

Human Ocular Thelaziasis: A Case Series of Four Patients from Manipur, India

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Abstract: Spirurid nematode of the genus *Thelazia* may rarely infect humans through aberrant transmission. We here report a case series of four patients (one male child, two adult male and one adult female) of ocular Thelaziasis presenting in Regional Institute of Medical Sciences, Imphal hospital Ophthalmology OPD within a span of last one and half year. The child presented with redness and discharge of the right eye. The other three patients presented with spontaneous expulsion of worms from eyes. Worms were removed from three of them with forceps using topical anaesthesia. All the patients were treated symptomatically. The patients responded well and had no complaint on subsequent visits. Worms from all the cases were identified to be *Thelazia callipaeda* by the Microbiology Department of the same institute. All four cases could be linked to a poor sanitary condition in the household.

Key word: Human ocular Thelaziasis, *Thelazia callipaeda*, Eye worm

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I. Introduction

Thelaziasis (commonly known as eye worm) is an arthropod-borne disease caused by Spirurid nematode in the genus *Thelazia*. *Thelazia* is primarily a veterinary parasite. It can occasionally infect humans and parasitize eyes and associated tissues such as conjunctiva, nasolacrimal duct, eyelids etc. Out of 16 species of *Thelazia* found worldwide, two are responsible for causing human infection, namely *Thelazia callipaeda* and *Thelazia californiensis*.¹ The intermediate host - *Drosophila* flies feed on ocular secretions of definitive hosts including cats, dogs, horses, cattle and thus ingest embryonated eggs. The eggs develop into larvae and are deposited in the conjunctiva of a new definitive host. In this process, human can act as an aberrant definitive host and be infected.² The first human Thelaziasis case was reported in the year of 1917 from China.³ In India, first it was reported in 1948 from Yeroaud, Salem.⁴

Clinically the cases can present with excessive lacrimation, ocular pruritus, foreign body sensation, conjunctivitis, keratitis, corneal ulcers. In some cases, the only symptom is the presence of worms obscuring the host's vision as a floater.⁵ In a few rare occasions, thelaziasis presented as periocular lump.^{6,7} The diagnosis of the condition is based on visualization of the parasite on the conjunctiva and confirmed by parasitologist by microscopic examination of the retrieved specimen. Although the patients are treated symptomatically, mechanical removal of the parasite is the mainstay of treatment.

II. Case Series

Case-1: A 25 year old male Hindu by religion from a rural area presented with the complaint of spontaneous expulsion of worms from his right eye for last 2 days. On examination, we found a worm in the lower fornix. There was no conjunctival congestion. Cornea, pupils were normal with visual acuity of 6/6. Fundus examination was also within normal limit. The worm was removed with a fine forceps and collected in a sterile container as depicted in Figure 1(a). Later, it was sent for further identification. The patient did not report of flies sitting on his face or eyes but provided history of poor sanitary conditions around his house.

Case-2: A five year old male child, Hindu by religion presented with redness and discharge of right eye for one week. On examination, conjunctiva was congested. Cornea and pupils were normal with visual acuity of 6/6. Fundus examination revealed no abnormality. Slit lamp biomicroscopic examination showed white, motile, translucent worms creeping in the lower fornix coming through a tunnel in the conjunctival sac. Eight worms were removed with a plain forceps after instilling topical anaesthetic drop and collected in a sterile container as depicted in Figure. 1(b). The mother reported of the child playing with their pet cat all the time.

Case-3: A 32 year old Muslim lady from a slum area presented with the chief complaint of spontaneous expulsion of worms from her left eye. On examination, the eye was quiet. Anterior segment was within normal limit. Fundus examination also revealed no abnormality. But after upper eyelid eversion, a white thread like worm was seen. Slit lamp examination revealed 2 milky white worms which were removed with forceps.

Case-4: A 27 years old male, Hindu hailing from a village area complained of foreign body sensation in left eye with history of few worm-like things coming out of the eye for last 4 days. The patient even carried one white coloured, thread like worm in a cup full of water as shown in Figure 1(c). Ocular examination of the patient revealed a visual acuity of 6/6 in right eye and 6/6 'P' in left eye. Slit lamp examination was insignificant with the exception of few concretions on left upper tarsal conjunctiva. No other worm was found in this case after thorough examination of the eye. He was managed symptomatically. Upon enquiry, the patient provided us history of owning a pet dog in the house.



(a)



(b)



(c)

Figure 1. Worm Specimens Retrieved from the Patients

Removal of worms after applying topical anaesthetic drop was our mainstay of treatment. In addition, all the adult patients were prescribed Moxifloxacin eye drop QID and also treated symptomatically. The child was advised Tobramycin eye drop QID. They were followed up after two weeks of their first visit and found to be free of any symptom. Table 1 lists the summary of the patients which have been considered in the case series.

Table no 1: Summary of the Patients

Patient	Age(years)/Sex	Year and month examined	Involved eye	Ocular finding	Significant History
1	25 /Male	December 2018	Right	1 worm in lower fornix	Poor sanitary condition around his house
2	5 /Male	January 2019	Right	Conjunctival congestion,8 worms retrieved from lower fornix	Close proximity of pet and the child
3	32/Female	April 2019	Left	2 worms retrieved from upper tarsal conjunctiva	Hailing from a slum area
4	27 /Male	June 2020	Left	Concretions on upper tarsal conjunctiva	Pet dog

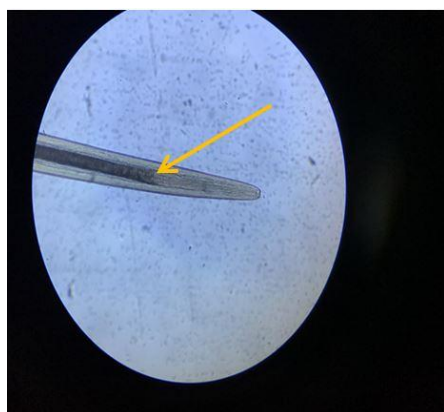


Figure 2.Esophago-intestinal Junction (Orange Arrow)

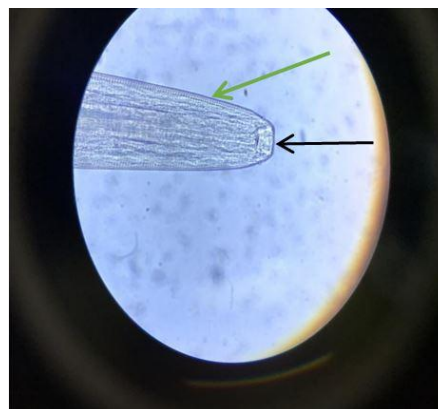


Figure 3.Wide Moderate Depth Buccal Cavity (Black Arrow) and Tightly Spaced Cuticular Striations (Green Arrow)



Figure 4.Curved Tail End

After transferring to sterile normal saline container, the worms were sent to Microbiology Department of RIMS, Imphal for identification. All the worms were identified as *T. callipaeda*. Macroscopically, the worms were white, tiny and thread like. The length varied from 6 to 15 mm. Based on appearance of cuticular striations, depth and width of the buccal cavity, placement of vulval opening relative to esophago-intestinal junction (as shown in Figure 2) and morphology of the tail and anal opening, *T. callipaeda* could be identified. Transverse cuticular striations were seen in the whole body of the worms. Anterior parts were showing wide, moderate depth buccal cavity and prominent tightly spaced cuticular striations which has been depicted in Figure 3. The male worms had curled tail end which has been shown in Figure 4. On the contrary the female worms had straight tail end.

III. Discussion

Available data suggest that in Asia, Thelaziasis is most commonly caused by *T. callipaeda*. In India, human ocular thelaziasis cases have been reported from Tamil Nadu, Himachal Pradesh, Haryana, Karnataka, Assam, Manipur.⁸ To our knowledge, 3 cases have been reported till now from Manipur. Hence, these four cases reported here may be an indication that Human ocular Thelaziasis is more prevalent in this part of the country than others. The common factors responsible are poor socio economic condition, unhygienic environment. Close proximity with pets, cattle rearing, hilly terrain and rainy season play an important role for spread of the disease.^{8,9} History of the cases reported here also suggest similar type of predisposing factors.

Extraction of worms from eye is stated to be the definitive treatment. Intraocular infestation with *T. callipaeda* had been treated successfully by pars plana vitrectomy.¹⁰ Irrigation with Lugol's iodine or 2%-3% boric acid to remove worms from lacrimal duct has also been suggested for *T. californiensis*. Levamisole and Ivermectin have been recommended to treat the condition.¹⁰ Our cases responded well with removal of worms and symptomatic management.

Public health programs that emphasize upon hygienic environments free from insect vector can play important role to prevent this infestation. The condition seems to be underreported as many a times patients do not seek medical treatment after spontaneous expulsion of worms and relief of symptoms. Awareness should be generated among the common people about the condition for timely diagnosis and to prevent further devastating ocular complications.

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