

Pinworms In Pregnancy

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The intestinal parasite that family physicians are most likely to see in the office is the pinworm, *Enterobius vermicularis*.¹ Prevalence in the United States is estimated to be 20 to 42 million cases, with the greatest rate of infestation in children between the ages of 5 and 14 years.¹ Parents and other siblings will likely be infected if one child in the family becomes infected. Pinworms commonly spread from the contaminated hands of infected children (60 percent of infested children have *Enterobius* embryos under their fingernails).² Pinworms can also spread from infested bedclothes, bedding, dust, food, and eating utensils. Prevalence of pinworm infestation remains high in spite of greater knowledge of the parasite and its relation to humans.

Enterobius vermicularis is a parasite that usually lives in the human gastrointestinal tract. The female worm migrates to the anus or rectum at night to lay eggs. The eggs can disperse throughout the general surroundings and remain viable in the intestinal tract for up to 20 days.³ The larvae develop within a few hours in the ova, then migrate to the large bowel, where they mature in 15 to 28 days.⁴ Involvement of the genital tract is less common, but cases have been reported in the medical literature.^{5,6} Pregnant worms often migrate to the patient's anus to lay eggs at night, but they can enter the vagina and travel the length of the genital tract to the peritoneum.⁷ The ability of the parasite to migrate to several areas of the body and through various organ systems led Hippocrates to call it the "hopper."² Cases of vulvovaginitis in children and women have been reported. Ova have been discovered on routine Papanicolaou smears, and a case was reported with pinworm infestation of a stillborn.⁸⁻¹⁰ No reports of pinworms causing cervical bleeding in pregnancy, however, were found in a search of the current medical literature.

Submitted, revised, 7 March 1995.

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Cram¹¹ compiled the data from several studies conducted by the National Institutes of Health and described for the first time the symptomatology of pinworm infestation. Patient complaints most commonly include perianal itching resulting from the movements of the migrating female worm. Several other, less common, symptoms and signs might also indicate the presence of pinworms (Table 1), although these symptoms and signs have not always been confirmed in pinworm infestation in controlled studies.³ Most cases of pinworm infestation are actually asymptomatic.⁴ Cases in which the worm migrated through the female genital tract have caused eosinophilia.¹² The wide variety of symptoms, related in part to the ability of the pinworm to affect several different organ systems, requires the clinician to view the worm or its ova for a conclusive diagnosis.

Diagnosis is usually made by applying adhesive tape or a commercially available "pinworm paddle" repeatedly to the perianal area in the evening when the patient is bothered by perianal itching or in the morning just before washing. A single female worm is capable of laying between 5,000 and 16,000 eggs. The freshly laid eggs adhere to the tape or paddles and are easily recognized by their shape under magnification (Figure 1). Magnification $\times 100$ is typical for viewing the characteristic shape of the eggs.³ Diagnosis is complicated, however, by the wide variety of other diseases that pinworm infestation can mimic.

Standard treatment for pinworm infestation is mebendazole, a wide-spectrum anthelmintic. A single dose of 100 mg has a 96 percent cure rate for pinworm infestations.³ Mebendazole is effective against the worms only, however, not the eggs. The Centers for Disease Control recommends a second dose 2 weeks after the initial dose. The *Medical Letter* recommends pyrantel pamoate as the treatment of choice against pinworms.¹³ It should be administered in a single dose of 11 mg/kg, with a maximum dose of 1 g. A second dose should be repeated 2 weeks after the initial dose. Pyrantel pamoate has a cure rate of 90 percent.³ Both medications can cause occasional gastrointestinal pain and diarrhea.

Table 1. Common Symptoms and Signs of Pinworm Infestation.

Abdominal pain
Grinding teeth*
Hives
Inflammation of the urethra
Inflammation of the vagina
Insomnia*
Involuntary urination
Irritability*
Nausea
Painful urination
Perianal itching
Urinary tract infection
Weight loss

*More noticeable in children with pinworm infestation.

Case Report

A 17-year-old gravida 1 woman who was cared for in the family practice office for her pregnancy was seen during her first and second trimester for bleeding. The patient denied recent intercourse, trauma, vaginal discharge, or foul odor. *Gonorrhea* and *Chlamydia* cultures were negative twice. A sterile speculum was inserted into the vagina with each episode, revealing a scant amount of old and fresh blood in the vault and a friable cervix. Obstetric sonography did not reveal any source of bleeding. A friable cervix was believed to be the cause of bleeding. The patient was given reassurance, and the pregnancy progressed normally.

One week before delivery, the patient came to the hospital labor-and-delivery unit complaining once again of vaginal spotting. She denied any vaginal trauma, intercourse, abnormal discharge, contractions, or other complaints. Cultures for *Gonorrhea*, *Chlamydia*, and group B streptococcus were negative. A wet preparation of vaginal secretion was sent to the laboratory, where pinworm ova were identified. Diagnosis was confirmed by the laboratory supervisor and a physician. We decided to prescribe mebendazole, a standard medication for pinworm infestation, but treatment was postponed until after delivery, because mebendazole is a category drug with uncertain safety in pregnancy. One week later the patient went into labor and had a normal spontaneous delivery of a healthy girl. The patient was treated following delivery with a single 100-mg dose of mebendazole and a second dose 2 weeks later. Follow-up

Papanicolaou smear and wet preparation of vaginal secretion at the 6-week postpartum visit were negative.

Discussion

Like many patients with reported vaginal pinworms, this patient did not complain of perianal itching, which is a common symptom in cases involving the gastrointestinal tract. Kazura,⁴ however, pointed out that pinworm infestation will appear asymptomatic if perianal itching is not present. Mali and Joshi¹⁴ suggested that physicians use Papanicolaou smears to diagnose parasitic infestations in the vagina or cervix in otherwise asymptomatic women. In our case, the patient had a prenatal Papanicolaou smear at 15 weeks' gestation that was unremarkable for pinworm ova.

This case raises several interesting points. First, it was not unusual that the patient should present without common symptoms of pinworm infestation. The only complaint was intermittent bleeding, which is not unusual in pregnancy. We were



Figure 1. Typical appearance of pinworm (*Enterobius vermicularis*) ova under magnification ($\times 100$). This example is included to benefit the practicing physician in diagnosing pinworm infestation, even though it was not taken from the patient described in this case report.

unable to find a similar case of bleeding in pregnancy caused by pinworms in a review of the medical literature.

Second, our patient lived with only her mother and an older brother; no younger siblings or other children were present in the home. We were unsure how she contracted pinworms in the first place, because the infestation so often spreads from children. It was not determined whether she was a nail biter, which could have inadvertently caused ingestion of the eggs if they had been underneath the nails.

Third, this patient was seen at a family practice residency training center. Her case was presented by one author (JH) and discussed at the weekly family practice obstetric consultation conference (which is attended by family practice obstetric fellows, family practice residents on obstetrics and gynecology rotations, the staff obstetrician, and available family practice faculty). Questions focused on the ramifications of treatment in pregnancy, the possibility of migration and colonization in other areas of the patient, the effects of treatment on the developing fetus, and prevention measures to decrease the spread of the infestation to other members of the family.

This patient complained of minor vaginal spotting and a healthy fetus (determined by monitoring fetal heart rate); the decision to delay treatment until after delivery was an easy one. Treatment for a symptomatic pregnant woman would be given only if the potential benefit justified the risk to the fetus.

In humans, 2 percent of administered mebendazole is excreted in the urine and the rest in feces as the drug or a primary metabolite. Mebendazole, however, was shown to be both embryotic and teratogenic in pregnant rats. It is a category C drug and not recommended in pregnancy. A review of 170 deliveries with inadvertent exposure to mebendazole during the first trimester did not reveal an increase in either spontaneous abortions or malformations in the general population.¹⁵

Pyrantel pamoate, which was recommended as the treatment of choice by the *Medical Letter*,¹³ is also a category C drug in pregnancy. Treatment with either mebendazole or pyrantel pamoate should be delayed until after delivery unless benefits fully justify the risk to the fetus.

There are no reported cases in which pinworm infection or infestation caused fetal harm. With

the stillborn cited earlier,¹⁰ the authors believed the cause of the fetal death was unrelated, and in all likelihood the pinworm infestation occurred after the fetal demise.

Could pinworm infestation transfer to the baby during pregnancy or delivery? The answers are unknown. Once the membranes are ruptured, infestation is theoretically possible, although improbable. This baby was observed for symptoms but not treated. Other family members were asymptomatic and did not receive treatment. Good hygiene measures were recommended for all family members.

Although the patient was tested for standard infections, she was not tested for pinworms initially. The diagnosis of pinworms is relatively easy to make; however, it requires suspicion of the worm's presence. It also requires a full understanding of the life cycle of the worm to make this diagnosis. This case broadens the differential diagnosis for bleeding in pregnancy.

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