

## Human Dipylidiasis – A rare case report from Hyderabad

\*Dr. Jayalakshmi L<sup>1</sup>, Dr. Katyayani Y<sup>2</sup>, Dr. Madhurima K<sup>3</sup>, Dr. Sasikala G<sup>4</sup>.

<sup>1,3</sup>Associate Professor, Department of Microbiology, Osmania Medical College, Hyderabad.

<sup>2</sup>Senior Resident, Department of Microbiology, Osmania Medical College, Hyderabad.

<sup>4</sup>Professor & HOD, Department of Microbiology, Osmania Medical College, Hyderabad.

\*Corresponding author: \*Dr. Jayalakshmi L

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**Abstract:** Human Dipylidiasis, a zoonotic infection caused by *Dipylidium caninum* was rarely reported in literature. *Dipylidium caninum* commonly infects dogs & cats and is taxonomically located in the family Dipylididae, order Cyclophyllidae, subclass Eucestoda. Mammals act as definitive hosts for this intestinal cestode and intermediate host is dog flea or cat flea, *Ctenocephalides canis*, *Ctenocephalides felis* respectively. Transmission is by ingestion of these intermediate hosts with cysticercoid larva. Humans are accidental hosts especially infants and young children. Human infection is usually asymptomatic thus rarely diagnosed clinically. We report a case of *Dipylidium caninum* infection in a 23 year male student with complaint of passing worm like moving bodies in stool.

**Keywords:** *Dipylidium*, Infected fleas, Proglottids.

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### I. Introduction

*Dipylidium caninum*, known as cucumber tapeworm or double pore dog tapeworm is common tapeworm of dogs and cats<sup>1</sup>. First human disease of *Dipylidium caninum* was described by Linnaeus in 1758<sup>2</sup> and in United States by Stiles in 1903<sup>3</sup>. Human infection is usually asymptomatic thus rarely diagnosed clinically<sup>4</sup>. About 120 human cases have been reported worldwide till date with three cases from India, one each from Kolkata, Karimnagar and Odisha<sup>5</sup>.

The adult worm measures around 10 – 70 cms long with scolex, neck & strobili consisting of 200 double pore proglottids resembling cucumber seeds. The gravid proglottids release packs of 8 -15 eggs with hexacanth embryo measuring 25 - 40 um which later develops in intermediate host, dog flea or cat flea into cysticercoid larva<sup>6</sup>. When these infected fleas were eaten by dog or cat or humans, the infection is transmitted.

### II. Case History:

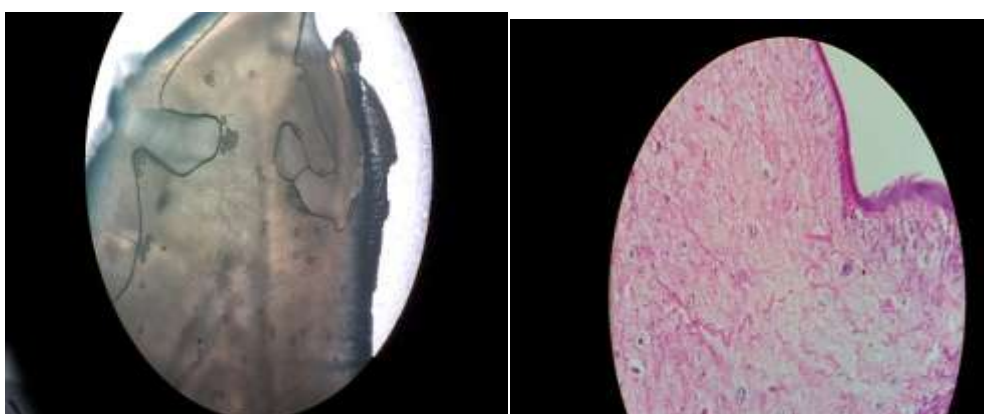
A 23 year male student attended outpatient clinic with complaints of passing worm like moving bodies in the stool since 3 months and frequent attacks of abdominal discomfort. General physical examination revealed patient to be moderately built & moderately nourished. Vitals were normal. The haematological profile of the patient was within normal limits & no eosinophilia seen. Erythrocyte sedimentation rate was not raised.

The patient was advised stool examination. Macroscopically the stool was yellowish, formed, ivory coloured and cucumber seed shaped structures, 0.5 – 1cm long x 0.1 – 0.2 cm thick were observed which were moving actively. (Fig:1) These structures when observed under the hand lens resembled proglottids of the tapeworm. A wet mount of the stool sample revealed 30 - 40 um diameter eggs in clusters of 8-15 with an onchosphere having 3 pairs of hooklets<sup>6</sup>. (Fig: 2)

For further confirmation, the proglottid segments were crushed & examined by normal saline mount. 8-15 eggs in clusters surrounded by thin membrane were observed under x10 and x40 magnification. Cut section & eosin staining of the proglottid also revealed similar findings. (Fig: 3). The proglottid segments were processed by paraffin embedment & stained with hematoxylin - eosin. These sections showed body wall with tegument & smooth muscle fibres & internal compartmentalisation of eggs in packets when observed under x10 magnification<sup>7</sup> (Fig:4). Stool culture did not reveal any pathogenic bacteria.



**Fig 1:** Macroscopic appearance of actively motile proglottids of *Dipylidium caninum*. **Fig 2:** Saline mount of stool sample showing packs of proglottid eggs with hexacanth embryo, x40 magnification.



**Fig 3:** Cut section of proglottid showing packs of eggs surrounded by a membrane, x10 magnification. **Fig 4:** Haematoxylin – eosin stained section of paraffin embedded proglottid showing tegument, smooth muscle fibres & packs of eggs, x40 magnification.

Based on these morphological findings, the parasite was diagnosed as *Dipylidium caninum* & the infection was treated with a single dose of Praziquantel 10 mg/ kg body wt. On follow up stool examination at 1 month & 3 months no evidence of the segments of the parasite or eggs was observed.

### III. Discussion:

Human infections of *Dipylidium caninum* have been reported in Europe, Phillipines, China, Japan, Argentina and United States especially in children<sup>6</sup>. There was one reported case of human *Dipylidiasis* in a 41 year old man in Sudan<sup>8</sup>. Diagnosis can be made by observing the characteristic rice grain-like proglottids in stool specimens and the pathognomonic egg packets in the gravid uterus in histologic sections of the parasite<sup>7</sup>. However motile proglottids on the innerwear can cause anal irritation and mistakenly diagnosed as *Enterobius vermicularis* infection<sup>5</sup>.

Epidemiological studies revealed that geography of pet animals & flea infestation as the principal risk factors for humans. Chandler AC on examination of 250 cats in Bengal, with a view to study their parasites and to determine to what extent it serves as a reservoir for human parasitic infection found *Dipylidium caninum* infestation in 43 per cent of cats and was often heavy, as many as 75 worms being found in some cats<sup>9</sup>. In the present case there is no history of having pets. Thus the probable source of infection could be the food contaminated with infected dog or cat fleas, since the patient had a habit of eating very frequently from road side food vendors.

### IV. Conclusion:

In spite of the scarcity of reports of human *Dipylidiasis*, all the described risk factors of the infection are present in developing countries. Though many of the infected humans remain asymptomatic, the event of concern is the morbidity it results in the pediatric age group. The most important measures to prevent this infection are by controlling the dog fleas, cat fleas & dog lice and by deworming of pet dogs & cats along with personal & environmental hygiene.

### References

- [1]. CK JayaramPanicker. Text Book of Medical Parasitology, 6<sup>th</sup> ed. Jaypee Brothers Medical Publishers; 2007: p.157.
- [2]. Narasimham M V, Panda P, Mohanty I, Sahu S, Padhi S, Dash M. Dipylidiumcaninum infection in a child: A rare case report. Indian J Med Microbiol 2013; 31(1):82-4.
- [3]. Claudia P. Molina, MD; James Ogburn, MD; Patrick Adegboyega, MD. Infection by Dipylidiumcaninum in an Infant. Arch Pathol Lab Med. 2003; 127: e157–e159.
- [4]. David I Gibson, Nature & Classification of parasitic helminths. In Topley & Wilson's Microbiology & Microbial infections. Parasitology. 10<sup>th</sup> ed. Cox FE, Wakelin D, Stephen H, Gillespie and Dickson D Despommier DD, editors. Oxford University Press, New York; 2005: 574 – 578.
- [5]. Ramana KV, Rao SD, Rao R, Mohanty SK and Wilson CG. Human Dipylidiasis: A Case Report of Dipylidiumcaninum Infection from Karimnagar. Online Journal of Health and Allied Sciences, 2011: 10: 28.
- [6]. Parija SC. Textbook of Medical Parasitology. 3<sup>rd</sup>ed. New Delhi: All India Publishers and Distributors; 2006: p 233-5.
- [7]. United States Centers for Disease control & Prevention. Differential Morphology of the Diagnostic Stages of Helminths Found in Humans: Eggs (Cestodes), DPDx – Dipylidiumcaninum infection; available at <http://www.cdc.gov/dpdx/> (accessed Nov 29,2013)
- [8]. Adam A Adam, Osman M Saeed, Hussein M Ibrahim, Hussein Y El Malik and Mohammed E Ahmed. Dipylidiumcaninum infection in a 41 year old Sudanese man in Nyala, Sudan: The first reported case in Sudan in 2006. NMJ 2012; (2)6: 37- 42.
- [9]. Chandler, A. C. The Helminthic Parasites of Cats in Calcutta and the Relation of Cats to Human Helminthic Infections. Indian J of Medical Research 1925; 13 (2) p. 213 - 227.