

CASE REPORT

THELAZIA CALLIPAEDA: A HUMAN CASE REPORT

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Abstract. We report a rare case of human thelaziasis. A 31-year-old man from Nakhon Pathom, Thailand presented to the hospital with a foreign body sensation in and excessive lacrimation from the right eye for one week. His visual acuity was normal. He gave a history of a fly flying around his face; he then rubbed it against his right eye. Five adult worms were collected from the right eye. Two were removed by the patients and three were removed on the ward, using a small cotton swab, from the conjunctival sac. All five worms were identified morphologically as *Thelazia callipaeda*. The patient became free of symptoms after the fifth worm was removed.

Keyword: *Thelazia callipaeda*, human thelaziasis, oriental eyeworm

INTRODUCTION

Thelazia callipaeda was first documented by Railliet and Henry in 1910. The worm is also known as the "Oriental eyeworm" because of its widespread occurrence in the Far East (Otranto *et al*, 2003). The 2 *Thelazia* species causing human thelaziasis are *T. callipaeda* and *T. californiensis*. Both species belong to the phylum Nematoda, order Spirurida, suborder Spirurata and superfamily Spiruroidea. *T. callipaeda* can be found in

China, India, Thailand, Korea, Japan, Russia, northern Europe and southern Italy. *T. californiensis*, can rarely be found in the western United States (Otranto *et al*, 2004). The differences between the two species include the location of the vaginal opening, the number of caudal papillae and the number of cuticular transverse striations (Choi *et al*, 1989).

The adult *Thelazia* spp worms may infest the conjunctival sac, lacrimal gland and lacrimal duct of dogs, cats, cows, rabbits, badgers, deers, foxes and monkeys (Koyama *et al*, 2000). Transmission occurs through non-biting flies belonging to the Drosophilidae family. This intermediate host ingests the embryonated eggs when feeding on animal lacrimal secretions. Third stage larvae are usually deposited in the eyes, then it molts twice from a stage 3

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to a stage 4 larva, then from stage 4 to stage 5 larva or young adult in 3-6 weeks. The larvae develop in the body cavity of the flies and eventually are deposited in the conjunctival sac of the new host. Humans are considered accidental hosts (Otranto and Traversa, 2005). Human thalaziasis usually presents with mild conjunctival irritation, a foreign body sensation and follicular hypertrophy. The worm can be seen floating in the subconjunctival sac and in rare cases the larva may enter the vitreous body (Xue *et al*, 2007).

CASE REPORT

A 31-year-old man from Nakhon Pathom, Thailand (a small province 60 km west of Bangkok) presented to our hospital with a foreign body sensation and excessive lacrimation of the right eye for one week. No discharge or conjunctival injection was noted. His visual acuity was normal. He gave a history of a fly flying around his face; and accidentally rubbed it against his right eye. This happened during a trip to a mountainous area in Chanthaburi Province, Thailand (240 km east of Bangkok) three weeks prior to presentation. He experienced right eye irritation 4-5 hours after scratching his eye. On admission, the patient brought with him two thin white worms in normal saline which he removed from the eye himself. The worms showed no movement when seen on the ward. Clinical inspection revealed thin white worms moving in his conjunctival sac located at the lateral aspect of his right eye. He had mild conjunctivitis. His visual acuity was normal. Ophthalmoscopic examination was otherwise unremarkable. On the ward, three worms were carefully removed with cotton buds from the conjunctival sac of his right eye. The three

worms were still alive and showed a serpentine movement when put in normal saline solution. The patient became free from symptoms immediately after the fifth worm was removed. Treatment included chloramphenicol and neosporin eye drops and terramycin ointment. The patient gave written consent for the study to be published and for photos to be taken.

All five worms were identified as being *T. callipaeda*. Two worms (one female and one male) were later examined under the microscope. Each worm was thin, thread-like and white to creamy in color. The female worm measured 8.1 mm in length and 0.3 mm at its maximal width. The male worm measured 6.0 mm in length and was 0.3 mm at its maximal width. The buccal cavity of female worm (Fig 1a) was broader than the male worm. Tracing laterally from the anterior part, a vulva opening in the female worm could be located. It was visible as a smooth surface free of cuticles (Fig 1a and b). The vulva was anterior to the esophago-intestinal junction (Fig 1a and b). This is an important characteristic of *T. callipaeda*. The vulva opening of *T. californiensis*, is posterior to the esophago-intestinal junction. The esophagus measured 0.6 mm in length. The vulva opening was situated 0.4 mm from the anterior end. The female esophagus appeared contracted. The blunt anterior, buccal cavity was rectangular in shape with the presence of a chitinous capsule (Fig 1c). Posterior end was blunt for female worm (Fig 1d). The male worm appeared more thin. It possessed buccal cavity similar to the female worm. The esophago-intestinal junction was very distinct (Fig 2a) and the esophagus measured 0.5 mm in length. The tail end was curved. There were seven visible pairs of pre-anal papillae

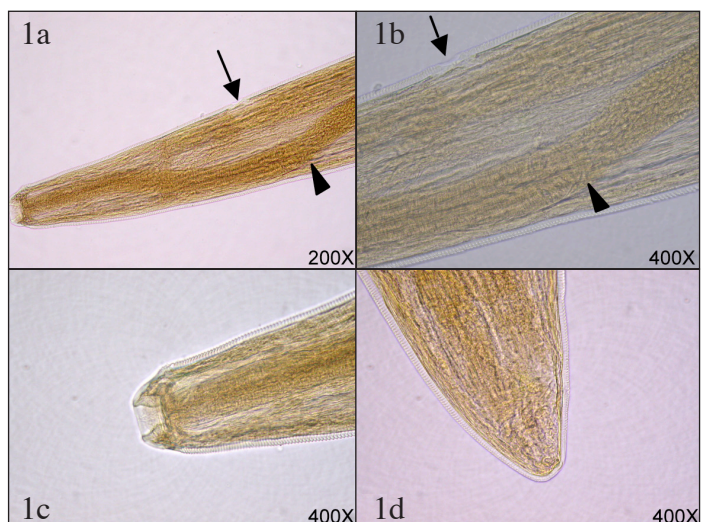


Fig 1—Female *T. callipaeda* taken from the patient’s conjunctival sac. Fig 1a shows the anterior portion of the female worm with the vulva opening (arrow) located anterior to esophago-intestinal junction (arrowheads). A higher power view is shown in Fig 1b. Fig 1c shows the rectangular buccal part with chitinous plates. The blunt posterior tail of the female worm is shown in Fig 1d.

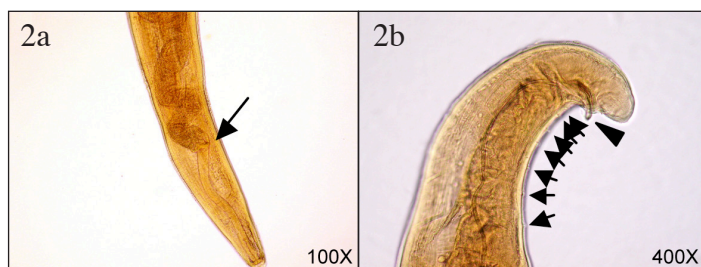


Fig 2—Male *T. callipaeda* showing a more slender structure. The esophago-intestinal junction is clearly seen (arrow) (Fig 2a). Note the curved posterior tail end of the male worm containing a pair of spicules (arrowhead) and seven visible pairs of pre-anal papillae (arrows) (Fig 2b).

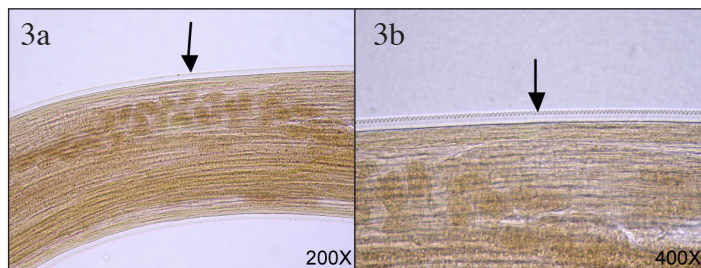


Fig 3—Mid region of a female *T. callipaeda* showing lateral cuticles along the body at lower magnification (Fig 3a) and higher magnification (Fig 3b).

and a pair of long spicules protruding from the cloaca (Fig 2b). Two visible post-anal papillae were also seen. Normally, the male *T. callipaeda* worm has 8-10 pairs of pre-anal papillae and 5 pairs of post-anal papillae, while the male *T. californiensis* worm has 6-7 pairs of pre-anal papillae and 3 pairs of post-anal papillae (Hong *et al*, 1985). The intestine of the worms from our subject could be traced to the posterior end. The body surface contained lateral striated cuticles possessing a saw-like pattern (Fig 3a and b). The number of lateral cuticles was 325 per millimeter at the head portion, 352 per millimeter at the mid portion and 445 per millimeter at the tail portion for the female worm and 293, 375 and 485 per millimeter at the head, middle and tail portions, respectively, for the male worm. This is consistent with the higher number of striations per millimeter reported for *T. callipaeda* than for *T. californiensis* (Hong *et al*, 1985). Toward the posterior end, the distance between striations was closer.

DISCUSSION

Acute eye irritation and excessive lacrimation among adults is commonly caused by bacterial or viral

infections or allergic reactions. Chemical conjunctivitis from irritant or toxic substance or the presence of a foreign body in the conjunctiva should be considered. Infection of the eyes usually causes inflammation of the conjunctiva, which was not seen in this case. Viral conjunctivitis is often associated with an infection of the upper respiratory tract, such as with a common cold or pharyngitis. The symptoms include watery eye discharge with accompanying itch. Bacterial conjunctivitis causes marked irritation and yellowish mucopurulent discharge, which can involve the surrounding eyelids. Allergic reactions can cause redness, edema of the conjunctiva, constant itching and increased lacrimation. Chemical conjunctivitis from irritant or toxic substances is usually painful and is associated with marked erythema. An important clue to the diagnosis of this patient was the lack of inflammation of the conjunctiva, hence infection, allergic and chemical conjunctivitis could be excluded. A foreign body in the eye is usually suggested with a presentation like this but parasitic infections may rarely cause eye irritation and excessive lacrimation.

Human thelaziasis has been reported worldwide. As of the year 2000, >250 human cases had been reported in the medical literature (Koyama *et al*, 2000). Until recently, scattered cases of human thelaziasis have been reported from China (Shi *et al*, 1988; Cheung *et al*, 1998; Yang *et al*, 2006), Japan (Yagi *et al*, 2007), Korea (Chu and Cho, 1973; Choi *et al*, 1977; Im *et al*, 1982; Hong *et al*, 1985; Ryu *et al*, 1986, 1987; Hong *et al*, 1988; Min and Chun, 1988; Choi *et al*, 1989; Hong *et al*, 1995), Thailand [Chaiyaporn and Phanich, 1969, (one case); Bhaibulaya *et al*, 1970 (two cases); Pecharanond *et al*, 1977 (one case); Yospaiboon *et al*, 1989 (one case)], Indo-

nesia (Kosin *et al*, 1989), India (Sharma *et al*, 2006; Nath *et al*, 2008) and Italy and France (Otranto and Dutto, 2008). A few cases were recorded in local languages (Tanaka, 1970; Li, 1983; Miroshnichenko *et al*, 1988; Tan and Tan, 2000; Sun and Chang, 2005; Wang, 2007; Dutto, 2008). In Thailand, this is the sixth documented case of human thelaziasis. This patient acquired the infestation in a mountainous area of Chantaburi Province, Thailand. The patient was most likely infected by *T. callipaeda* contained in the fly which suddenly flew around his eye when he rubbed it against his eye. The worms were examined and identified based on morphological appearances. A definitive host could have been the local animals present in the area. An epidemiological study of the vector (intermediate host) and the occurrence of thelaziasis in local animals would prove beneficial.

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