

*Short Communication*

## MANAGEMENT OF OCULAR SETARIASIS IN EQUINE: A REPORT OF 15 CASES

Chaithra S.N.<sup>1</sup>, Aswathy Gopinathan<sup>2\*</sup>, Kiranjeet Singh<sup>3</sup>, Akshay Kumar<sup>1</sup>  
Manish Arya<sup>1</sup>, Vinay Kishor Tiwari<sup>4</sup>, Prabha Sharma<sup>1</sup>

*Received 19 December 2023, revised 16 February 2024*

**ABSTRACT:** The present report is about the successful surgical retrieval of eye worms in 15 horses. Most of the animals were presented with lacrimation, photophobia, and varying degrees of corneal opacity. On ophthalmic examination, worms appeared like moving white threads in the anterior chamber. Animals were restrained with xylazine-ketamine general anesthesia. Regional nerve blocks were given to minimize eyeball movements and a 2-3 mm clear corneal incision near the limbus at the 10-2 O'clock position of the eyeball was given to retrieve worms. With a single incision, worms were successfully removed in all the cases. Bolus of Ivermectin was given orally along with analgesic and antibiotics eye drops postoperatively. The vision was restored and corneal opacity subsided within 10-20 days post-surgery.

**Keywords:** Ocular setariasis, Equine, Surgical retrieval.

Ocular setariasis in horses is caused by *Setaria digitata* [1] and mostly occurs in summer and autumn when vectors like *Anopheles peditaneniatus* and *Culex nilgircus* are highly prevalent [2]. Eye worm movement in the anterior chamber may lead to varying degrees of corneal opacity and most of the affected animals are presented with clinical signs like lacrimation, photophobia, corneal opacity, conjunctivitis, and loss of vision [3]. The occurrence of cases of both unilateral and bilateral ocular setariasis is available in the literature [4]. Needle paracentesis [4] and the incision at noon position surgical methods [5] are usually practiced under general anesthesia or regional nerve blocks. The present report describes the successful surgical management of ocular setariasis in 15 horses presented with varying degrees of corneal opacity and vision impairment.

In the summer and fall, when mosquito vectors are most numerous, the ocular setariasis tends to proliferate [2]. Ocular setariasis was found to be more common than 6% in a survey on the occurrence of health issues conducted by Indian horse veterinarians in 2006 - 2007 [6]. The parasite migrates and can be detected in many organs including the heart, lung, spleen, kidney, uterus, oviduct, ovary, and urinary bladder in atypical hosts including horses, donkeys, or

humans [7]. Ocular worm is typically more common in all horses [8]. In addition, the young worm can enter the eye through the cornea [9].

### The study

The present study was conducted on fifteen horses presented to the institute polyclinic with ocular setariasis having corneal opacity, photophobia, lacrimations, and blepharospasms for one year. Retro-illumination was done to detect the presence of worm/s in the anterior chamber. The corneal opacity observed in cases was graded mild (slightly hazy), moderate (cloudiness with visible worm), and severe (worms are hard to locate due to whitish/bluish cornea). After confirmation of eye worm (Fig. 1) five mL of tetanus toxoid was given intramuscular in all the animals the day before surgery.

Topically flurbiprofen (0.3%) and tobramycin eye drops were instilled in the eyes along with systemic administration of flunixin meglumine (@ 0.25 mg/kg body weight, intravenously (IV)) before surgery in all the cases. Animals were fasted for 24 hrs and water was withheld for 12hrs before surgery. Xylazine (1.1mg/kg b.wt, IV) and ketamine (2.2mg/kg b.wt, IV) were given at a gap of five minutes for general anesthesia. Keeping the affected eye on the upper side

animals were positioned in lateral recumbency. Auriculopalpebral and supraorbital nerves were blocked with 2% lignocaine as per the methods described by Lumb and Jones [10].

A clear corneal incision with 2.8 mm keratome slit blades near the limbus was made at the 10-2 O'clock position (Fig. 2). In 12 cases worm came out with aqueous outflow. In rest three cases parasite was removed with curved colibri forceps (Fig. 3). The incision site was hydrated with sterile normal saline and left without any suturing. Topical application of Tobramycin and Flurbiprofen eye drops thrice daily for one week was advised. One gram of Ivermectin orally once was also given in all the cases.

The worms were collected in formal saline after surgical removal and sent for microscopic morphological examination for sex determination.

### Results and discussion

All the horses were 5-7 year old male. Most of the animals were presented with a history of epiphora and blepharospasms for the last 3-4 days. On clinical examination, a white thread-like single worm in the aqueous humor was noticed in the left eye in 9 cases and the right eye in 6 cases. Heart rate, respiration rate, and rectal temperature were normal. History

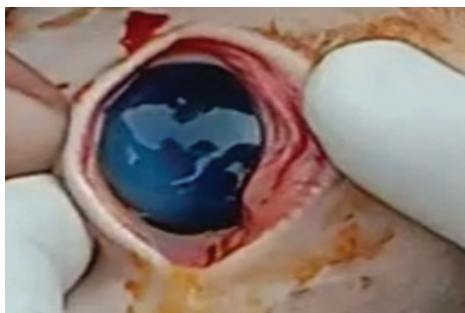


Fig. 1. Animal with live eye worm before surgery.



Fig. 2. Photographs show the surgical incision method at 10 - 2 O'clock position.

revealed that deworming has not been done in affected cases in the last one year.

Xylazine-ketamine combination along with nerve blocks was found effective in restricting animal movements for 100% successful surgical retrieval of eye worms. A gradual reduction in lacrimation and corneal opacity was recorded post-surgery. Corneal transparency was regained and all the horses recovered uneventfully within 20 days post-surgery.

The worms retrieved were identified as male *Setaria digitata* in 4 horses and female *Setaria digitata* in 11 horses based on the morphology (Fig. 5 and Fig. 6) unfortunately we were unable to do the morphometric analysis of the larvae.

Heterotrophic parasitism of adult *Setaria* spp. worms from the peritoneum to the aqueous humor of affected animals caused insult to the cornea and led to corneal opacity. Similar detrimental effects of ocular setariasis in equine have been reported by Gangwar *et al.* [1]. Endotoxins released by dead worms in the anterior chamber insulted the endothelium and caused corneal edema [11].

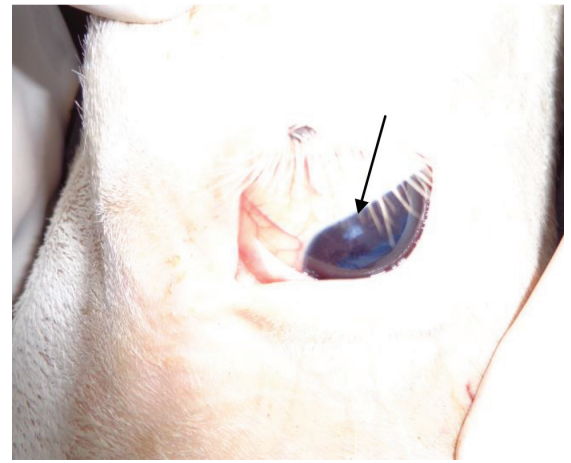
Both medical and surgical treatment has been given for the equine ocular setariasis but mostly surgical removal has been found effective [11, 12]. Literature is available on different surgical techniques for worm removal either by aspiration or incision. We have performed corneal incision techniques in our study and were 100% successful. Reports are available on the successful removal of intraocular parasites by needle aspiration from the equine eye [1]. However, in cases with severe corneal opacity, the aspiration technique may be contraindicated [4].

The cornea is a delicate structure hence surgeon should be very precise in handling it and there should be no movement at the time of making an incision.

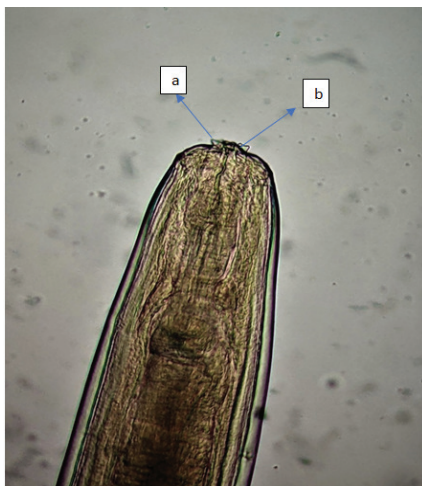
A stab incision at the 10-2 O'clock position of the eyeball proposed earlier [13, 14] was used in the



**Fig. 3. Photographs of the parasites removed from the equine eye.**



**Fig. 4. One of the horse showing corneal opacity (arrow) at the incision site one month after eye worm retrieval.**



**Fig. 5. Anterior end of male *Setaria digitata* worm. [(a) Ventral projection (VP) and (b) Dorsal projection (DP)].**



**Fig. 6. Lateral view of tail end of male *Setaria digitata* worm. [(a) 3 pairs of precloacal papillae, (b) 3 pairs of postcloacal papillae and (c) Lateral appendage].**

present study. As we performed surgeries under general anesthesia and nerve blocks animals were under total control. General anesthesia with xylazine-ketamine and isoflurane combination was reported effective for successful retrieval of eye worms [4].

Antibiotics (tobramycin) and anti-inflammatory (flurbiprofen 0.3%) drugs were administered topically postoperatively to reduce intraocular inflammation and corneal edema. Corneal opacity was not observed in any case except one postoperatively possibly due to the good surgical technique used and proper care taken by the animal owners. One of the horses showed corneal opacity at the incision site one month after eye worm retrieval (Fig. 4). Administration of topical antibiotics has been recommended to reduce bacterial keratitis which is very common in horses [4]. It has

also been reported topical steroidal drugs together with systemic non-inflammatory drugs help to reduce inflammation, which influences the degree of corneal edema and uveitis [4].

Animals were treated with Ivermectin postoperatively because none have a history of deworming. Reports on improper deworming leading to intraocular filarial nematode are available [15].

### Conclusion

From the results of the present study, we conclude that a 2-3mm clear corneal incision near the limbus at 10-2 O'clock position under general anesthesia and nerve blocks is more convenient for the successful retrieval of eye worms in horses. Female worms were predominant on morphological examination.

## ACKNOWLEDGMENTS

The authors sincerely thank the Director, IVRI for financial help.

## REFERENCES

1. Gangwar AK, Sangeetha D, Singh HN, Singh A. Ocular filariasis in equines. *Indian Vet J.* 2008; 85: 547-548.
2. Mritunjay K, Monsang SW, Pawde AM, Singh SK, Madhu DN, Zama MMS. Post surgical healing effect of placentrex in equine (EQUUS CABALUS) ocular setariasis: A review of 22 cases. *Indian J Field Vet.* 2011; 6(4): 71-73.
3. Rafee MA, Amarpal. Equine ocular setariasis and its management. *J Exp Biol Agric Sci.* 2016; 4: S139-S143, DOI: 10.18006/2016.
4. Tuntivanich N, Sonthaya T, Pranee T. Success of anterior chamber paracentesis as a treatment for ocular setariasis in equine eye: case report. *J Equ Vet Sci.* 2011; 31: 8-12.
5. Buchoo BA, Pandit RAS, Parrah JD, Darzi MM. Surgical management and prevalence of ocular filariasis in equines. *Indian Vet J.* 2005; 82: 81-82.
6. Singh BR, Chauhan M, Sindhu RK, Gulati BR, Khurana SK *et al.* Diseases prevalent in equids in India: A survey of veterinary practitioners. *Asian J Anim Vet Adv.* 2010; 5: 43-153.
7. Varma AK, Sahai BN, Singh SP, Lakra P, Shrivastava VK. On *Setaria digitata*, its specific characters, incidence and development in *Aedes vittatus* and *Armigeres obturbans* in India with a note on its ectopic occurrence. *Z Parasitenkd.* 1971; 36: 62-72.
8. Pratap K, Amarpal A, Aithal HP, Pawde AM. Survey of eye disorders in domestic animals. *Indian J Anim Sci.* 2005; 75: 33-34.
9. Sreedavi C, Sudhakar K, Murthy PR, Prasad V. Clinical microfilariasis in a horse: a case report. *Indian Vet J.* 2002; 79: 487-488.
10. Lumb WV, Jones EW. Local and regional anesthetic and analgesic techniques. In: *Veterinary anesthesia*, 3<sup>rd</sup> edn. 2001; Lea and Febiger, Philadelphia, 449.
11. Gopinathan A, Singh K, Saxena AC, Khurana KL, Amarpal. Evaluation of two techniques for management of ocular setariasis in horses. *Res Opin Anim Vet Sci.* 2013; 3: 407-411.
12. Perera GDRK, Nilaweera PKW. Non-conventional remedial approach to intraocular nematodiasis in horses under the field conditions: three case studies. *Explor Anim Med Res.* 2022; 12(2), DOI: 10.52635/eamr/12.2.299-303.
13. Kalpravidh M, Bramasa A, Kalpravidh C. Surgical removals of intraocular parasites from the anterior chambers of the horse eyes. *Thailand J Vet Med.* 1992; 22: 13-20.
14. Jamelka ED. Removal of *Setaria digitata* from the anterior chamber of the equine eye. *Vet Med Small Anim Clin.* 1976; 71: 673-675.
15. Mercier P, Chick B, Alves-Branco F, White CR. Comparative efficacy, persistent effect, and treatment intervals of anthelmintic pastes in naturally infected horses. *Vet Parasitol.* 2001; 99: 29-39.

**Cite this article as:** Chaithra SN, Gopinathan A, Singh K, Kumar A, Arya M, Tiwari VK, Sharma P. Management of ocular setariasis in equine: a report of 15 cases. *Explor Anim Med Res.* 2024; 14(Parasitology Spl.), DOI: 10.52635/eamr/14(S1)66-69.