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A case study on surgical management of equine ocular Setariasis

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Abstract

A one year old Kathiawari crossbred female horse was presented with history of progressive corneal opacity, ocular discomfort and lacrimation of right eye for last 3 week. Clinical examination revealed blepharospasm, corneal edema and severe conjunctivitis with loss of vision. Ocular examination revealed a presence of milky-white thread like structure swirling in the anterior chamber. The worm was expelled out under Xylazine sedation followed by 4-Point Retrobulbar nerve block through stab Incision by BP blade-11 at 10 o'clock position. Morphologically, the worm was identified as *Setaria digitata*. Post-operatively, broad spectrum antibiotic, anti-inflammatory and antihistaminic drugs along with topical antibiotic and corticosteroid were administered. The complete recovery and clearance of the corneal opacity took 3 weeks.

Keywords: Eye worm, blepharospasm, corneal opacity, retrobulbar nerve block

Introduction

Equine ocular Setariasis is caused by many *Setaria species* such as *S. digitata*, *S. equina* or *S. marshalli* (Nematoda: Filariodea). Normally, *S. digitata* affects cattle and buffalos, with common predilection site in peritoneal cavity (Al-Azawi *et al.*, 2012) ^[1]. It is mostly non-pathogenic in its natural hosts. Mosquitoes (e.g. *Aedes*, *Culex*, *Anopheles*, etc.) act as vectors during summer and autumn seasons. The parasite also exhibits migratory behavior in unnatural hosts such as goat, sheep, equine or human beings. Larvae of *Setaria spp.* frequently migrate into the eye of cattle and horses. In India, 57 per cent of equine ocular disorders were diagnosed as ocular Setariasis (Tamilnahan *et al.*, 2013) ^[10].

Due to movement of larvae and presence of serrated cuticle in worm within the anterior chamber, it causes severe irritation to the corneal endothelium (Jaiswal *et al.*, 2006) ^[3] and displays signs of lacrimation, photophobia, corneal opacity, conjunctivitis (Patil *et al.*, 2012) ^[7] and even loss of vision in cases when treatment is delayed (Aswathy *et al.*, 2013) ^[2]. Several chemotherapeutic methods are known for treating Setariasis in animals. However, chemotherapy of ocular Setariasis is not recommended because the dead body of the worm can exacerbate the development of opaqueness of the affected eye. The best treatment of ocular Setariasis is the surgical removal of the parasite that can be performed under general anaesthesia or regional nerve blocks.

Case history

A one year old Kathiawari crossbred female horse was presented in Government veterinary polyclinic hospital Chittorgarh. The owner reported about swirling movement of milky-white thread like worm in right eye. The horse had the history of continuous lacrimation, ocular discomfort and corneal opacity in affected eye along with abnormal gait for last 3 weeks. Another eye was free from abnormalities. No anthelmintic drug was administered previously.

Clinical and laboratory findings

Clinical examination of the affected eye revealed motile milky-white worm in the aqueous humor of anterior chamber along with epiphora, blepharospasm, corneal edema, severe conjunctivitis, mild degree of corneal opacity and impaired vision (Fig. 1). There were congested conjunctival mucous membrane, elevated rectal temperature (103.1 °F), capillary refill time (3 second), respiratory rate (28 per minute) and heart rate (70 per minute). Hematological and biochemical parameters of blood revealed normal physiological picture except eosinophilia.

Surgical treatment

The horse was sedated with Xylazine hydrochloride followed by 4-Point Retrobulbar nerve block with 2% lignocaine hydrochloride. Lignocaine hydrochloride was topically installed on the affected eye to fix the eyeball in left lateral recumbency. The eyeball was held and fixed in a stable position with the hand so as to expose the entire cornea. Stab incision was given at 10 o'clock position approximately 1 mm away from limbus (corneoscleral junction) as the worm appeared near the site and worm pulled out with the help of forceps (Fig. 2). The incised site was left without suturing. The anterior chamber was reinflated with mixture of salt solution and air. Post-operatively, ceftriaxone, flunixin meglumine and chlorpheniramine maleate along with topical antibiotic tobramycin and dexamethasone are administered. Owner was advised to cover the operated eye. No post-surgical complications were reported by the owners except very minute aqueous leakage. The corneal opacity was subsided gradually and the cornea regained transparency and vision within 3 weeks. The retrieved worm was identified as *S. digitata* based on morphology characteristics. It was approximately 4.2 cm long (Fig. 3).



Fig 1: Corneal edema and ocular discharge in right eye with live worm (*S. digitata*)



Fig 2: Retrieving of worm with forceps after stab incision



Fig 3: Gross morphology of extracted worm (*S. digitata*) after surgery

Discussion

Both medical and surgical treatments had been advocated for the equine ocular Setariasis. The occurrence may be minimized by treatment with Ivermectin @ 200-300 micrograms/kg b.wt orally (Muhammad and Saqib, 2007) [6].

Medical treatment alone has not been considered suitable because of the slow resorption of dead parasites and the attendant antigenicity leading to uveitis (Moore *et al.*, 1983) [5]. In ocular Setariasis, anterior chamber paracentesis could be done by either needle aspiration or stab incision. Needling technique is a simple, quick and economical method with minimum post-operative complications, but it could be relatively difficult in violent horses (Singh *et al.*, 1976) [9].

The best method is the surgical removal of the complete parasite through a corneal stab in a closed valve manner to minimize aqueous leakage using BP blade No. 11 under general anaesthesia or regional nerve blocks (Tuntivanich *et al.*, 2011; Patil *et al.*, 2012; Aswathy *et al.*, 2013) [2, 7, 11]. Corneal opacity is the most common post-operative complication at the site of stab incision (Sharma *et al.*, 2005) [8]. Therefore, surgical treatment is followed by chemotherapy. A combination of antibiotic, NSAID and corticosteroid is administered postoperatively to reduce intraocular inflammation and corneal opacity. Administration of topical antibiotic tobramycin is highly recommended for equine bacterial keratitis (Keller *et al.*, 2005) [4].

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