Enterobius vermicularis larvae in urine sample of female student: The first case report in Indonesia

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Abstract

Genital enterobiasis is caused by migration of adult females or larvae of *Enterobius vermicularis (E. vermicularis)*. Adult female *E. vermicularis* migrate to the genital organs after laying eggs at perianal area. The eggs in the perianal will hatch into larvae and walk into the anus. In female patients, the chance of larval entry into the genital is greater because it is located adjacent to the anal. A larvae of *E. vermicularis* was found in direct urine of a 19-year-old female student. There were no other signs and symptoms of enterobiasis in her. This ectopic enterobiasis in genital tract was the first report in Indonesia.

Keywords: *Enterobius vermicularis*, genital enterobiasis, direct urine

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Introduction

Genital enterobiasis is a case of ectopic enterobiasis found in several countries, though the prevalence of the disease is very low. Some reported-cases were found accidentally when patients were observed in diagnostic process of the other diseases. A number of ectopic enterobiasis were detected in papsmear diagnosis such as an endometrial enterobiasis in a 40-years-old Chinese woman,[1] cervical carcinoma with enterobiasis in 35-years-old[2] and vaginal enterobiasis in 40-years-old Indian women,[3] existance of *E. vermicularis* ova in vaginal smear in37-years-old Korean women,[4] and a fallopian tube enterobiasis in a 23-years-old of pregnant Malaysian woman.[5] A number of *E. vermicularis* eggs were found in the kidney of a 51-years-old woman French with abdominal pain,[6] while the adult *E.vermicularis* were found in the urine of a 7-years-old female in Irak.[7] A massive infestation of *E. vermicularis* was found among the nocturnal enuresis of 20-years-old women in Romania.[8] These ectopic enterobiasis cases occurred in a broad range of women age indicated that this disease is a general problem of community and necessary to be treated. This case report presents an unexpected result of *E. vermicularis* larvae occurrence in urine sample of a 19-years-old female student who did not appear clinical sign and symptom of the disease.

Case presentation

Larvae of *Enterobius vermicularis* were studied from the urine sample of a female student at practicum in biomedical laboratory of Public Health Faculty of Universitas Muhammadiyah Semarang in November 2018. The *E. vermicularis* larvae were found in urine sample after examination through precipitation method. This method was modified with centrifugation. The larvae were observed through microscopic observations.

The self-collection of direct urine sample was taken by probandus in boarding house about 15 to 30 minutes before go to campus. The probandus were female students who took the course of Biomedical 1. Each female student is required to take direct urine for practicum specimens. A 10 ml urine sample was poured into a centrifuge tube and rotated at 2500 rpm for 10 minutes. The sediment and supernatant of the urine was separated. Two drops of sediment was taken and prepared in the object glass slide to be examined microscopically to finding of adult, larva or egg of *E. vermicularis* worm with gradual magnification.[9] We found larvae worm (Figure 1) in the urine sample. There are no other intestinal worms that can migrate to the genital organs.[10] *E. vermicularis* is the one species may to migrate to the female genital organs due to the anatomical position of the anus and adjacent genital holes.[2-4] The microscopic images of larvae in this finding indicate the presence of an esophageal bulb. The esophageal bulb is a specific feature of *E. vermicularis*.[11] No other morphological features are more specific. The behavior of female worms laying eggs in the perianal,[12] larvae migration behavior,[10] and the existence of several reports of cases of genital infection[1-8] reinforces this suspicion. The hatched larvae will enter into the rectum[11] or migrate to the genital tract in women.[13] No other species of intestinal nematode were migration reported in the genital tract. Its means, only this species can migrate to the genital tract. Finally, we concluded that this larvae is *E.vermicularis* worm.

Figure 1 *E. vermicularis* larvae from urine specimen.

At first, we suspected that the urine sample was contaminated with fecal or perianal material from the collected bottle, water source,

bedroom linen or the other sources so that an in-depth interview was done with the probandus. In-deep interview with the students finds valid information about direct urine. Its specimen was not contaminated with fecal or other perianal material during sampling. Probandus went to campus from her house in Jepara, around 70 km from Semarang city. In the morning, she urinates when taking a bath and cleaned with clean water. When arrived in Semarang, she went to her boarding house to collect her sample urine with the clean bottle that prepared before, and then brought it to laboratory. It means that the urine sample was pure excreted from her urinary tract and was not contaminated with the other material sources such as bathroom water, towel, and bedroom linen. We suspect that there had been migration of larvae from the perianal area after hatching a few hours before collected urine specimens.

Conclusion

The existence of *E. vermicularis* larvae in the urine sample indicated that the probandus was infected with the worm. Unfortunately, the other data such as sample from perianal swab or fecal materials are cannot obtained so could not strengthen this finding. We found many studies were reported the occurrence of *E. vermicularis* infection from fecal and perianal material samples.[14-22] Enterobiasis cases were never reported based on laboratory diagnosis from the urine specimen. This finding is the first report of genital enterobiasis in Indonesia. Prevalence, transmission mechanisms and determinant factors of the ectopic enterobiasis in genital tract among women in Indonesia are not clearly understood so that the further studies are necessary to be done followed by the prompt public health action to control this disease.

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Conflicts of interest

Authors declare that there is no conflict of interest.

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