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CASE REPORT

Analysis of a child infected with *Hymenolepis diminuta* in Poland

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Abstract

Hymenolepis diminuta is a cosmopolitan parasite of rats and mice which is very rare in humans. This study presents the case of a 3-year-old boy infected with *Hymenolepis diminuta* in Poland. The diagnosis was based on eggs found and their morphology in the patient's stool.

Key words

child, *Hymenolepis diminuta*, Poland

INTRODUCTION

Among the tapeworms, *Hymenolepis diminuta* deserves special attention from the point of view of both biological and epidemiological studies. It is a cosmopolitan parasite of rats and mice, very rare in humans. Unlike *Hymenolepis nana*, *Hymenolepis diminuta* needs an intermediate host to close its lifecycle – insects (over 20 species), among others, rat and mouse fleas, mildews, flour beetles, cockroaches, and beetles. The final host becomes infected by eating cysticercoid eggs with food contaminated with insects' larvae, or by hands. In the small intestine of the host it grows into an adult measuring 20–50 cm in length [1, 2, 3, 4].

CASE RAPORT

A 3-year-old boy living in Starachowice, Swietokrzyskie province in south-east Poland, was treated at a paediatric clinic due to his slow weight gain. Preliminary parasitological digestive studies in the Medical Laboratories in Kielce suggested *Hymenolepis nana* eggs. The boy's feces were sent to the Department of Biology and Genetics of the Medical University in Lublin, where, after careful analysis and the measurement of eggs, the size of which ranged from 65 x 69 µm to 70 x 67 µm (Fig1–400x magnification), *Hymenolepis diminuta* was found. The eggs were spherical with oncospheres, with 6 hooks and two distinct embryonic sheaths, the inner of which was devoid of polar filaments characteristic of *Hymenolepis nana* [3, 5, 6]. In macroscopic and microscopic studies, proglottids were not present in the child's feces. Examination of the immediate family produced negative results.. The child was given a single dose of albendazole (Zentel®) 400 mg, and referred to the Department of Endocrinology of the Regional Hospital in Kielce, where blood and urine tests were performed. The results were normal.

After the completion of treatment, a coproscopic study was repeated 14 days after treatment, and tapeworm eggs were again detected. Abdominal ultrasound was also performed; it showed no irregularities. The anti- parasitic drug used was found to be ineffective.

The child was still gaining very little weight and was referred to the Department of Infectious Diseases in Warsaw, where praziquantel (Cesol®) was given in a single dose of 150 mg.

Coproscopic control studies were performed 14 and 30 days after treatment and there were no *Hymenolepis diminuta* eggs present.

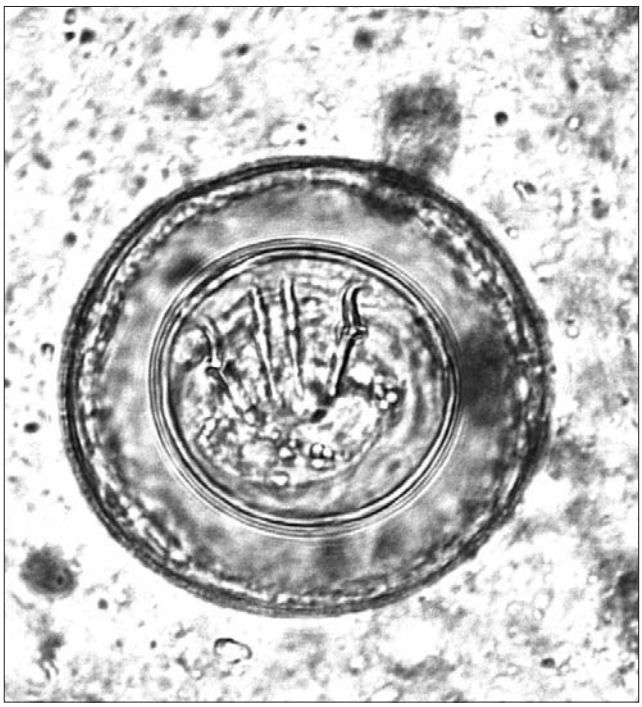

Figure 1. *Hymenolepis diminuta* egg found in the patient's stool (400× magnification)

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DISCUSSION

It is difficult to explain *Hymenolepis diminuta* infection in a child living in a city centre where no rodents were observed. Perhaps food products were contaminated with mildews containing cysticercoid larvae.

Hymenolepis diminuta infection in humans is very rare; worldwide, only a few hundred cases have been reported, mostly in children [3, 7, 8, 9]. In recent years, tapeworm infestations invasion was found in 1998 in a 5e-year-old girl from Spain, in 2003 and 2007 in 2-year-old boys from Italy, in 2008 in a 12-year-old girl from India, and in 2012 in a 2-year-old girl from Malaysia [3, 5, 8, 10, 11].

In Poland, *Hymenolepis diminuta* infections in humans occur in isolated cases; in the years 1994–2009, 5 were described, in 1994, 1997, 2001, 2002, and 2009 [12, 13, 14, 15, 16].

Very often, *Hymenolepis diminuta* infections are asymptomatic, but there may be abdominal pain, diarrhea and irritability. Due to such rare occurrence among humans, diagnosis, analysis and description of *Hymenolepis diminuta* in each case provides new knowledge of infections with this parasite [3, 17].

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