**CASE STUDY**


**ABSTRACT**

*Hymenolepis diminuta* (*H. diminuta*) is a common parasite of rats and mice. It is very rare among humans. The life cycle of this parasite is completed in two hosts. Human beings are accidentally infected due to ingestion of infected fleas. Most of the time human infections are asymptomatic. We report a case of *Hymenolepis diminuta* infection in a school-going 10-year-old girl from a coastal village in south Tamil Nadu. Demonstration of *H. diminuta* eggs in the stool is the important diagnostic tool. Absence of polar filaments confirms the *Hymenolepis diminuta*. Praziquantal is the drug of choice.

**Key Words**

*Hymenolepis diminuta*, rat tapeworm

**Implications for Practice:**

1. **What is known about this subject?**
   Children are accidental hosts of *Hymenolepis diminuta*. It is very rare among human beings. We found only a few cases reported from countries like Australia, the United States, Italy, Spain, Jamaica, Thailand, and Indonesia.

2. **What new information is offered in this study?**
   Though it is very rare among humans, our hope is that our study will act as an important stimulus to initiate more community studies like this in the future, especially in a developing country like India.

3. **What are the implications for research, policy, or practice?**
   Because of its rare incidence, this case of *H. diminuta* has implications for public health. As a preventive measure, eating contaminated grains and cereals needs to be avoided. With proper inspection of grains, cereals, and rodent control measures, along with proper sanitation and personal hygiene, these parasitic infections can be prevented without morbidity.

**Background**

*Hymenolepis diminuta* (*H. diminuta*) is primarily a rodent parasite called rat tapeworm. Though it is present worldwide, very few cases have been reported and only from specific countries.²³ *Hymenolepis diminuta* infestation is most common among children.³ Most reported cases were asymptomatic. Common symptoms were mild diarrhea, abdominal pain, and vague gastrointestinal manifestations. Diagnosis is usually made by demonstration of eggs in the feces by microscopy.²³

**Case details**

A 10-year-old female presented to our clinic with a history of intermittent abdominal pain with loss of appetite. On examination, the child weighed 25kg and was 134cm in height, with mild pallor but no icterus. Her abdomen was soft with no organomegaly. Cardiovascular, respiratory, and central nervous systems were found to be normal. Her routine blood investigations were within normal limits except for eosinophilia, which is seen in parasitic infestations.

From the child’s stool sample, we identified a spherical, thick-shelled, yellow coloured egg measuring 70µm in diameter, with six central hooklets without any polar filaments (Figure 1). We asked for two consecutive stool samples after a week. These stool samples also showed similar morphology of eggs. Thus, we finally diagnosed the child with *Hymenolepis diminuta* infestation. The absence of polar filaments is an important finding that differentiates this parasitic egg from *Hymenolepis nana* egg, which...
measures 30–45µm in diameter, with four to eight polar filaments emanating from little knobs at either end of the embryophore.²

All the stool samples were processed by formal-ether concentration method by Ritchie.¹² Samples were screened by both saline and iodine wet-mount preparations in a systematic manner.

Discussion

Hymenolepis diminuta is rare in humans. It is more prevalent worldwide among rodents.²⁴ Humans, usually children, are accidental hosts by ingestion of an infected intermediate host. Countries such as Australia, the United States, Spain, Italy, Malaysia, Thailand, Jamaica, and Indonesia have reported cases of H. diminuta infection.⁵–¹⁰ Reports from different populations have shown an incidence of 0.001–5.5 per cent H. diminuta parasitism.¹¹¹² In a study by Chandler with 10,000 stool samples, 23 cases were reported.¹³ Aside from those cases, only a few cases in India have been documented.⁶¹³–¹⁶ Foods such as grains and cereals contaminated with infected insects are the chief sources of infection.² Live beetle ingestion in Southeast Asia, especially in China, is an interesting mode of transmission of H. diminuta. In our case there was strong evidence of rats and insects dwelling around the residential area, therefore the source could have been the rats defecating at the larval stage.

The tablet Cysticide (Praziquantel) was prescribed. The patient tolerated the medication well without any adverse drug reactions. Following drug therapy, after 15 days two consecutive stool samples were received and subjected to microscopic examination. Both were found to be negative for ova and cysts. Screening for the siblings was also performed; these also showed no ova and no cysts. Health education regarding proper personal hygiene and sanitation was given to the family members as a preventive measure.

Conclusion

We report this rare case of Hymenolepis diminuta infection due to its rare incidence in humans and its relevance to public health. As a preventive measure, eating contaminated grains and cereals needs to be avoided. With proper inspection of grains, cereals, and rodent control measures, along with proper sanitation and personal hygiene, these parasitic infections can be prevented without morbidity.

References


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CONFLICTS OF INTEREST
The authors declare that they have no competing interests.

PATIENT CONSENT
The authors, Kalaivani R, Nandhini L, Seetha KS, declare that:

1. They have obtained written, informed consent for the publication of the details relating to the patient(s) in this report.
2. All possible steps have been taken to safeguard the identity of the patient(s).
3. This submission is compliant with the requirements of local research ethics committees.