CASE REPORT

Occurrence of *Thelazia rhodesii* Infection in a Jersey Crossbred Cow – A Case Report

Velusamy Rangasamy[1]*, Latchumikanthan Annamalai[2], Vijayasarathi Matheri Kanniappan[2], Kumaresan Arunachalam[3]

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Thelaziosis is a helminthic disease caused by spirurid nematode of the genus *Thelazia*, which causes infection in orbital tissues of several animals including cattle, horses, dogs and humans worldwide (Otranto *et al.,* 2001). Cattle are mainly infected by *Thelazia rhodesii*, *Thelazia gulosa,* and *Thelazia skrjabini*. Among these, *Thelazia rhodesii* is the most common parasite affecting cattle in many countries (Otranto *et al.,* 2001). Horses, camels, and dogs are primarily infected by *T. lacrimalis*, *T. leesei* and *T. callipaeda*, respectively. It is mainly transmitted by secretophagous flies that feed on lacrimal secretions such as non-biting dipteran flies of the genus *Musca* (Muscidae) (Giangaspero *et al.,* 2000). Face flies, *viz., Musca autumnalis*, *Musca convexifrons* and *Musca larvipara* have been incriminated as vectors for *Thelazia* species infesting cattle and horses (Giangaspero *et al.,* 2000). The rate of infection is high during summer and rainy seasons when the fly population is abundant (Venkatesan *et al.,* 2019). Clinically, thelaziosis is considered as an important parasitic disease because of its zoonotic nature (Otranto *et al.,* 2007). In the definitive hosts, the larval stages and adults cause excessive lacrimation, epiphora, conjunctivitis, keratitis and corneal ulcers (Deepthi and Yalavarthi, 2012). Bovine thelaziosis was first reported in Iran by Ebadi in 1951 and other investigators in many countries, however only limited studies are recorded in India (Arunachalam *et al.,* 2017; Sivajothi *et al.,* 2023). This case report focused on the occurrence, identification, clinical and therapeutic management of *Thelazia rhodesii* infection in a Jersey crossbred cow in central part of Tamil Nadu.

Case History and Observations

Four years old Jersey crossbred cow was presented to the Veterinary Clinical Complex of the Veterinary College and Research Institute, Namakkal (India), with a history of cloudiness and conjunctivitis in the right eye during October 2024. The owner had noticed a problem in the right eye and the animal was grazed on open pasture and had not received any anthelmintic treatment. Further, the anamnesis revealed that it was initially treated by a local veterinarian with antibiotics, however, there was no clinical improvement and then, it was referred to the VCRI, Namakkal for further treatment.

[1]Department of Veterinary Parasitology, Veterinary College & Research Institute, Namakkal-637002, TANUVAS, Tamil Nadu, India

[2]Department of Veterinary Parasitology, Veterinary College & Research Institute, Orathanadu-614625, TANUVAS, Tamil Nadu, India

[3]Department of Veterinary Surgery and Radiology, Veterinary College & Research Institute, Namakkal-637002, TANUVAS, Tamil Nadu, India

Corresponding Author: Dr. Velusamy Rangasamy, Associate Professor, Department of Veterinary Parasitology, Veterinary College and Research Institute, Namakkal-637002, TANUVAS, Tamil Nadu, India E-mail: velupara@gmail.com

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Upon clinical examination, the animal was dull with excessive lacrymation in the right eye. Vital signs such as body temperature, pulse and respiration were normal. The conjunctiva was swollen and protruding out of the eyelid with corneal opacity (Fig.1). On close examination, white slender worms were found wriggling in the anterior chamber of the eye.

Treatment and Discussion

The conjunctival sac was flushed with normal saline using a 22 gauze butterfly catheter and the eye worms were removed surgically after the instillation of a regional anesthetic (1% lignocaine) in the right eye. The eye worms were preserved in 70% alcohol after initial washing in normal saline and subjected to parasitological identification. The affected eye was thoroughly washed with normal saline and injected 0.5 mL of 1 % levamisole sub-conjunctively and gentamicin eye drops were given every 12 h for 3 days for suppression of inflammation and prevent secondary bacterial infections. Further, levamisole @ 7.5 mg/kg b.wt. and ivermectin @ 0.2 mg/kg b.wt. were injected subcutaneously and repeated after

15 days. The affected animal recovered completely after three weeks post-treatment.

Species identification of worm was made using standard taxonomical keys described by Naem (2007). The nematodes were washed thoroughly in distilled water, dehydrated in 70-90 % alcohol and cleared in lactophenol and examined under low (x10) and higher power objective (x40) of light microscope (Nikon).

The worms were milky white in colour and the cephalic region was similar in both sexes. The length of the female worm measured by micrometry was 1.6-2.1 cm long. On microscopic examination, anterior end of the worm showed rectangular buccal cavity and prominent cuticular transverse striations as serrated appearance. The mouth cavity was broad and cup-shaped, lips were absent and had muscular oesophagus. A pair of lateral cervical papillae was prominent one on either side just anterior to the oesophagus and intestinal junction (Fig. 2). Spirurid-type of eggs was observed within the uterus in the mid portion of the adult female worms (Fig. 3). The tail end was stumpy and blunt (Fig. 4). The length of the male worms was 0.9-1.4 cm long and had no lips. The cuticle showed prominent cuticular transverse striations, two lateral cervical papillae, one on each side at the anterior end (Fig.5). The tail end was blunt and curved ventrally without caudal alae. The spicules were unequal and dissimilar (Fig.6). Based on these morphological features, they were identified as *Thelazia rhodesii* as described by Naem (2007).

Fig.1: Corneal opacity and conjunctivitis in the right eye

Fig.2: Female - Head end of *Thelazia rhodesii*

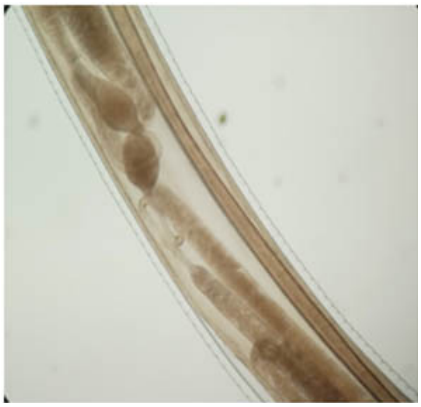

Fig.3: Female- Mid portion containing uterus

Fig. 4: Female -Tail end of *Thelazia rhodesii*

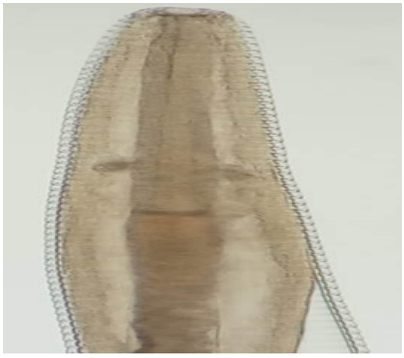

Fig. 5: Male -Head end of *Thelazia rhodesii*

Fig. 6: Male-Tail end of *Thelazia rhodesii*

Thelaziosis is a roundworm infection occurring in domestic and wild animals, birds and humans. Tear-feeding face flies act as an intermediate host. Among the different *Thelazia* species reported, *Thelazia callipaeda* and *Thelazia californiensis* were known to cause human thelaziosis (Bradbury *et al.,* 2018). In the present study, the nematode identified was *T. rhodesii* based on the prominent transverse striations on the body.

The age of the animals is considered as a main factor in the prevalence of thelaziosis. The infection rate is increased with the age. The rate of thelaziosis infection is higher in older animals (> 6-12 months) than young (0-6 months) (Otranto and Traversa, 2005). This is similar to our study that we observed thelaziosis infection in 4 years old Jersey crossbred cow. The higher infection rate in aged animals could be due to long-term exposure of the disease and long lifespan of *Thelazia* spp. (Khedri *et al.,* 2016).

Seasonal prevalence of *Thelazia* infection has been encountered worldwide and clinical occurrence of infection is maximum during the fly activity (*Musca* spp.) in tropical and sub-tropical regions (Aken *et al.,* 1996). In the present case, *Thelazia* infection was observed in the beginning of the rainy season of October when the fly propagation is high as has been noted in Zambia with the peak of *T. rhodesii* infections (Daradka and Ismail, 2014). The intermediate host of the parasite is seasonal high during the spring and summer in Jordan (Daradka and Ismail, 2014). In India, it is reported higher during summer followed by monsoon period (Venkatesan *et al.,* 2019). The increased humidity and temperatures during the rainy season might favour the conditions for *T. rhodesii* transmission.

Thelaziosis is characterized by a range of sub-clinical to clinical symptoms such as epiphora, conjunctivitis, keratitis, corneal opacity and ulcers (Deepthi and Yalavarthi, 2012). The *T. rhodesii*'s serrated cuticle causes mechanical damage to both the cornea and conjunctival epithelium which lead to increased lacrimal gland secretions and conjunctivitis. Thelaziosis does not cause mortality in cattle, however, the morbidity in terms of conjunctivitis, corneal opacity and blindness which impact on the animal's productivity and grazing due to impaired vision (Otranto and Traversa, 2005).

Bovine thelaziosis can be treated either by local or systemic anti-parasitic drugs. In this case, the affected animal was completely recovered following a sub-conjunctival injection of levamisole and subcutaneous injection of levamisole and ivermectin. Similar observations were reported by other research workers that the clinical condition of the infected cattle with *T. rhodesii* was improved following the treatment with ivermectin and levamisole combination (Ahmed and Boro, 2019).

In summary, the present study describes the occurrence of *Thelazia rhodesii* infection in a Jersey crossbred cow. The eye worms were identified based on their morphological characters. The affected animal was treated successfully with levamisole and ivermectin combination. The prevalence of thelaziosis is attributed to multi-factors, hence its control needs a comprehensive approach including regular deworming of the animal and fly control as prophylactic measures.

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