

Tubal enterobius vermicularis: A case report

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Abstract

Enterobius vermicularis is a parasitic roundworm belonging to the phylum Nematoda. It is the most prevalent human helminth. The most common symptoms are perianal irritation and itching. After the gastrointestinal tract, Enterobius Vermicularis primarily affects the female genital tract.

Here we present a case of a 55-year-old postmenopausal, Caucasian woman. She presented herself to the emergency department of our hospital where she was diagnosed with pulmonary embolisms. A CT scan of the abdomen was performed and showed a bilocular cystic structure on the left ovary (already seen in 2011 but now slightly enlarged), without signs of nodular components. We performed a bilateral salpingo-oophorectomy through laparoscopy. The anatomopathological examination showed bilateral atrophic ovaries and a hydrosalpinx on the left side. The right salpinx surprisingly contained two parasitic granulomas with presence of ova, first assumed to be Schistosomiasis japonica ova. Further examination revealed asymmetrical ova measuring 53 µm in length with a light-breaking eggshell, compatible with Enterobius vermicularis ova. The patient was first treated with praziquantel 600 mg, 2 tablets twice a day for one day. After the final diagnosis of Enterobius vermicularis, she was further treated with mebendazole 100 mg, one tablet on day 0 and 14. The patient had no other symptoms of oxyuriasis.

There are two possible hypotheses describing the occurrence of Enterobius vermicularis in the female genital tract. We found ova and a developed larva in our patient, but no adult pinworms, which supports the hypothesis that the gravid female pinworm migrates from the perianal region to the perineum and vagina. From there, the worm can ascend to the uterus, fallopian tubes and peritoneum.

In conclusion, we presented a rare case of Enterobius vermicularis in the salpinx of a postmenopausal woman, which should not be missed or confused with Schistosomiasis or pollen.

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Keywords: Enterobius vermicularis; Female genital tract; Salpinx; Schistosomiasis japonica; Case report.

Introduction

Enterobius vermicularis (also known as the human pinworm, oxyuris, threadworm or seatworm) is a parasitic roundworm belonging to the phylum Nematoda. It is the most prevalent human helminth and occurs mainly in temperate regions such as North America and Western Europe [1-5]. *Enterobius vermicularis* is predominantly found in elementary school children [1,2].

Transmission occurs by ingestion of *Enterobius vermicularis* ova through contaminated food or hands, or through airborne ova that are dislodged from contaminated bed linen or clothing. Digestive secretions lead to egg dissolution, releasing larvae in the small intestine. The larvae mature into adult worms in 2 to 6 weeks and migrate to the colon. The male worm dies after insemination. The gravid female migrates nocturnally to the perianal region for ova deposition, resulting in perianal irritation and itching. Extraintestinal symptoms are rather rare and most often present as accidental findings [1-8]. After the gastrointestinal tract, *Enterobius vermicularis* primarily affects the female genital tract but infestation of the lungs, spleen, kidneys and male urinary tract have also been described [1-3].

Here we present a case of tubal *Enterobius vermicularis*.

Case report

A 55-year-old postmenopausal, Caucasian woman presented herself to the emergency department of our hospital where she was diagnosed with pulmonary embolisms. A CT scan of the abdomen was performed and showed a bilocular cystic structure on the left ovary (already seen in 2011 but now slightly enlarged), without signs of nodular components. Because of this, she was referred to the gynaecology department.

In the antecedents we noted three uncomplicated vaginal deliveries, a haemorrhoidectomy in 2017, the recently diagnosed pulmonary embolisms and an erosive gastritis. The patient used pantoprazole 20 mg and rivaroxaban 30 mg. She smoked one pack of cigarettes a day. The patient has no traveling history.

At the moment of the consultation the patient did not have any complaints. Clinical examination exhibited no abnormalities. A vaginal ultrasound showed an uterus in anteversion with a thin endometrium. The left and right ovaries had both a normal aspect. Lateral to the left ovary there was an anechogenic structure measuring 90x30 mm with a cogwheel sign. There was no abnormal vascularisation in this structure, which probably concerned a hydrosalpinx. There was no fluid in the Douglas cavity, and CA 125 was within normal range.

We performed a bilateral salpingo-oophorectomy through laparoscopy and noticed bilateral normal ovaries, a normal salpinx on the right side and an enlarged left salpinx. The operation occurred without complications.

The anatomopathological examination showed bilateral atrophic ovaries and a hydrosalpinx on the left side. The right salpinx surprisingly contained two parasitic granulomas with presence of ova (Figures 1 and 2), first assumed to be *Schistosomiasis japonica* ova. Further examination revealed asymmetrical ova measuring 53 µm in length with a light-breaking eggshell, compatible with *Enterobius vermicularis* ova (Figure 3). We also found a developed double-folded larva.

The patient was first treated with praziquantel 600 mg, 2 tablets twice a day for one day. After the final diagnosis of *Enterobius vermicularis*, she was further treated with mebenda-

zole 100 mg, one tablet on day 0 and 14. The patient had no other symptoms of oxyuriasis.

The patient and the ethics committee consented to publish this report and all accompanying images.

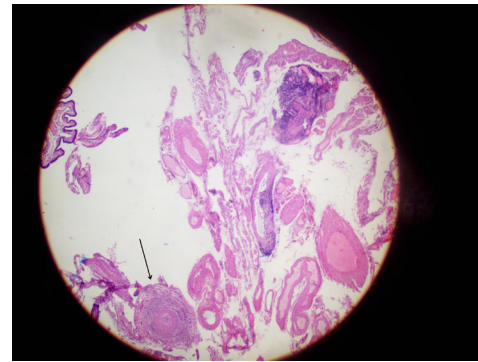


Figure 1: Salpinx and parasalpingeal tissue with granuloma (black arrow).

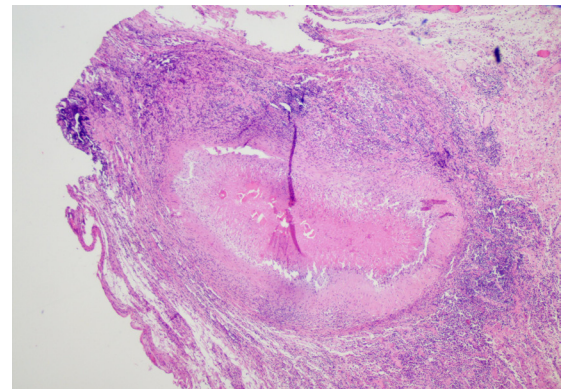


Figure 2: Granuloma with ova.

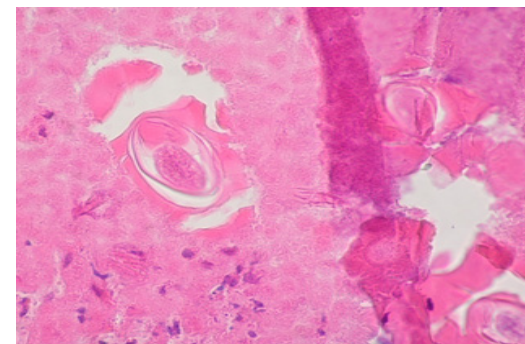


Figure 3: Asymmetrical ovoid ovum, maximal diameter 53 µm, with a light-breaking eggshell.

Discussion

Although an infection with *Enterobius vermicularis* in the female genital tract is rather rare, there are several case reports concerning this topic in the literature. In 1920, Klee was the first to describe a case of *Enterobius vermicularis* in the female genital tract. However, the exact prevalence of extra-intestinal *Enterobius vermicularis* remains unknown since many infections remain asymptomatic [2,5].

There are two possible hypotheses describing the occurrence of *Enterobius vermicularis* in the female genital tract. The first hypothesis states that the gravid female pinworm migrates from the perianal region to the perineum and vagina. From there, the worm can ascend to the uterus, fallopian tubes and peritoneum. This theory is supported by the fact that only female adult pinworms and ova are found in cervical smears and peritoneal granulomata, as the male pinworms die in the colon after fertilisation [2,4,7,9,10]. We found ova and a developed larva in our patient, but no adult pinworms, which supports this hypothesis. The second hypothesis suggests that the adult pinworm penetrates through the intestinal wall to the peritoneal cavity but this pathway is difficult to prove [2,4].

In our case, the ova were first mistaken for *Schistosomiasis japonicum* ova, which happens often [2,4,5]. The *Enterobius vermicularis* ova are flattened on one side, have a thick double shell and vary in size from 50-60 μm^2 x 20-30 μm^2 . On the other hand, the *Schistosomiasis* ova have a thin shell, have a lateral or terminal spine of varying length and are larger (70-175 μm x 40-70 μm). The pinworms are less resistant to degeneration than the ova, and therefore less often found in the anatomopathological examination [2,4]. The *Enterobius vermicularis* ova can also be confused with pollen grains, fungal spores or contaminant vegetable cells [5].

The *Enterobius vermicularis* ova and worms are often associated with acute and chronic inflammation of the surrounding tissues with formation of granulomata. In our patient, two granulomata were found in the right fallopian tube. In some cases, granulomatous lesions in the uterus, fallopian tube and ovary can be mistaken for leiomyomas, fibromas, endometriomas or even malignant tumours [1,2].

The standard treatment for intestinal enterobiasis is a single dose of mebendazole 100 mg, albendazole 400 mg or pyrantel pamoate 11 mg/kg (max. 1 g), repeated after two weeks. No standard treatment exists for extraintestinal enterobiasis. In most cases the patients were treated with oral mebendazole as we did in our case. Further research can help us optimise the therapy of extraintestinal enterobiasis [1,4,9,11].

Conclusion

In conclusion, we presented a rare case of *Enterobius vermicularis* in the salpinx of a postmenopausal woman, which should not be missed or confused with *Schistosomiasis* or pollen.

Declarations

Funding statement: There was no funding for the project.

Disclosure statement: There was no conflict of interest.

Attestation statement:

- The subjects in this trial have not concomitantly been involved in other randomized trials.

- Data regarding any of the subjects in the study has not been previously published.

- Data will be made available to the editors of the journal for review or query upon request.

Data sharing statement: Not applicable.

Trial registration: Not applicable.

Ethical approval: Yes

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