

## Case study

### **“*Enterobius vermicularis*: A first case report from Saptari,”**

#### **Abstract:**

*Enterobius vermicularis* is one of the most prevalent intestinal helminths in schoolchildren. But the parasite was not reported so far from the area. We report the first case of the parasite, which produced symptoms of gastrointestinal problems like abdominal pain and perineal irritation, as well as mental distress in a 5-year-old child. The parasitic specimen sample was collected by using adhesive cellophane tape from the perineal area on a glass slide while considering proper established laboratory methods and precautions. Microscopical examination of the specimen revealed flattened on one end and slightly curved on the other ends, thin, smooth, and transparent eggs of *E. vermicularis*. The ova are ingested through the oro-fecal route, the larvae hatch, and mature female worms migrate to the perianal region where they lay eggs. Sometimes, it may also migrate from the anus to the female genital tract. The infections are asymptomatic, but common symptoms are abdominal pain, perineal region itching, irritability, and debilitating sleep disturbance, although, of low pathogenicity, complications such as infertility or peritonitis may develop. It is a common auto-infectious parasite. The ova of *the pinworm* are rarely seen in the stool of routine microscopic examination. Therefore, the easy and effective method is "scotch-tape/adhesive cellophane tape," and the test is performed for routine examination. The case report is very useful for health professionals for reporting, diagnosis, and treatment of infections.

**Keys words:** *Enterobius vermicularis*, Pin worm, Nematode, Oxyuriasis, Autoinfection

#### **INTRODUCTION:**

*Enterobius vermicularis*, frequently known as pinworm or seat worm is one of the most common intestinal parasites in schooling children. Although most infections are asymptomatic, some cases induce exasperating symptoms. The condition associated with *E. vermicularis* infection is known as oxyuriasis (or enterobiasis) [1], presented by itching or irritation of the perianal region, acute abdominal pain, crawling sensation, and mental disorders. it commonly affects young schooling children age lower than 10 years [2]. Controlling of *E. vermicularis* infection is

difficult, because of the parasite's rapid transmission and high reinfection rate [3]. It is cosmopolitan in nature and infected billions of people all over the world, especially schooling children. The prevalence of *E. vermicularis* infection among children has been reported in many parts of the world, with infection rates having great variations, depending on the various factors like age, area and climate studied [4-5]. The prevalence of pinworm infection among children and schoolchildren has been reported in some scientific reports [6].

It is estimated that more 200 million people are infected yearly by this parasite infection especially in overcrowded areas such as schools, daycare centers and, orphanage [7]. It resides in the caecum and right colon of the intestine and moves out through the anus for laying eggs. It is a lumen habitant and hence does not cause serious infection although may cause exasperating in rare cases when the parasite invades the tissues [8]. Ingestion of eggs, contaminated food, water leads to the infection. The mature parasite usually inhabits in the intestinal lumen of terminal ileum or caecum [9]. which after fertilization, the female parasite moves to the perianal region where air contact stimulates them to lay eggs [10,11]. The presence of female *E. vermicularis* causes vigorous itching in the perianal region. Scratching of the affected area will lead to the transfer of eggs to the finger and help in the transmission of the eggs, the same person known as autoinfection [12]. Adults are least infected group with exception of mother whose children are infected [13]. Occasionally, *E. vermicularis* moves to other sites and develops granulomatous lesions, mostly affecting the female genital tract and appendix [6]. The purpose of the case report is to aware the individual and health professional of the pathogen in the area which is helpful for reporting, diagnosis, treatment, and prevention of the disease.

## **CASE PRESENTATION**

This is the case of a 5-year-old school child. One day, around 12:00 pm in the month of January, a woman came to the [diagnostic lab at Rajbiraj, Saptari district, Providence No. 2, Nepal](#) with her 5-year-old daughter to test his stool sample, complaining that there was severe itching around the anus and perineal region at night, irritability, weight loss, and she couldn't concentrate on her studies for the last few months. After acknowledging her complaint, it was requested that she come tomorrow with her daughter to the lab early in the morning after bed without visiting the toilet. The procedure was clearly demonstrated to their guardian about the procedure and method. The next day, the patient came to the lab with her mother. The sample was collected by

using adhesive cello tape from the perineal area on a glass slide while considering proper laboratory precautions [3]. The guardian of the patient was requested to visit the lab after 2:00 pm to take the report.

The laboratory workup revealed that flattened on one end (slightly curved on one end), thin, smooth, and transparent eggs were seen through the adhesive cello tape, which was fixed on the glass side (adhesive side down) and examined under a light microscope at 10X and 40X (fig. 1 and 2) [14]. The diagnostic criteria, results, and literature review [5,15] confirmed the precedence of *E. vermicularis* in the area.



Fig. 1: Adult head containing eggs of *E. vermicularis*.

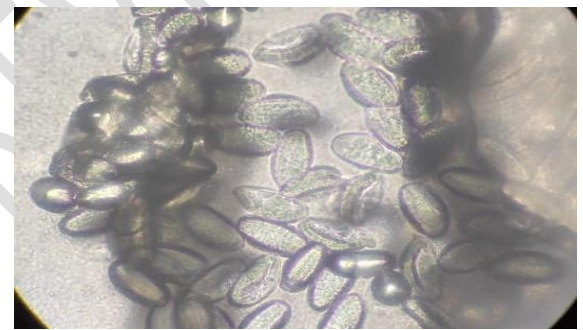


Fig.2: Eggs of *E. vermicularis*

### Discussion:

The parasite has a cosmopolitan distribution. It is more common in school and preschool children of temperate and cold climates than in warm climates because of the less frequent changing of underclothing and bathing in the winter season of common children residing in places like hostels, daycare centers, and orphanages. Illiteracy, poverty, and the socio-economic and socio-behavioral status of life may play a major role in increasing the rate of prevalence of the parasite [16,17]. This high prevalence rate of this parasitic infection among children is due to living conditions, poor sanitary and socio-economic conditions, sharing of beds, crowding, consumption of properly unwashed raw vegetables and fruits, drinking of contaminated water, and unhygienic food. It develops autoinfection due to the use of contaminated fingers for eating and drinking, and it transmits to others by using contaminated towels, beds, and clothes. The infection is mainly observed in preschool and school children, which develops symptoms like irritation, weakness, loss of concentration, abdominal pain, mental disorders, growth, and

development and affects their studies as well as their growth and development [14,18]. Medical and health professionals were advised to diagnose and treat the human pathogen having similar symptoms and infestation, which could help to control the infection in a proper way. Dahal et al. reported the pathogens in the nearby areas, which helped with confirmation of the infection [6]. Special attention is required for health professional to diagnose and treat the pathogen. **The medical and health professionals were advised to diagnose and treat the human pathogen having the similar symptoms and infestation which could help to control the infection in proper way.**

### **Conclusion:**

The treatment, combined with a focus on hygienic measures, can almost always completely remove pinworm infection and avoid recurrence and autoinfection. The participation of all members of the patient's household, including sexual partners, is essential to the treatment's long-term effectiveness. Health education, hygiene, and sanitation play a vital role in the prevention and control of parasitic infections. **The patient was treated with Kit Kat (mebendazole) 100 mg/6 tablets and was advised to repeat the tablet after 2 weeks of the same medicine. After one month of treatment, a follow-up was taken from the family, and it was found that there were no such symptoms in the patient.**

### **References:**

1. Caldwell JP. 1982. Pinworm (*Enterobius vermicularis*). Canadian Family Physician 1982, 28: 306-9.
2. Kumari N, Kumar A, Kumar S, Shailesh S, Xess A, Shahi SK. Intestinal parasitic infection, demographic status of school children and sanitary conditions of schools in patna, bihar- a pilot study, Journal of Evolution Medical and Dental Sciences 2017, 6(56): 4167-71.
3. Shoup B. Diagnosis and management of pinworm infection. Primary Care Update for OB/GYNS 2001, 8:2
4. Bunchu N, Vitta A, Thongwat D, Lamlerthton S, Pimolsri U, Waree P, Wongwigkarn J, Khamsri B, Cheewapat R, Wichai S, Meepayung T, Thongthung A, Soypetcasem S, Buapan C, Chidburee P, Polseela R. *Enterobius vermicularis* Infection among Children in Lower Northern Thailand. Journal of Tropical Medicine Parasitology, 2011, 34:36-40.

5. Mathuria YP and Singh A. Prevalence of Intestinal Parasites at a Tertiary Care Centre at Moradabad, Western Uttar Pradesh, India: A One-Year Observational Study. *Annals of International Medical and Dental Research*, 2017;3(5): 7-10.
6. Dahal T and Maharjan M. Pinworm (*Enterobius vermicularis*) Infection in Children of Barbhanjyang VDC, Tanahun District, Nepal. *Journal of Institute of Science and Technology*, 2015;20(2): 18-21.
7. Gulnaz C and Nizami D. The relation between *Enterobius vermicularis* infection and enuresis, Yurkey. *European Journal of General Medicine* 2006, 3(1): 16-29.
8. Hong ST, Choi MH, Chai JY, Kim YT, Kim MK and Kim KR. A case of ovarian enterobiasis. *Korean Journal of Parasitology* 2002, 40: 149-151.
9. Heyman DL. *Control of communicable diseases manual* 18th Edit. American Public Health Association, Washington DC, 2004, 69: 1161-1168.
10. Murata KET. Fatal infection with human pinworm (*Enterobius vermicularis*) in captive chimpanzee. *Journal of Medical Primatology* 2002, 31(2): 104-108.
11. Zahariou A, Karamouti M and Papaioannou P. *Enterobius vermicularis* in male urinary tract. *Journal of Medical Case Report* 2007, 1: 137-138.
12. Horne PD. First evidence of Enterobiasis in ancient Egypt. *Journal of Parasitology* 2002, 88(5):1019-21.
13. Devlin JB. Prevalence and risk factors for nocturnal enuresis. *Iranian Medical Journal* 1991, 84:118-20.
14. Wendt S, Trawinski H, Schubert S, Rodloff AC, Mössner J, Lübbert C. The diagnosis and treatment of pinworm infection. *Dtsch Arztebl Int* 2019, 116:213-9.
15. Ghazala R, Rawat V, Pandey HS and Kumar M. Acute abdomen: An uncommon presentation of a common intestinal nematode, *Tropical Parasitology* 2015, 5(2):123-6.
16. Misra S, Duttaroy B and Shroff B. The prevalence of intestinal parasitic infections in the urban slums of a city in Western India, *Journal of Infection and Public Health*, 2013, 6: 142-9.
17. Padmaja N, Swaroop PS, Nageswararao P. Prevalence of Intestinal Parasitic Infections among School Children in and around Amalapuram. *Journal of Public Health and Medical Research* 2014, 2(2):36-8.

18. Nateeworanart S, Vitta A, Lee UP. Egg positive rate of *Enterobius vermicularis* in children in a rural area of Pichit province, Thailand. Southeast Asian Journal of Tropical Medicine and Public Health 2007, 38(1):40-2.

UNDER PEER REVIEW