

## Ovarian enterobius presenting as pelvic inflammatory disease: A rare case

Ranjan Agrawal<sup>1\*</sup>, Mithila Bisht<sup>2</sup>, Vibhuti Goyal<sup>3</sup>

<sup>1</sup>Professor, <sup>2</sup>Associate Professor, <sup>3</sup>Assistant Professor, Dept. of Pathology, Rohilkhand Medical College & Hospital, Bareilly, Uttar Pradesh, India

\*Corresponding Author: Ranjan Agrawal

Email: [drranjan68@gmail.com](mailto:drranjan68@gmail.com)

### Abstract

*Enterobius vermicularis* is one of the most prevalent human nematode worldwide. Besides intestine extra intestinal sites especially the female genital tract may be involved. We present herein a case of infestation of the ovary by *Enterobius* in a lady aged 40 years.

**Keywords:** Ovary, *Enterobiusvermicularis*.

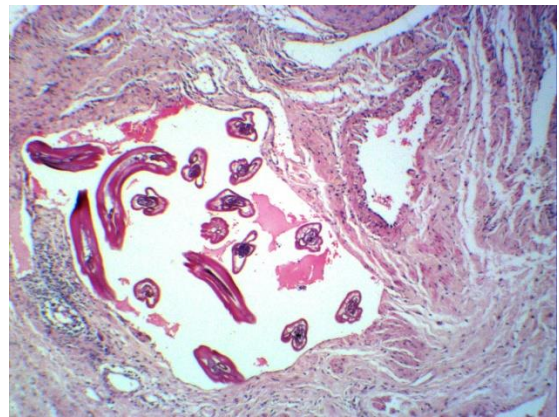
### Introduction

Pelvic inflammatory disease refers to inflammation of the endometrium, fallopian tubes, pelvic peritoneum, and adjacent structures. Most of the cases are caused by *Chlamydia trachomatis*.<sup>1</sup> *Enterobius vermicularis* (EV) is the most prevalent human nematode worldwide. It is an intestinal parasite that may involve extraintestinal sites including the female genital tract. Although it has a low pathogenicity, complications such as infertility or peritonitis may occur.<sup>2</sup>

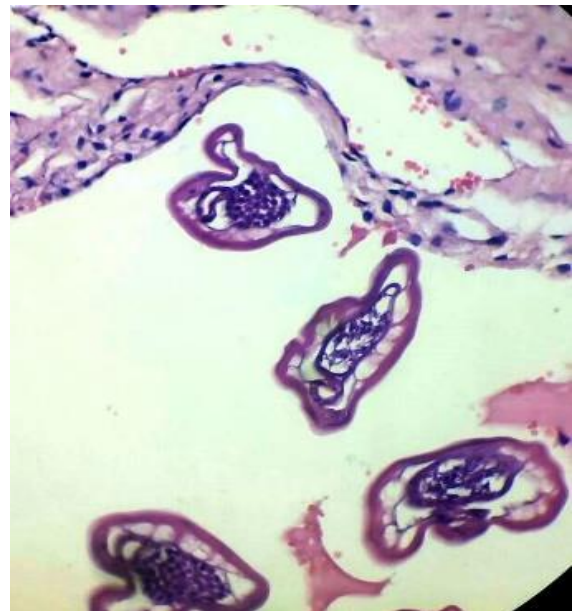
### Case Report

A 40 years old female presented to the surgery department following complaints of pain in abdomen and vomiting. As stated by the patient she was asymptomatic 2 days back when she developed pain in abdomen. Initially, it started in the umbilical area and then involved the entire abdomen. She gave a history of passing loose stools since 2 days and now absolute constipation. There has been no history of diabetes, hypertension or drug allergy. Her pulse was 96/min and blood pressure 100/70 mmHg. Investigations revealed low Calcium levels and hypokalaemia. Hb was 9.1g%, TLC 12900 cells/mm<sup>3</sup>, with 90% Polymorphs and ESR (Wintrobe) 35 mm in 1<sup>st</sup> Hour. Ultrasound abdomen suggested septate pelvic cavity collection measuring 8.5x4.5 cm.

On examination, her abdomen was tender. She had a pale appearance. Exploratory laparotomy revealed appendicular perforation with peritonitis and left ovarian cyst. The entire excised tissue was sent for histopathological examination. Sections showed ovarian tissue including ovarian stroma and corpus albicans. In addition at one place cut sections of the parasite identified as *Enterobius vermicularis* were present. Post-operative follow-up was uneventful.



**Fig. 1: Microphotograph showing ovarian tissue with numerous *Enterobiusvermicularis* worms. (H& Ex40)**



**Fig. 2: Microphotograph showing details of parasite (H&E x 100)**

## Discussion

EV infections are more common in children aged 5 to 10 but can occur in any age groups and all socio-economic classes. Despite this high prevalence, enterobiasis is not a fatal disease. Significant morbidity may occur as a result of ectopic infections, especially in females.<sup>1</sup> It spreads by faeco-oral route and is associated with overcrowding, temperate and tropical climates, and poor sanitation. EV spends 2-4 weeks in the GIT of humans. The gastrointestinal secretions digest its outer coating made of protein, thus liberating the larvae free in the duodenum. Reproduction occurs in the intestine. At night the gravid female migrates to the anus, where they deposit large number of eggs that quickly embryonate and remain viable for about 3 weeks. These eggs may then infect the same or a new susceptible host through anal-oral transmission, or via "retrograde infection". The eggs attach under fingernails and in clothing, fur of pets, bed sheets, dust and other fomites. Humans are the only host of the pinworm.

The most common presentation is pruritis in the perianal and perineal region leading to nocturnal enuresis, irritation and lack of sleep. Pruritis is due to allergic reaction and mechanical irritation. Among tissues the parasite most commonly invades the appendix followed by the female genital organs especially by migrating from rectum to vagina and ascending via the uterine cavity. The parasite can even penetrate the intact tissues.<sup>3</sup> The worms migrate into the vagina invading uterus, uterine tube, ovary, and even the peritoneum.<sup>4</sup> In patients with intraperitoneal pinworm contamination the immune system responds by producing granulation tissue around the pinworms. Fallopian tube infiltration,<sup>5</sup> salpingo-oophoritis,<sup>6</sup> tubo-ovarian abscess, or granulomata of the vulva, vagina, uterus,<sup>7,8</sup> fallopian tubes,<sup>9</sup> or ovaries,<sup>10,11</sup> and even the human embryo have been reported.<sup>12</sup> Escape of worms through the fallopian tubes into the peritoneal cavity can lead to pelvic<sup>7,10</sup> or abdominal peritonitis,<sup>10,11</sup> or granulomata of the pelvic peritoneum.<sup>8,12</sup> Pelvic peritoneal granulomas due to EV have been reported only in females. Granulomas are rare in ectopic sites such as the ovary. From the peritoneum formation may be seen in the liver,<sup>13</sup> spleen, or kidney.<sup>9</sup> Usually deep internal sites are involved but, even conjunctiva and external auditory meatus may be infected. Ectopic infection results from spread of larvae from the anal margin to different other sites. Another possible route of ectopic spread could be due to intestinal or appendicular perforation spreading pinworms into the peritoneum. It is debated whether pinworms can cause appendicitis or if they are an incidental finding. Pinworms induce a hypersensitivity reaction leading to appendicitis.<sup>14</sup>

In patients with a very high worm burden, abdominal pain, nausea, and vomiting may be present. In addition, symptoms may develop due to presence of larvae in distant sites such as the external auditory meatus, conjunctiva, nasal mucosa, liver and lung.<sup>1,15</sup> Young girls with Enterobiasis have an increased incidence of urinary tract infection, probably because of migration of worms into the urethra or bladder.<sup>1</sup> Symptoms related to extraintestinal pinworm

infection may include urinary tract infection, enterocutaneous fistula, mesenteric abscess formation, omentitis, salpingitis, fallopian tube infiltration, salpingo-oophoritis, and tubo-ovarian abscess. It is most commonly diagnosed with the "scotch tape test" which involves pressing tape against the perianal skin early in the morning and examining under the microscope for eggs. Female adult worms may also be isolated from the perianal skin. Examining the stool is limited because worms and eggs are not generally passed in the stool except in severe infection or a high worm load. Patients may also present with leucocytosis or eosinophilia.

EV is readily killed with antiparasitic therapy. The treatment of choice for EV infestation is Mebendazole or Pyrantelpamoate with Albendazole as an alternative treatment. The dosage is 400mg once repeated in 2 weeks. Reinfection is common due to the continuous spread of eggs or larvae that are spared by the drugs. Repeat dose of the drug may increase the effect of therapy. Close relatives and family members should also be treated similarly so as to prevent the spread and also reinfection. Careful hand washing and environmental decontamination have an important role in reducing transmission.<sup>1</sup>

## Conclusion

EV predominantly affects the GIT but however, other sites such as the female genital tract may also be involved. Only 6 cases of *E. vermicularis* involving the female genital tract have been reported and ours is the 7<sup>th</sup> such case. The pathogenicity of EV involving the female genital tract is low but cases presenting with infertility or peritonitis are available. So a careful search for the parasite is important in preventing morbidity.

**Conflict of Interest:** None.

## References

1. Tandan T, Polard AJ, Money DM, Scheifele DW. Pelvic inflammatory disease associated with *Enterobius vermicularis*. *Arch Dis Child* 2002;86:439-40.
2. Powell G, Sarmah P, Sethi B, Ganesan R. *Enterobius vermicularis* infection of the ovary. *BMJ Case Rep* 2013;31:2013.
3. Dundas KC, Calder AA, Aliyusuf R. *Enterobius vermicularis* threadworm infestation of paraovarian tissue in a woman who has had a hysterectomy. *BJOG* 1999;106(6):605-7.
4. Beckman EN, Holland JB. Ovarian enterobiasis - a proposed pathogenesis. *Am J Trop Med Hyg* 1981;30:74-6.
5. Schnell VL, Yandell R, Van Zandt S, Tung VD. *Enterobius vermicularis* salpingitis: a distant episode from precipitating appendicitis. *Obstet Gynecol* 1992;80:553-5.
6. Erhan Y, Zekioglu O, Ozdemir N, Sen S. Unilateral salpingitis due to *Enterobius vermicularis*. *Int J Gynecol Pathol* 2000;19:188-9.
7. Pearson RD, Irons RP Sr, Irons RP Jr. Chronic pelvic peritonitis due to the pinworm *Enterobius vermicularis*. *JAMA* 1981;245:1340-1.
8. McMahon JN, Connolly CE, Long SV, Meehan FP. *Enterobius* granulomas of the uterus, ovary and pelvic peritoneum. Two case reports. *Br J Obstet Gynaecol* 1984;91(3):289-90.

9. Sun T, Schwartz NS, Sewell C, Lieberman P, Gross S. Enterobius egg granuloma of the vulva and peritoneum: review of the literature. *Am J Trop Med Hyg* 1991;45:249–53.
10. Sinniah B, Leopairut J, Neafie RC, Connor DH, Voge M. Enterobiasis: a histopathological study of 259 patients. *Ann Trop Med Parasitol* 1991;85:625–35.
11. Chandrasoma PT, Mendis KN. Enterobiusvermicularis in ectopic sites. *Am J Trop Med Hyg* 1977;26:644–9.
12. Knuth KR, Fraiz J, Fisch JA, Draper TW. Pinworm infestation of the genital tract. *Am Fam Physician* 1988;38:127–30.
13. Nutting SA, Murphy F, Inglis FG. Abdominal pain due to Enterobiusvermicularis. *Can J Surg* 1980;23:286–7.
14. Panidis S, Paramythiotis D, Panagiotou D, Batsis G, Salonikidis S, Kaloutsi V et al. Acute appendicitis secondary to Enterobiusvermicularis infection in a middle aged man: a case report. *J Med Case Reports*.2011;5:559.
15. Vasudevan B, Rao BB, Das KN. Infestation of Enterobiusvermicularis in the nasal mucosa of a 12yr old boy-a case report. *J Commun Dis* 2003;35:138.

**How to cite this article:** Agrawal R, Bisht M, Goyal V. Ovarian enterobius presenting as pelvic inflammatory disease: A rare case. *Indian J Pathol Oncol* 2019;6(2):336-8.