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Case Report

Case Report of *Hymenolepis Diminuta* From Rural Tertiary Care Centre

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ABSTRACT
Hymenolepis diminuta is a parasite infecting mainly rats which is acquired accidentally to humans by ingesting infected intermediate host which is arthropod (Flea,beetles, cockroaches) harboring the cysticercoid larvae. In the present case report, a case of parasite *H. diminuta* infection in a 7 year old female child from the rural area of western Maharashtra is reported. The patient came to pediatrics outpatient department of rural tertiary care hospital with the chief complaints of three days of fever, intermittent abdominal pain, anal pruritus, nocturnal restlessness and vomiting. Stool microscopy revealed presence of eggs of *H. diminuta*.The present case responded well to praziquantel therapy(10mg/kg) for 7 days.More awareness is required for a better understanding of epidemiology and transmission routes of these kind of rare zoonosis.
Key words: parasite**,** *Hymenolepis diminuta*, praziquantel, rat tapeworm.

Introduction*:*
Hymenolepis diminuta is a rodent parasite infecting mainly rats and mice. The parasite is also known as 'rat tapeworm'. Humans acquire infection accidentally by ingesting infected arthropods (intermediate host) harboring the cysticercoid larvae. The rats are definitive host while obligatory intermediate hosts are arthropods mostly flour beetles and flour moths.[1] Inside the arthropod (Flea ,beetles ,cockroaches) the hexacanth embryo will develop into a cysticercoid. When an infected arthropod is ingested, cysticercoids of parasite will develop into an adult form in the small intestine of definitive host and their eggs will be passed out in the stool [2] [3] Humans, usually children, are accidental hosts and acquire infection by ingesting the infected intermediate host.[3]

Many cases of *H diminuta* infection are reported from India.[2][3][4][5] and from foreign countries[1][6][7][8][9][10][11][12][13]

Case report:
A 7year-old female child resident of Loni (Bk) village (in Ahmednagar district of Maharashtra) was presented in out patient department with chief complaints of fever, dry cough,and intermittent pain in the abdomen. Single

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episode of vomiting which was nonprojectile, non-bilious in nature. Anal pruritus, nocturnal restlessness was also present . There was no history of loose motion, passage of worms or blood in stool. There was no past history of bleed from any site and jaundice. No history of similar illness were reported by her family members and neighbours. The patient was admitted in paediatric ward and further investigated.

General and Systemic examination:

The general and systemic examination did not revealed any abnormality. All the blood investigations were within normal range.The stool specimen was sent to Microbiology laboratory for routine microscopic examination.

In the gross examination, received stool specimen was semisolid in consistency,greenish in colour with absence of blood, mucus and worm segment. The saline and iodine mount were prepared and examined under microscope. Microscopic examination of stool specimen showedabsence ofpus cells and red blood cells (RBC). It showed presence of spherical thick shelled eggs of approximately 70 µm in diameter which were bile stained ,yellow-colored. These eggs contained six central hooklets but no polar filaments [Figure 1 and 2].These eggs were identified as *H. diminuta* eggs and can be differentiated from *H. nana* eggs by their similar appearance but bigger size and absence of polar filaments .[7]

Figure 1- Outer membrane with radially striated brown egg of *Hymenolepis diminuta* (10x)

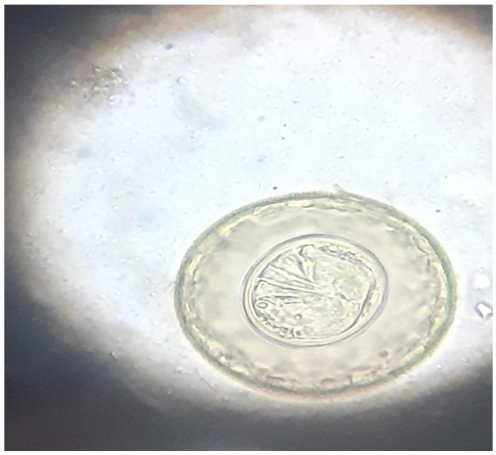

Figure 2-Egg of *H.diminuta* showing hexacanth embryo without polar filament (High power- 40X)

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Discussion:

Hymenolepis diminuta is a rat tapeworm.These infections are predominately seen throughout the world from temperate to tropical conditions with the people maintaining poor sanitation.[13] Rodents are its principal definitive hosts. Accidental ingestion of infected arthropod containing cysticercoids infects human beings. In the small intestine of human beings adult worms are found, and its eggs are passed in the stool. Passage of eggs in the stool is having diagnostic value. [3]

In India many reports revealed that cereals contaminated with infected insects are chief sources of infection.[2] As Watwe *etal* reported that this parasitic infection is usually reported in childrens present case was also a female child.[3] Marangi*et al* (2003) reported, that their patient had episodes of nocturnal restlessness and itching , similar symptoms were present in the present case .[7] In present case, all the blood investigations were within normal limits, as mirrored in case reported by author Ahmed AF et, al.[9] Gupta *et al* observed anemia in their case report. [10]*H. diminuta* infection may also cause eosinophilia.[4] Anemia or eosinophilia was not evident in present case reported by us.Absence of eosinophilia in *H. diminuta* infection was also stated by other authors.[6][7]There was no history of passage of proglottids and worms in present case. Expulsion of proglottids were reported by few authors.[1][7][14]

In India a stool survey conducted by Chandler *et al* (1927) on approximately 10,000 stools. They reported 23 cases of *H. diminuta* in their study [12] .This case was treated with Praziquantal (10mg/kg) for 7 days. Praziquantal was the drug of choice in many cases reported.[8][10][12]In a case by Ahmed AF *et al*(2017)they preferred nitazoxanide (500 mg/day) because of unavailability of praziquantal in rural areas of mexico.[9].

Outcome and follow-up :

Patient was treated and followed up after two weeks. Another stool sample was advised and sent for microscopic examination. The stool specimen showed absence of any parasite. Concurrently, child symptoms were also relieved. Health education was given to family regarding proper sanitation measures.

Conclusion:

Every case of H.diminuta infection should be reported and analyzed to improve our knowledge of mode of transmission , treatment protocol and epidemiology of this infection to break the chain . Along with albandazole other antihelmithics should be prescribed to cover other parasites also. Significant role of personal hygiene and food hygiene underlines the parasitic transmission demanding health education speciallyin school going children.

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