RESEARCH ARTICLE Agricultural Science Digest, Volume 41 Special Issue: 260-261 (April 2021)

Therapeutic Efficacy of Ivermectin against Thelaziasis in Cattle

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10.18805/ag.D-5198

ABSTRACT

Background: *Thelazia* species are arthropod-borne nemathelminths causing thelaziasis of eyes in various domestic animals and humans. The adult and larval stages of *Thelazia spp.* are responsible for eye disease. The treatment of ocular thelaziasis includes topical or parenteral introduction of 1% moxidectin, 10% imidacloprid along with levamisole and ivermectin in the infected animal.

Methods: Sixty-two cattle were randomly divided into two groups of 31 each. The group I was administered with ivermectin at 200 mcg/kg body weight subcutaneously whereas group II was subjected to mechanically removal of worms from the eyes

Result: The treatment with ivermectin showed high therapeutic efficacy of up to 87.1% as compared to 16.67% in mechanical removal of worms.

Key words: Cattle, Eyeworm, Ivermectin, Thelaziasis.

INTRODUCTION

Eyeworms (*Thelazia* spp.) are arthropod-borne nemathelminths causing thelaziasis of eyes in various domestic animals and humans.The species of *Thelazia* prevalent in cattle in India include *T. rhodesii, T. skrjabini* and *T. gulosa* with *T. rodessi* as the most common one (Balam and Yalavarthi, 2012). The rate of infestation increases during the fly seasons when the fly population is abundant (Bhatia *et al.*, 2007). Thelaziasis is characterized by a range of sub-clinical to clinical symptoms such as epiphora, conjunctivitis, keratitis, corneal opacity and ulcers (Khedri *et al.*, 2016). The adult and larval stages of *Thelazia spp.* are responsible for eye disease. Male nematodes cause asymptomatic, subclinical thelaziasis, whereas clinical symptoms have been more frequently registered in the presence of gravid females (Ikeme, 1967). The treatment of ocular thelaziasis includes topical or parenteral introduction of 1% moxidectin, 10% imidacloprid along with levamisole and ivermectin in the infected animal (Munangandu *et al.,* 2011) This work was carried out to determine the efficacy of ivermectin as a therapeutic option in treatment of cattle thelaziasis.

MATERIALS AND METHODS

The present study was carried out in and around the Lakhimpur district of Assam situated in the North bank plain zone of river Brahmaputra from 1st February, 2019 to 31st January 2020. This includes the clinical cases brought to the Veterinary Clinical Complex, Lakhimpur College of Veterinary Science and ambulatory clinics at Nowboichia, Gogamukh and Pukhriporia village of Lakhimpur, Assam. The cattle for the study were selected based on the clinical tests of lacrimation, epiphora and presence of *Thelazia spp.* in the eyes (Fig 1-2). The cattle grazed on pasture and had not received anthelmintic treatment prior to this study. Parasites were manually collected from the conjunctival sac of affected eyes under local anesthesia with a fine pair of forceps. The worms were preserved in 70% alcohol after initial washing in normal saline and subjected to identification. A total of 62 naturally infested cattle were selected and randomly divided into two equal groups of 31 animals each. The animals in Group I were administered with Ivermection @200 mcg per Kg. b. wt. subcutaneous whereas Group II animals were subjected to only mechanical removal of worms. In all animals from both the group the eyes were flushed with 0.9% normal saline on Day 0, Day 7 and Day 30 and Ciplox-D was instilled to guard against secondary bacterial infection. The parasites were manually removed with non-traumatic forceps from the infected eyes under local anesthesia in both the group.

The efficacy of the treatment was evaluated in terms of reduction of worm count and reduction of severity and/or presence of clinical signs. The reduction in worm count was calculated for each animal as follows:

$$\text{Per cent reduction}[t] = 100 \times (WC\ [to] - WC[t])/WC[to]$$

Where

WC[to] = baseline worm count before treatment and WC[t]= worm count at time *t* after treatment (Ferroglio *et al.*, 2008).

RESULTS AND DISCUSSION

Treatment of thelaziasis in cattle with ivermectin demonstrated

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How to cite this article: Yadav, S.N., Ahmed, N., Bordoloi, G., Sarma, M., Thakuria, P. and Nath, A.J. (2021). Therapeutic Efficacy of Ivermectin against Thelaziasis in Cattle. Agricultural Science Digest. 41 (Special Issue): 260-261. DOI: 10.18805/ag.D-5198.

Submitted: 24-04-2020 **Accepted:** 01-07-2020 **Online:** 10-09-2020

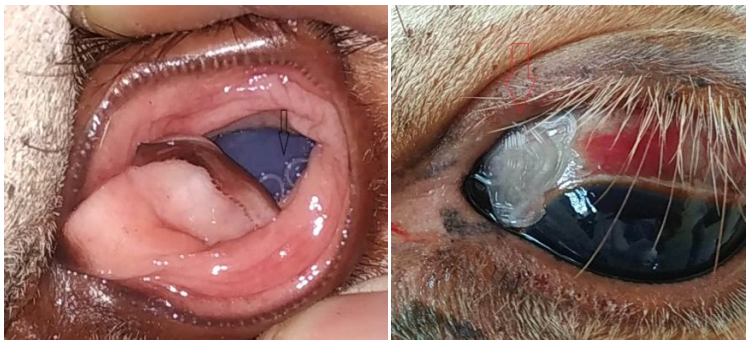


Fig 1-2: Presence of the worm in the eye.

a high therapeutic efficacy in total cure; actual figures being 64.61% at day 7 and 87.01% at day 30 post-treatment. The reduction in the number of worms could be achieved up to 83.1% at day 7 and 96.8 at day 30. Soll *et al.* (1992), Corba (1985), Balam and Yalvarthy (2012), Ahmed and Boro (2019) also observed that the clinical condition of cattle infected with *T. rhodesii* improved following the treatment with ivermectin. Arunachalam *et al.* (2017) treated adult cattle infested with thelaziasis with ivermectin 200 mcg/kg orally and reported complete recovery after 30 days of treatment. Kennedy *et al.* (1994) reported high efficacy of topical ivermectin in the treatment and control of *T. skrjabini* infection in cattle. Further, these workers reported significant reduction of *T. gulosa* and *T. skrjabini* infestation in cattle with pour-on Ivermectin. Hence, the administration of ivermectin by all routes was found effective against thelaziasis in cattle. After the mechanical removal of parasite in Group II showed complete recovery as 3.22% and 16.67% on day 7 and day 30, respectively. The corresponding reduction in worm number was 8.26% and 18.32%. Kennedy *et al*. (1994) also suggested no significant improvement in naturally and experimental thelaziasis of cattle for non medicated group. Treatment of cattle with ivermectin subcutaneously at 200 mcg/kg effectively removes *T. rhodesii* parasites in the infested eye.

CONCLUSION

Thelaziasis causes a decrease in the production of the animal causing nuisense to the animal in endemic area. Hence the key element for prevention, regular deworming of the animal and fly control which shoud be done as prophylactic measure from thelaziasis in cattle. Adjunctive therapy may still be necessary as and when required for animals with clinical signs of conjunctivitis and keratitis.

ACKNOWLEDGEMENT

The authors are thankful to the Associate Dean, Lakhimpur College of Veterinary Science, Assam Agricultural University, Joyhing, North Lakhimpur, Assam, for providing necessary facilities to carry out the study.

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