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## Refractory *Enterobius vermicularis* infection in an elderly woman: Mebendazole or albendazole?

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Sir,

Nematodes of the species *Enterobius vermicularis*, also called pinworms, are responsible for the most frequent helminth infection in temperate areas such as Europe (including Spain) and USA [1,2]. This infection is not associated with cultural factors, race or socioeconomic level and the only host of this parasitic species is the human being [1]. The biological cycle is simple and is initiated by ingestion of embryonated (infective) eggs [1,3]. The most common form of transmission is direct transfer from anus to mouth through the fingers. Other possible ways include contact with contaminated clothing (including bedding), bathroom fixtures, toys, furniture, or house dust). After ingestion, eggs hatch in the duodenum and, within one to two months, undergo two molts until the development of adult worms. After copulation, females attach to the mucosa of the cecum and adjacent regions while males die and are eliminated in the feces. Gravid females migrate, mainly at night, to the perianal region, where they deposit eggs that adhere to the skin. These eggs are very sticky and within a few hours transform into infective (embryonic) forms that may cause local symptoms (e.g. anal itching) or detach from the skin and remain viable in a moist environment. In many cases, *E. vermicularis* infection is asymptomatic [1,2]. In symptomatic cases, the most frequent clinical manifestations are anal or perineal pruritus, being more intense at night.

We describe the clinical case of a 60-year-old woman who was referred to our unit for nervous irritability due to intense anal and vulvar pruritus accompanied by vaginal leucorrhea and perineal erythema of one year of evolution. She did not report urinary symptoms, gastrointestinal alterations or gynecological history (i. e. uterine prolapse, previous vaginosis, candidiasis), although she indicated the occasional presence of "worms" in

stool. All blood laboratory studies were normal, except for the presence of eosinophilia (600 eosinophils/ $\mu$ L). Several coproparasitic methods were performed in primary care and were negative. In addition, she was treated with mebendazole on several occasions without improvement of the symptoms. A Graham's test was performed in the perianal region and an evaluation of the vulvovaginal discharge by fresh examination, Gram stain and microbiological culture. These studies only showed the presence of eggs with typical characteristics of *E. vermicularis* [4] in the perianal region and in vulvo-vaginal exudate (Figure 1). No helminth eggs or larvae were observed in new coproparasitic studies. All family members (symptomatic or asymptomatic) were treated simultaneously with albendazole in a single dose (400 mg) and treatment was repeated after two weeks to eliminate



Figure 1 | *Enterobius vermicularis* eggs in vaginal exudate.

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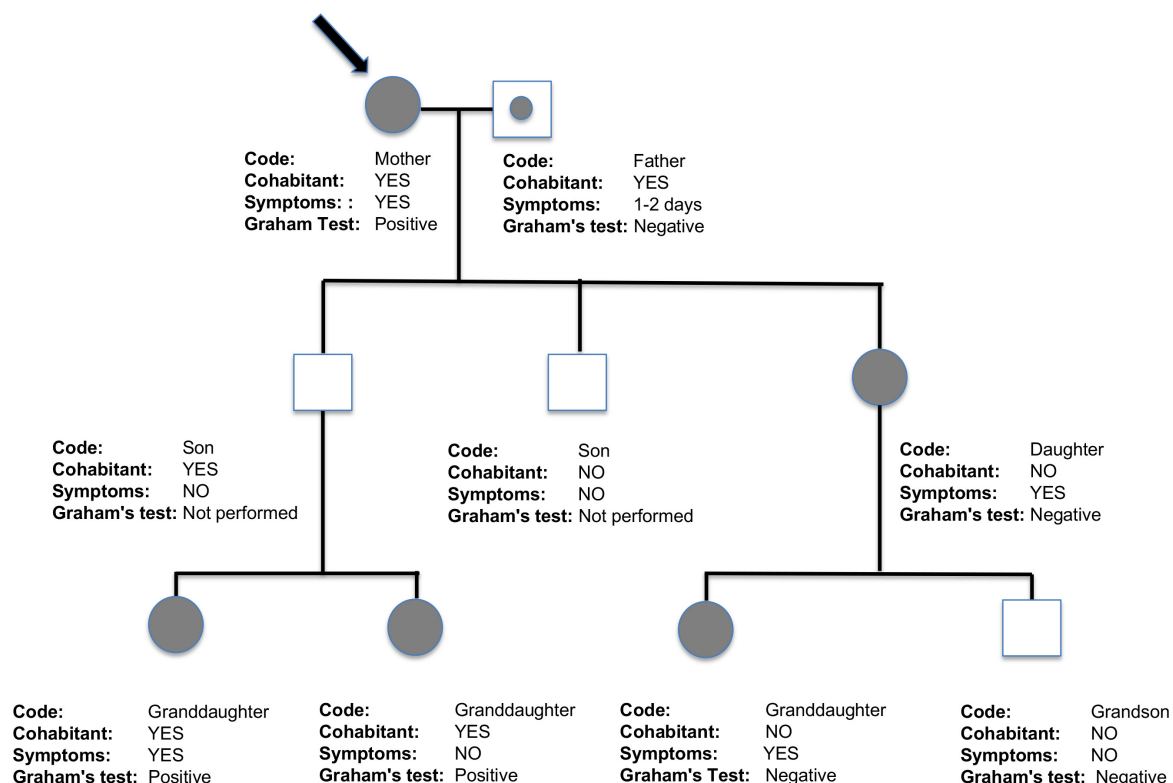


Figure 2 Family tree.

○ Unaffected woman; □ Unaffected man; ● Affected woman; ◐ Paucisymptomatic man; ➔ Patient.

the possibility of reinfection. Two months later, post-treatment control of the patient was performed, and she was asymptomatic, the eosinophilia disappeared, and the Graham's test was negative. At present the whole family remains asymptomatic.

The clinical case described presents several aspects of interest. First, *E. vermicularis* infection is very common in school-age children, although cases have also been described in adults [2,4,5,6], as in the present case. On the other hand, the usual manifestations are perianal, with extraintestinal infection being rare. For anatomical reasons, when they occur, it mainly affects the female genital tract by migration from adult forms [3]. The most frequent form is vulvovaginitis [2,5,6,7] although other areas such as uterus, fallopian tubes, ovary, and pelvic peritoneum can be affected [2]. Routine coproparasitic methods does not rule out pinworm infection, which explains the patient's initial negative results, requiring Graham's test in the perianal region or the study of secretions and/or biopsy in extraintestinal forms for diagnosis [1]. The presence of eosinophilia in patients with enterobiasis is rare and should suggest the presence of an invasive form [1,8]. The presence of recurrences is usually due to reinfection. In this case, clinical and/or parasitic infection of other members of the family nucleus was documented, so treatment should be performed simulta-

neously in all individuals, whether they are asymptomatic [2]. Finally, the use of mebendazole, the drug of choice in intestinal involvement, is inadequate in invasive forms since it is an anthelmintic with poor digestive absorption, so it reaches good concentrations in the lumen [9]. However, albendazole is completely absorbed, so it reaches a high tissue concentration [10], being effective in invasive forms [7].

In summary, *E. vermicularis* should be included among the causes of vulvovaginitis in women of any age. Diagnosis is based on observation of genital exudate and detection of eggs in the perianal region by Graham's test. The presence of eosinophilia should raise suspicion of an invasive form. The use of albendazole is preferable and should be performed simultaneously in the whole family.

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## CONFLICT OF INTEREST

Authors declare no conflict of interest

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