Enterobius vermicularis Salpingitis Seen in the Setting of Ectopic Pregnancy in a Malaysian Patient

On 22 January 2014, a 23-year-old woman, who was in her second pregnancy and at 8 weeks of gestation, presented as an outpatient to the Emergency Department (ED) University of Malaya Medical Centre (UMMC), Kuala Lumpur, Malaysia. She was referred by a private general practitioner after complaining of vaginal bleeding for 3 days with small amount of spotting and staining on her undergarment associated with suprapubic pain for a day. The pain was described as sharp prickling, nonradiating, and progressively increasing in severity. She did not have any vaginal discharge or fever. The result of a urine pregnancy test carried out at the private clinic was positive. When she missed her menses in December 2013, no test was done to confirm pregnancy. Bowel and urinary habits were normal. She did not have any medical illnesses or previous surgeries. No known allergies were noted. She had a full-term vaginal delivery in 2009. 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Enterobius vermicularis, often referred to as pinworm, thread-worm, or Oxyuris, is an intestinal nematode which commonly infects children throughout the world, particularly in developed temperate countries. The worms usually inhabit the cecum of the human gastrointestinal tract. The common route of intestinal infection is via autoinfection (anus to finger to mouth), as the eggs are infective within 4 to 6 h after being laid. Infection through inhalation and swallowing of airborne eggs dislodged from contaminated fomites such as clothing or bed linen may also play a role in transmission. After ingestion, the embryonated eggs hatch and release larvae in the small intestine. Larvae develop into adult worms and reside in the distal ileum, the cecum, the appendix, and the proximal ascending colon, and the majority of infections are asymptomatic (2). After mating, the males die and the gravid female worms migrate nocturnally down to the anus, where the eggs are laid on perianal and perineal surfaces and produce intense irritation and pruritus ani. The life span of the adults is about 2 months. Appendicitis caused by obstruction and inflammation due to the presence of adult worm in the appendix have been reported occasionally. Less commonly, the adult worms can become lodged in the intestinal mucosa and cause intestinal abscess (2).

Extraintestinal enterobiasis is rare and mostly involves the female genital and reproductive tract, which includes the vagina, uterus, ovaries, fallopian tubes, and pelvic peritoneum or even the human embryo (3–15). In addition, recurrent urinary tract infections (UTIs) as a complication of aberrant migration in women, particularly in young girls, have also been identified (16, 17). We describe a case of E. vermicularis salpingitis seen in the setting of ectopic pregnancy in a Malaysian patient. In this case, salpingitis due to ectopic infection by E. vermicularis might have contributed to the ectopic pregnancy. Nevertheless, risk of infertility from chronic low-grade asymptomatic salpingitis due to enterobiasis has been reported in the literature (13, 18).

Extraintestinal E. vermicularis infections involving the female genital and reproductive tract are unusual. Although vaginal enterobiasis is rare, a review of the English-language literature revealed several reports on E. vermicularis infection in the female genital tract and the first case was reported in 1950 (12). Infection involving the female genital tract occurs due to the migration of the gravid female worm from perianal and perineal areas up to the vagina, and the worm may ascend to the peritoneum through the fallopian tubes. This hypothesis is supported by several reports which documented the presence of only female adult worms and ova on cervical smears and in peritoneal granuloma (3, 6, 8). Another possible mechanism is the passage of the adult worm through the intestinal wall to produce pelvic peritoneal granulomas; however, this hypothesis is difficult to prove, as the infection is rarely found in the bowel wall (19).
In most cases, clinical manifestations due to the presence of adult worms or eggs outside the gastrointestinal tract are minor, with many lesions reported as incidental findings upon surgery or autopsy (10). However, several cases of invasive female genital tract enterobiasis with overt clinical symptoms, including salpingitis, fallopian tube infiltration, urinary tract infection, pelvic mass, tubo-ovarian abscess, generalized peritonitis, and granuloma of the vulva, uterus, and ovaries, have been reported (3–8, 10–13). In addition, several cases of invasion of the human embryo by *E. vermicularis* have been reported (14, 15). The patients all underwent hysterectomy and/or oophorectomy, and the diagnosis of enterobiasis was made postoperatively after a histopathological examination. Preoperative diagnosis is difficult, as only past or concomitant gastrointestinal enterobiasis or the finding of parasites in cervical smears, vaginal wet mounts, and vaginal pooled specimens might suggest *E. vermicularis* infection and prompt appropriate treatment.

Moreover, the preoperative symptoms and complaints, including lower abdominal pain, fever, dyspareunia, nausea, and vomiting, are usually nonspecific, while results of biochemical examination such as blood test also lack specificity (3). Histochemical examination is also difficult, as the egg of this parasite might be easily confused with *Schistosoma* eggs, particularly in the epidemiological setting, in which infections by both species are endemic. Nevertheless, since *Schistosoma* infection is not endemic in Malaysia and the patient lacked a travel history, combined with the PCR and DNA sequencing results, this case excluded the possibility of schistosomiasis.

Experience with treatment of extraintestinal enterobiasis is not standardized, and the available treatment choices are limited. According to The Centers for Disease Control and Prevention (CDC) guidelines, the recommended treatment for enterobiasis is oral pyrantel pamoate. Alternatively, a single dose of mebendazole may also be given to the patient followed by a second dose in cases where the infection persists, typically as a result of autoinfection. In most reported cases, patients were treated with mebendazole after surgery (3–11). However, the use of mebendazole in pregnancy remains controversial with regard to fetus safety (9). A study conducted to examine the pregnancy outcome after gestational exposure to mebendazole reported no significant increase in fetal malformation compared with control group results (20). Although no significant teratogenic effects were seen, nevertheless, mebendazole should be used with caution in pregnancy, especially in the first trimester. Treatment should also be given to family members, especially to family members who are in close contact with the patient, due to the high incidence of infection in the same household.

ACKNOWLEDGMENTS

This work was supported by the University of Malaya (H-20001-00-E00061, H-20001-00-E00051, and BKP 007-2014).

REFERENCES

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