

## CASE REPORT

# Human Infection with *Hymenolepis diminuta*: First Case Report from North India

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## ABSTRACT

The parasite *Hymenolepis diminuta* commonly infests rodents, and human cases have been reported from all corners of India, save North India. There is a need to create awareness about its association with human disease as it is completely curable after treatment. We describe two cases of human infection due to *H. diminuta* in a 24-year-old woman and her son. These two cases were diagnosed on routine microscopy wet mount preparation and subsequently were successfully treated with medication. A detailed description of this disease in terms of epidemiology, clinical presentation, and effective treatment is dependent upon prompt diagnosis and reporting of all such cases.

**Keywords:** Diarrhea, *Hymenolepis diminuta*, Praziquantel, Rat tapeworm.

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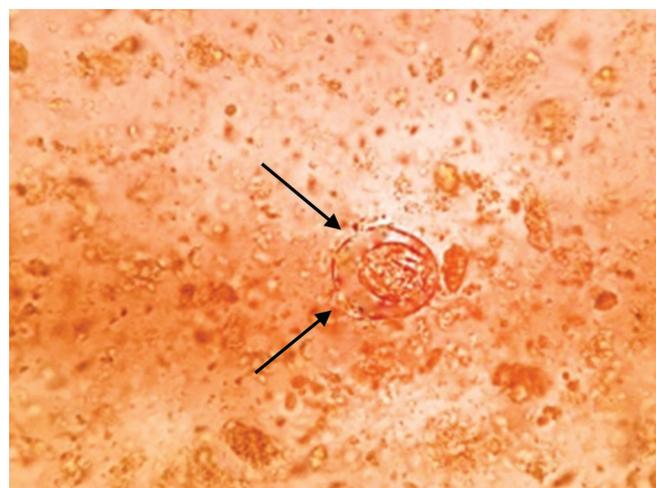
## INTRODUCTION

Hymenolepiasis in humans is frequently caused by the dwarf tapeworm, *Hymenolepis nana*, and uncommonly by *Hymenolepis diminuta* (rat tapeworm). Life cycle is completed in human/mice/rat (definitive host) and coprophilic arthropods (intermediate host, commonly cockroaches, beetles, and fleas). Subtropical and tropical areas have a high prevalence of hymenolepiasis, especially if poor hygiene coexists. Human infection by *H. diminuta* is acquired accidentally by ingestion of infected arthropods harboring the larvae, which metamorphose into the adult worm in intestine. Children are commonly affected. Human disease due to rat tapeworm has been documented from East, West, and South India. We report here two cases of *H. diminuta* from New Delhi, India. To the best of our knowledge, this is the first such case being cited from North India.

A 24-year-old female, residing in a slum area in east Delhi, presented to the casualty of our hospital with chief complaints of diarrhea (7–10 episodes/day) for last 4 to 5 days, associated with colicky abdominal pain. History of fever/vomiting was not there. Other than being underweight, malnourished, and dehydrated, no other remarkable findings were noted on physical examination. She was diagnosed as a case of acute gastroenteritis with moderate dehydration and was subsequently given symptomatic treatment. On improvement, she was discharged with oral metronidazole (400 mg thrice daily for 5 days). Her stool sample was brought to the microbiology laboratory for examination when diarrhea did not improve at review on the 5th day of illness.

The watery, muddy brown stool was not associated with blood/mucus or any adult worm segments. Routine microscopy demonstrated one to two round-to-oval eggs/high-power field. They were approximately 60 to 80 µm, had a thick outer and thin inner shell membrane with three pairs of hooklets. Polar filaments, characteristic of *H. nana*, were absent. Similar findings were documented after concentration of stool with formol-ether technique (Fig. 1).

She was diagnosed as a case of diarrhea due to *H. diminuta*. By this time her 1-year-old son developed diarrhea and examination of his stool sample revealed similar findings. Accordingly prompt treatment with 20 mg/kg praziquantel for 5 days was given to both. Clinical and laboratory evaluation of the patients after 5 days of treatment was satisfactory. No eggs were seen on subsequent testing.



**Fig. 1:** Iodine mount of stool sample with *H. diminuta* egg at 40× magnification of light microscope

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*Hymenolepis diminuta*, a common rodent parasite, accidentally infects humans after ingestion of infected arthropods. The larval form inhabits the human intestine and eggs are shed in the feces. A few hundred cases have been reported in humans till date. The cestode has been reported in a young female and her son in Mexico, in a 5-year-old girl with neurological symptoms from Spain.<sup>1,2</sup> In India, there are a few reports of such cases from the South, East, and Western parts.<sup>3-5</sup> Most of these are documented in children with gastrointestinal complaints though adults may also manifest disease. Maculopapular pruritic rash due to *H. diminuta* was seen in an 18-year-old male from Odisha.<sup>5</sup> Majority of infections are asymptomatic. The clinical spectrum includes anorexia, abdominal pain, diarrhea, pruritus, rash, eosinophilia, and nocturnal enuresis. Neurological manifestations may also exist. Immunosuppression may exacerbate the condition. Praziquantel and niclosamide are effective therapeutic options.

Our cases belonged to low socioeconomic status residing in poor sanitation area. Infection was probably acquired from unhygienic sources of food/water infected with rodent feces. Fecal examination of rodents is required to trace the source of infection. There arises a

need of institution of effective measures of pest control, especially in slum dwellings as rodents are common inhabitants of such households and are reservoirs of this organism. A detailed description of this disease in terms of epidemiology, clinical presentation, and effective treatment is dependent upon prompt diagnosis and reporting of all such cases.

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