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CASE REPORT

Thelaziasis: an emerging ocular parasite in Northeast of India

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ABSTRACT

Thelazia spp. is a parasitic nematode and the most common cause of "thelaziasis" (oriental eye worm infestation) in humans, dogs and cats. It was first discovered in the eyes of a dog in China in 1910. Infection in man is considered zoonosis. Transmission to humans occurs via the face fly (Musca autumnalis) in T. callipaedia and Fannia canalicularis in T. californiensis. The eye worm commonly parasitizes the tear ducts and conjunctival sacs of the host although intraocular infestations have been reported. Here, we report a case of thelaziasis in a 36-year-old male, from Majuli, Assam. He had a complaint of 'something' inside the left eye since one month. The patient was admitted in the Inpatient Department of Ophthalmology and after thorough observation a mild congestion was noticed in the bulbar conjunctiva of left eye. After two days of exploration a small whitish appearing point was seen in deep upper conjunctival cul- de –sac of left eye which was grasped with a forcep and pulled outwards. On further exploration another worm was noticed inside left upper lid in the sub conjunctival space. In total, three worms were received in the Department of Microbiology which were intact, slender, thread-like and creamy white. Based on the site of recovery, gross appearance and microscopical findings, the worms were identified to be Thelazia callipaeda. This study highlights the importance of "thelaziasis" and it required further research to minimize the morbid conditions and sequelae caused by the worm by its presence in the human eye.

Keywords: *Cul- de –sac; eye worm; Presbyopia; Thelazia callipaeda.*

INTRODUCTION

Thelazia callipaeda is a parasitic nematode and the most common cause of "thelaziasis" (oriental eye worm infestation) in humans, dogs and cats. It was first discovered in the eyes of a dog in China in 1910.[1] Infection in man is considered zoonosis. Williams first reported human thelaziasis in the United States in 1935. Transmission to humans occurs via the face fly (*Musca autumnalis*) in *T. callipaedia* and *Fannia canalicularis in T. californiensis*.[2] They feed on proteins in eye secretions, nasal secretions and saliva. The flies have rough, spongy mouthparts that are irritating and increase tear production, thus promoting successful transmission. The eye worm commonly parasitizes the tear ducts and conjunctival sacs of the host though intraocular infestations have been reported.[3, 4] The eggs of *Thelazia callipaeda* develop into first stage larva (L1), in utero. The female deposit these larvas enclosed in egg membranes in the lacrymal secretions of the host. When the intermediate host (tear feeding fly) feeds, it ingests the *T callipaeda* larva. Once inside the fly, L1 larva 'hatch' from the egg membrane and penetrate the gut wall. They remain in the haemocoel for two days and invade either the fat body or the testes of the flies. In the tissues, they develop into the L3 stage. The L3 migrates into the head of the fly and releases into the eye or its periphery during the next feed. Once in the eye, eyelid, tear gland or ducts of the mammalian host, the L3 larva develop through the L4 larva stage and into adults in about 1 month.[5] Adult worms for both the species are creamy-white and measure upto 0.75X 13.00 mm in males and 0.85 X 17.00 mm in females. The male is identified by the ventral curving of the posterior end and the female is identified by the vulva, which opens mid–ventrally. *T. callipaeda* can be distinguished morphologically from *T. californiensis* based on the numbers of pre and post cloacal papillae in the male and the position of the vulva in the female. Male T. callipaeda have 8-10 pairs, *T. californiensis* have 6-7 pairs of precloacal papillae and 5 and 3 pairs of postcoacal papillae respectively. The treatment of human Thelazia infection consists of removal of the worm under local anaesthesia.

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Review of literature indicate that of the reports[3,6-11,] available from India on human thelaziasis, three are from the Northeast of India.[7,8,10,12] This is the fourth report from the Northeast in a patient hailing from the plains of a riverine island clearly indicating an apparently increasing trend of the zoonosis in this part of the tropic irrespective of being limited only to hilly and foothill terrains.[11]

Case report

A 36-year-old male from Majuli, Asia's largest riverine island in Jorhat, Assam attended the Ophthalmology Out Patient Department of a tertiary care hospital with complaint of 'something' inside the left eye since last one month. He also brought a specimen of a foreign body he claimed to have come out of the eye. The patient was apparently healthy, of moderate hygiene and an agriculturist by occupation. He gave a history of some insect entering the eyes while cycling back home from fields in the evening. He also had pet dog and cat at home.

On examination, the visual acuity of the right eye and left eye were 6/6 and 6/9 respectively. Pin hole revealed 6/6 in both the eyes. Near vision was N8. Lids, cornea, anterior chamber, iris, pupils and lens were all normal. Mild congestion was noticed in the bulbar conjunctiva of left eye. Dilated fundoscopic examination revealed a normal retina with normal appearing optic disc, foveal reflex, macula. Peripheral retina also appeared normal. There were no rashes or swelling in the skin.

Haemogram, other parameters, diurnal and nocturnal peripheral blood films were within normal limits. Stool examination revealed no ova. C reactive protein was elevated, ultra sonogram of the left eye revealed a moving structure that could be captured with great difficulty. CT scan (contrast) orbit and brain were within normal limits. The patient was admitted for observation. In subsequent days he complained of 'something' wriggling in his left eye but even after thorough examination several times in the day nothing could be revealed. After two days exploration was done under local anaesthesia. The right eye revealed no abnormalities. A small whitish appearing point was seen in deep upper conjunctival cul- de –sac of left eye which was grasped with a forceps and pulled outwards. A 10 mm size worm was extracted out. At first it was stationary perhaps due to the affect of anaesthetic but slowly it became active. On further exploration after making the lids intermittently avascular by putting chalazion clamps to improve contrast another worm was noticed inside left upper lid in the subconjunctival space. A cataract surgical knife was used to slightly dissect the area where the worm was noticed and forceps was used to grasp and take it out. Thereafter, lacrimal syringing with anaesthetic was done but to no avail. All the worms were sent to the Department of Microbiology for identification. Meanwhile, the patient was put on Albendazole 400 mg and Prednisolone 30 mg to counteract any hypersensitivity reactions. Treatment continued for 7 days. He was discharged after four days when there were no more complaints of foreign body sensation. The patient was prescribed reading glasses to correct his near vision of Presbyopia.

Identification

All the three worms received were intact, slender, thread-like and creamy white. Two of these were 20mm and the third was 10mm in length (**Figure 1**).

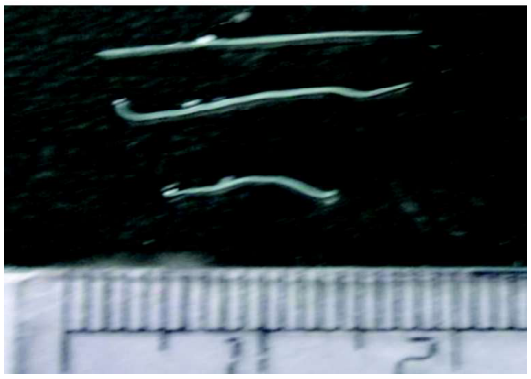

Figure1 Showing the length of the worms in mm

Figure 2 Showing the trapezoid anterior end and striated cuticle (x400)

The maximum breadth was up to 0.25mm. The entire bodies of the worms were covered by dense transverse cuticular striation. The smaller worm had a tapered anterior end with conspicuous, trapezoid buccal capsule (**Figure 2**) with no lips or teeth like structures and ventrally curved posterior end (**Figure 3**).

Figure 3 Showing coiled posterior end of the male worm (x400)

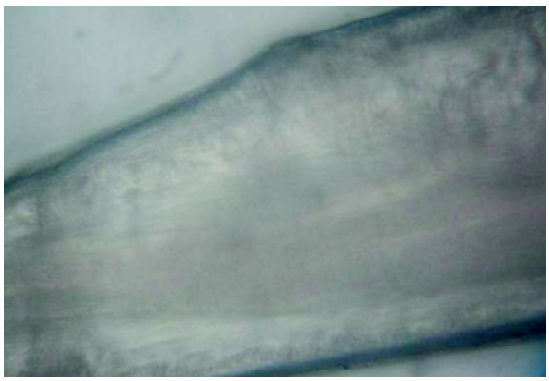

Figure 4 Showing the vulval opening anterior to the esophago-intestinal junction

The spiral coiling of the posterior end limited the observation of the preanal and post anal papillae. In the female worms the vulva was anterior to the esophago-intestinal junction (**Figure 4**) and numerous encysted larva were seen in the uterus (**Figure 5**).

Figure 5 Showing encysted larva in the uterus of the female worm (x 400)

The posterior end was rounded. We tried to irrigate the conjunctiva with 0.85% sterile normal saline to look for eggs and larva in the conjunctival fluid for three consecutive days but to no avail. Based on the site of recovery, gross appearance and microscopical findings, the worms were identified to be *Thelazia callipaeda.*

DISCUSSION

Reports on human thelaziasis are available from several Southeast Asian countries, including India. Literature review from India suggests the first report to be from Salem district in 1948. Two more cases were reported from the North eastern state of Manipur in 1993. Subsequently, Mukherjee et al in 1978 described an intraocular infestation, Mahanta et. al in 1996 from Assam, Sharma et. al in 2006 from Himachal Pradesh and Nath et. al in 2008 and Handique et al in 2014 again from Assam came across few cases over a span of three decades. The present report is supposed to be the eight in the country and fourth from the northeast clearly indicating emergence of the parasite in this region or under reporting from elsewhere. This report also intends to highlight that geographical topography of mountains and foothills may not just favour the occurrence of thelaziasis as speculated. The patient in this report hailed from the riverine island and had no history of visit to any mountainous region. Therefore, to restrict or to overlook the epidemiology of human thelaziasis in terms of terrains would be short sightedness from strategic prevention and public health point of view.

CONCLUSION

The authors are in view that a thorough investigation of the carnivores especially pet dogs and cats which are in close contact with humans and the vectors is a must in the region that shows increasing prevalence of this parasite. Amalgamation of medical microbiologists, veterinarians and entomologists could be a welcome gesture in the venture to minimize the morbid conditions and sequelae caused by the worm by its presence in the human eye.

Conflict of interest: No conflict of interest.

Ethical clearance: Obtained.

Consent of the patient: Both verbal and written consent was obtained from the patient.

Contribution of authors: "We declare that this work was done by the authors named in this case report with equal contributions."

REFERENCE

1. Richet C. Comptes Rendus des Seances de la Societe de Biologie et de ses Filiales. Soc Biol Ses Fil 1893;9:775-6.
2. Kirschner BI, Dunn JP, Ostler HB. Conjunctivitis caused by *Thelazia californiensis*. Am J Ophthalmol 1990;110(5):573-4.
3. Mukherjee PK, Verma S, Agrawal S. Intra ocular Thelazia-(a case report). Indian J Ophthalmol 1977 Oct 1;25(4):41.
4. Zakir R, Zhong-Xia Z, Chiodini P, Canning CR. Intraocular infestation with the worm, *Thelazia callipaeda*. Br J Ophthalmol 1999 Oct 1; 83(10):1194.
5. Otranto D, Lia RP, Buono V, Traversa D, Giangaspero A. Biology of *Thelazia callipaeda* (Spirurida, Thelaziidae) eye worms in naturally infected definitive hosts. Parasitology 2004 Nov;129(5):627-33.
6. Friedmann M. Thelazia callipaeda, the 'oriental eye worm'. Antiseptic 1948;45(9):620-6.
7. Singh TS, Singh KN. Thelaziasis: report of two cases. Br J Ophthalmol 1993 Aug;77(8):528.
8. Mahanta J, Alger J, Bordoloi P. Eye infestation with Thelazia species. Indian J Ophthalmol 1996 Apr 1;44(2):99.
9. Sharma A, Pandey M, Sharma V, Kanga A, Gupta ML. A case of human thelaziasis from Himachal Pradesh. Indian J Med Microbiol 2006 Jan 1;24(1):67.
10. Nath R, Narain K, Saikia L, Pujari BS, Thakuria B, Mahanta J. Ocular thelaziasis in Assam: A report of two cases. Indian J Pathol Microbiol 2008 Jan 1;51(1):146.
11. Handique AK, Tamuli A, Khan AM. Ocular thelaziasis in a 7-month-old infant. Indian J Med Microbiol 2014 Jan 1;32(1):84.
12. Khan AM. Human Thelazizsis in India. Indian J Med Microbiol 2007;25:72-80.