

## A RARE CASE OF OCULAR SETARIASIS IN A BUFFALO

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## SUMMARY

The present report deals with the successful surgical retrieval of eye worm from the anterior chamber of the buffalo. Animal was presented with lacrimation, photophobia and varying degree of corneal opacity. On ophthalmic examination, worm appeared like moving white thread in the anterior chamber of the eye. Animal was restrained in standing position with xylazine sedation. Regional nerve blocks, auriculopalpebral and retrobulbar nerve blocks were given to minimize eye lid and eye ball movements and a 2-3 mm clear corneal incision near limbus at 10-2 O' clock position of eyeball was given to retrieve worm. With single incision worm was successfully removed from the anterior chamber with the help of forceps. Ivermectin bolus was given orally along with analgesic, antibiotics eye drops, intramuscular antibiotics and anti-inflammatory injections postoperatively. Vision was restored and corneal opacity subsided after 20 days post-surgery.

**Keywords:** Ocular Setariasis, Eye worm, Buffalo, Corneal opacity, Surgical retrieval

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Ocular setariasis in horses is caused by *Setaria digitata* (Gangwar *et al.*, 2008). Eye worm movement in anterior chamber may lead to varying degree of corneal opacity and most of the affected animals are presented with clinical signs like lacrimation, photophobia, corneal opacity, conjunctivitis and loss of vision (Rafee and Amarpal, 2016). Corneal opacity is a clinical manifestation associated with several parasitic and infectious diseases in cattle and buffalo. It is seen associated with parasitic diseases due to *Setaria digitata*, *Thelazia* sp., *Theileria annulata*, *Trypanosoma evansi* and *Plasmodium bubalis* (Mohan *et al.*, 2009; Balam Deepthi and Yalavarthi, 2012; Randhawa *et al.*, 2014; Sivajothi and Reddy, 2016; Joshi *et al.*, 2017). Corneal opacity develops as a result of stromal inflammation, tissue fibrosis, corneal epithelial thickening and vascularization (Morales *et al.*, 2018). Occurrence of both unilateral and bilateral ocular setariasis is available in literature (Tuntivanich *et al.*, 2011). Microfilariosis was found to be associated with gradual deterioration in the body condition of the animals. Jayalakshmi *et al.* (2017) reported a prevalence of 2.72% in bovines, while in buffalo it was recorded as 2.97% and 2.45% in cattle. The higher prevalence of microfilariosis in buffaloes can be due to their habitat (swampy areas) which provides a suitable environment for vector population. Highest prevalence was observed in monsoon season, followed by summer, and least in the winter season (Samatha *et al.*, 2016). The higher prevalence of microfilariosis in lactating animals is attributed to the prolactin hormone producing immuno-suppression along with the lactation stress (Jayalakshmi *et al.*, 2017). Needle paracentesis (Tuntivanich *et al.*, 2011) and incision at 12 O'clock position (Buchoo *et al.*, 2005) and 10-2 O'clock position (Chaithra *et al.*, 2024) surgical

methods are usually practiced under general anesthesia or under regional nerve blocks in horses. The present report describes the successful surgical the management of ocular setariasis in a buffalo presented with varying degrees of corneal opacity and vision impairment.

## CASE HISTORY AND SURGICAL TREATMENT

An adult buffalo was presented to the institute polyclinic with ocular setariasis having corneal opacity, photophobia, lacrimation and blepharospasm from past two months. Retro-illumination was done to detect the presence of worm in the anterior chamber (Fig. 1A). Corneal opacity observed and graded as moderate (cloudiness with visible worm). Topically flurbiprofen (0.3%) and tobramycin eye drops were instilled in eyes along with systemic administration of Inj. Meloxicam (@ 0.25 mg/kg b.wt IV) before surgery. Animal was fasted for 24 hrs and water was withheld for 12 hrs before surgery. Sedation was achieved by administration of Inj. Xylazine (0.1mg/kg b.wt IM) (Sahoo *et al.*, 2023). Retrobulbar nerve block with 2% lignocaine was performed as per the methods described by Lumb and Jones (2001). Topical proparacaine eye drops were also administered to desensitize cornea.

A corneal incision with 2.8 mm keratome slit blades near limbus was made at 10-2 O'clock position according to the method described by Chaithra *et al.* (2024) (Fig. 1B). Parasite was removed with curved colibri forceps (Fig. 1C-F). The incision site was hydrated with sterile normal saline and left without any suturing. Topical application of Tobramycin, Flurbiprofen and Carboxy methyl cellulose eye drops thrice daily for two weeks was advised. Bolus Ivermectin (one gram) orally once was also given. Intramuscular antibiotic and analgesic was given for 6 days post-operatively.

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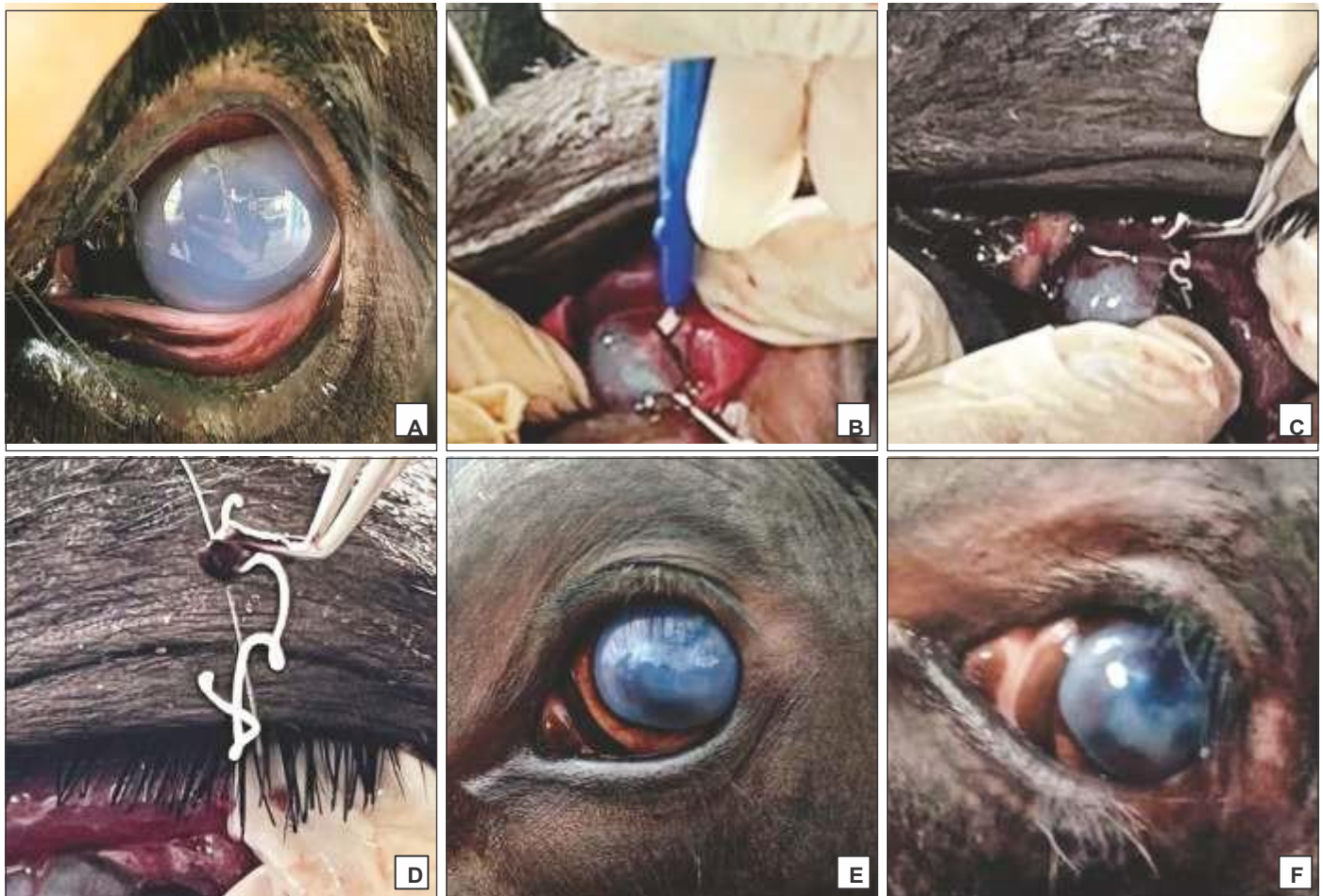


Fig. 1. Surgical procedure for removal of worm

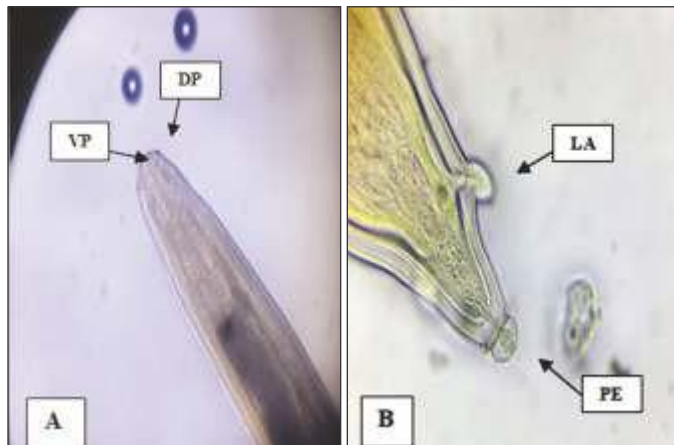


Fig. 2. (A) Microscopic view of posterior end of the adult female worm with ventral projection (VP) and dorsal projection (DP). (B) Lateral appendage (LA), and Posterior terminal end with smooth knob (PE)

Blood smear and wet film mount examination was negative for microfilaria. Haematological parameters were, Haemoglobin 10 g/dl, PCV 34%, Total erythrocyte count  $6 \times 10^6/\text{c.mm.}$ , Total leucocyte count  $9 \times 10^3/\text{c.mm.}$ , Platelets  $182 \times 10^3/\text{uL}$ , Neutrophils 52%, Lymphocytes 39%, Monocytes 5%, Eosinophils 4% and Basophils 0%. The worm was collected in a formal saline after surgical removal and sent for microscopic morphological examination for the sex determination.

Corneal opacity has been reported in due to the accidental migration of *Setaria digitata* into the anterior chamber of left eye with clinical signs such as corneal opacity, lacrimation, and blepharospasm (Mohan *et al.*, 2009). Heart rate, respiration rate and rectal temperature were normal.

Xylazine sedation along with auriculopalpebral and retrobulbar nerve block was found effective to restrict the animal movements and eyeball movements for successful surgical retrieval of eye worm. A gradual reduction in lacrimation and corneal opacity was recorded post-surgery. Corneal transparency was regained and the animal recovered uneventfully after 20 days post surgery. Surgical removal of the parasite is the best treatment (Tuntivanich *et al.*, 2011) that can be performed under general anaesthesia or regional nerve blocks with or without sedation (Rafee and Amarpal, 2016).

On the basis of morphology, the worm was identified as adult female *Setaria digitata* (Fig. 2A-B) however, we were unable to do the morphometric analysis of the larvae. The structural features of the identified microfilaria were in accordance with Bino Sundar and Ravindran (2010). The microfilariae of *Setaria* is sheathed with blunt anterior end and tapering posterior ends. The



anterior sheath was extending beyond the body and has a prominent cephalic space. It has a long and tapering tail that tapers gradually from anal pore to its tip. Similar to the anterior sheath the posterior/caudal sheath extends well beyond the tail tip (Bino Sundar and Ravindran, 2010).

Heterotrophic parasitism of adult *Setaria* spp. worm from peritoneum to aqueous humor of affected animals caused insult to cornea and lead to corneal opacity. Similar detrimental effects of ocular setariasis in equine have been reported by Gangwar *et al.* (2008). Endotoxins released by dead worm in anterior chamber insulted the endothelium and causing corneal edema (Gopinathan *et al.*, 2013).

Both medical and surgical treatment has been given for the equine ocular setariasis but surgical removal has been found effective in present study as reported by Gopinathan *et al.* (2013). Corneal incision technique was performed in the present case. Reports are available on successful removal of intraocular parasites by needle aspiration from the equine eye (Gangwar *et al.*, 2008). However, in cases with severe corneal opacity, the aspiration technique is contraindicated (Tuntivanich *et al.*, 2011).

Cornea is a delicate structure hence surgeon should be very precise to handle and there should be no movement at the time of making incision. Stab incision at 10-2 O'clock position of eyeball proposed earlier (Kalpravidh *et al.*, 1992 and Jamelka, 1976) was used in present case.

Antibiotics (tobramycin) and anti-inflammatory (flurbiprofen 0.3%) eye drops were administered topically postoperatively to reduce intraocular inflammation and corneal edema. Corneal opacity was reduced postoperatively possibly due to the good surgical technique used and proper care taken by the animal owners. Administration of topical antibiotics has been recommended to reduce bacterial keratitis which was common in horses (Tuntivanich *et al.*, 2011). It has also been reported topical steroidal drug together with systemic non-inflammatory drugs helps to reduce inflammation, which influences the degree of corneal edema and uveitis (Tuntivanich *et al.*, 2011). Animal was treated with Ivermectin postoperatively because it did not have the history of deworming. Reports on improper deworming led to intraocular filarial nematode are available (Mercier *et al.*, 2001).

## CONCLUSION

From the results of the present study, it has been concluded that a 2-3 mm clear corneal incision near limbus at 10-2 O'clock position under mild sedation and nerve blocks is convenient for successful retrieval of eye worms in buffalo.

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