Rahimi², *EB Kia¹

¹School of Public Health, Tehran University of Medical Sciences, Iran

²Faculty of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran

³Faculty of Medicine, Iran University of Medical Sciences, Tehran, Iran

(Received 5 Feb 2008; Accepted 23 July 2008)

Enterobious vermicularis, is the most common parasite occurring in man infecting about 10% of population in developed countries (1). It is located predominantly in the caecum, appendix, and proximal areas of the ileum and colon (2). Despite its high prevalence, enterobiasis is not usually considered a serious disease, although ectopic infections can cause significant morbidity, most commonly in females (3). Another possible complications of enterobiasis is when this worm crawls itself to the lumen of the appendix leading to appear some clinical manifestations resemble to acute appendicitis. The association of *E. vermicularis* infection and acute appendicitis is controversial. During 2001-2006, 1533 removed appendices at Al-Zahra Medical Centre, affiliated to Isfahan University of Medical Sciences, Iran, were analyzed pathologically. After paraffin embedding of each appendix specimen, 4 µm tissue sections were prepared and stained with Haematoxylin-Eosin (H&E). Then, the slides were examined under the microscope and the pathological findings for every appendix were recorded.

Overall, *E. vermicularis* was found in five tissue specimens (0.3%). Four appendices contained females of *E. vermicularis* and the other one had male. All the patients with appendices infected with *E. vermicularis* were less than 18 years old. In all parasitoid appendices, the site

of infection was the lumen of the appendix, there was no sign of inflammation and the tissue reaction was reactive follicular hyperplasia. It is not clear whether the invading parasites to appendix actually cause the inflammation. It has also been noted that parasites may be incidental findings in cases where inflammation is already present (4). The concept of *E. vermicularis* as a cause of appendicitis has been debated since the late 19th century, when Still initially documented this organism in the appendix lumen (5). Aschoff found parasites in less than 1% of the appendix tissues, and stated that such infections could cause clinical signs of appendiceal colic or symptoms resembling true appendicitis (6). *E. vermicularis*, prior to invasion of the appendix mucosa may produce an acute appendicitis-like clinical picture by obstructing the lumen or causing a hypersensitivity reaction in the tissue. Although *E. vermicularis* infestation may lead to chronic inflammation and granuloma formation, a number of other series have revealed no relationship between parasitic infection and chronic inflammation (4, 7).

In all our infested appendices, the parasite was restricted to the appendix lumen, without any sign of inflammation is supporting the suggestion that *Enterobious* may causes symptoms in children that mimic acute appendicitis. This conclusion is fully agreement with another

study that 4 appendices (3.8%) showed evidence of *E. vermicularis* appendicitis (8) and also with a study in which 40 appendices associated with *E. vermicularis* were analyzed (9). The presence of more female *Enterobius* than male which is coincident with another study (10), is probably because of higher lifespan of females.

In conclusion, parasitic infection rarely causes acute appendicitis, and the diagnosis of appendicitis associated with parasite infections may be difficult in many cases.

References

1. Hwang KP, Tsai WS, Lincy LN. Detection of *Enterobius vermicularis* eggs in the submucosa of the transverse colon of a man presented with colon carcinoma. *Am J Trop Med Hyg.* 2002;67:546-8.
2. John DT, Petri Jr WA. The intestinal nematodes. In: Markell EK and Voge M, editors. *Medical Parasitology*. 9th ed. W. B. Saunders, Missouri; 2006. p. 246-8.
3. Russell LJ. The pin worm, *Enterobius vermicularis*. *Prim Care.* 1991;18:13-24.
4. Budd JS, Armstrong C. Role of *Enterobius vermicularis* in the aetiology of appendicitis. *Br J Surg.* 1987; 74:748-9.
5. Still GF. Observation on *Oxyuris vermicularis* in children. *Br Med J.* 1899; 1:898.
6. Aschoff L. Appendicopathia oxyurica (pseudoappendicitis ex oxyure). *Med Klin.* 1913;91:249-51.
7. Mogenson K, Pahle E, Kowalski K. *Enterobius vermicularis* and acute appendicitis. *Acta Chir Scand.* 1985;151:705-7.
8. Yildirim S, Nursal TZ, Tarim A, Kayaselcuk F, Noyan T. A rare cause of acute appendicitis: parasitic infection. *Scan J Infect Dis.* 2005; 7:757-9.
9. Mowlavi GH, Massoud J, Mobedi I, Rezaian M. *E. vermicularis*: A controversial cause of appendicitis. *Iranian J Publ Health.* 2004;33:27-31.
10. Williams DJ, Dixon MF. Sex, *Enterobius vermicularis* and the appendix. *Br J Surg.* 1988; 75:1225-6.