

SURGICAL MANAGEMENT OF OCULAR SETARIASIS IN A HORSE – A CASE REPORT

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ABSTRACT

An 8-year-old male kathiawari horse was presented to Large Animal Surgery Unit of Veterinary Clinical Complex, Veterinary College and Research Institute, Orathanadu, with a history of cloudiness and lacrimation of the right eye with worm crawling for the past 3 days. Ophthalmic examination revealed a thread like worm swimming inside the anterior chamber of eye and mild opacity was noticed in the right eye. Under xylazine-ketamine general anaesthesia and proparacaine topical analgesia, the worm was surgically removed by needle paracentesis. Postoperatively, the horse was administered antibiotics and anti-inflammatories along with inj. Tetanus toxoid. The horse was dewormed with oral ivermectin. A complete resolution of lacrimation and corneal opacity was noticed on 20th postoperative day.

Keywords: Eye worm, *Setaria digitata*, Horse, Needle paracentesis, Ocular setariasis

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INTRODUCTION

One of the prevailing surgical issues in equine ocular health was a vision-threatening condition stemming from ectopic parasitic infestation by *Setaria* spp. (Radwan *et al.* 2016). *Setaria digitata* usually affects cattle and buffalo, with a common predilection site in the peritoneum and pleural cavity (Taylor *et al.*, 2007).

Aberrant migratory behaviour of *Setaria* species affects unnatural hosts like goats, sheep and horses (Bazargani *et al.*, 2008). Infected sheep, goats and horses result in cerebral spinal nematodiasis, which leads to paraplegia of the hind limbs (Taylor *et al.*, 2007). In equine the most common form of migration is ocular migration (Jayakumar *et al.*, 2012 and Radwan *et al.*, 2016). *Setaria* species transmitted by mosquito vectors (intermediate hosts) belong to the genera *Armigeres*, *Aedes*, *Anopholes* and *Culex* (Taylor *et al.*, 2007 and Tung *et al.*, 2004). Mosquitoes become infected with microfilariae when they feed on infected

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hosts and then they develop into infective larvae L3 within 8 to 10 days. Infected vectors transmit L3 to susceptible hosts during blood meals, and larvae reach sexual maturity in the host within 8 to 10 months (Perumal *et al.*, 2016). Ocular setariasis is a vision threatening condition in equines caused by *S. digitata*, *S. equina* and *S. marshalli*. Infected horses show ocular signs like lacrimation, photophobia, corneal opacity and conjunctivitis. If treatment is delayed, it leads to blindness (Verma *et al.*, 2019). The main goal of treatment is to eliminate the parasite through a medical or surgical approach. Comparatively, surgical removal by needle paracentesis under general anaesthesia is more effective than medical approach. According to research conducted by Tamilmahan *et al.*, (2013), ocular setariasis in horses was detected in 138 out of 242 cases (57.02%) in India.

CASE HISTORY

An 8-year-old male Kathiawari horse was presented to the large animal surgery unit of Veterinary Clinical Complex, Veterinary College and Research Institute, Orathanadu, with a history of lacrimation and cloudiness of the right eye with a worm crawling in the anterior chamber for the past 3 days.

DIAGNOSIS

Physical examination revealed all the vital parameters within the normal range. Ophthalmic examination revealed corneal opacity, photophobia and lacrimation on right eye with a thread like cylindrical worm moving in a swirling in the anterior chamber of the right eye (Fig.1).

TREATMENT AND DISCUSSION

The horse was kept off feed for 24 hours and water was withheld for 12 hours. The horse was injected with prophylactic dose of inj. Tetanus toxoid 5 ml intramuscularly and the horse was prepared aseptically using 0.5 % povidone iodine solution for surgical removal of ocular setariasis. The horse was premedicated with inj. xylazine hydrochloride at the dose rate of 1.1 mg/kg i.v. and butorphanol at the dose rate of 0.02 mg/kg i.v. Then, the anaesthesia was induced with inj. ketamine hydrochloride at the 2.2 mg/kg i.v. and the animal was positioned in left lateral recumbency. Proparacaine hydrochloride, a sterile aqueous ophthalmic topical anaesthetic solution, was instilled on the cornea to desensitise the cornea and sclera. Paracentesis of the anterior chamber for the removal of intraocular parasite was done through a 16-gauge needle. A 16-gauge needle attached to the 20 ml syringe filled with sterile 0.9 % normal saline was inserted into the eye at the 3 O'clock position of cornea at approximately 1mm away from limbus and about 3 ml of normal saline was infused. Then the needle was aspirated gently and the worm escaped through the hub of the needle due to the aqueous humour pressure, and the live worm was collected inside the 20 ml syringe. The retrieved worm was sent for parasitological examination and the puncture site was left to heal without suturing. The animal was administered inj. Intace fat the dose rate of 15 mg/kg i.v. and inj. Flunixin at the dose rate of 1.1 mg/kg i.v. for 3 days. Postoperative management consists of eyedrops moxifloxacin one drop 5 times daily for 10 days and Syrup

Lavitone-H 30 ml daily for 10 days. Epiphora was reduced to normal lacrimation within 10 days and corneal opacity was reduced on 20th post-operative day. On parasitological examination, the larva was identified as *Setaria digitata* female due to presence of paired prominent lateral appendages (LA) with a smooth knob at the posterior end (Fig. 2), and anterior end has dorsal and ventral projection and round lips on the peribuccal crown (Fig. 3).

The adult *Setaria species* is usually found in the peritoneal cavity of equines and other animals (Taylor *et al.*, 2007). The affected animal showed lacrimation, conjunctivitis, and corneal opacity. It was due to erratic movement of worms within the eye that causes corneal oedema (steamy eye), keratouveitis and blindness (Ansari and Buchoo, 2005; Tuntivanich *et al.*, 2011). Similar findings were reported by Shukla *et al.*, (2022), Patil *et al.* (2012) and Sharma *et al.* (2020). Medical management of eyeworm infection by ivermectin was reported by (Muhammad and Saqib, 2007). Even though medical treatment alone had not been considered as suitable method because of slow absorption and attendant antigenicity of dead parasite leads to uveitis (Moore *et al.*, 1983). Surgical removal of parasites had a higher recovery rate either

by needle aspiration technique reported by Rahman *et al.*, (2017), Peng *et al.*, (2019) and Singh *et al.*, (2018) or clear corneal stab incision reported by Patil *et al.*, (2012), Shukla *et al.*, (2022). Comparatively, the needle aspiration technique had lower aqueous leakage, and puncture was left without suturing. Tuntivanich *et al.*, (2011) and Verma *et al.*, (2019) reported eye worm could not be retrieved by needle paracentesis because of migrating parasites and stab incision was used as an alternative to retrieve the worm. In the present study, needle paracentesis by inserting a 16-gauge needle was found to be effective without any post-operative complications. In delayed cases of ocular seteriasis leads to keratouveitis which is the primary cause of papillary constriction. At the time of surgical procedure, administration of atropine may reduce the risk of iris trauma as well as degree of uveitis (Tuntivanich *et al.*, (2011)

CONCLUSION

This paper was to report the successful surgical recovery of ocular seteriasis in an 8-year-old male horse through needle paracentesis using 16 gauge needle.

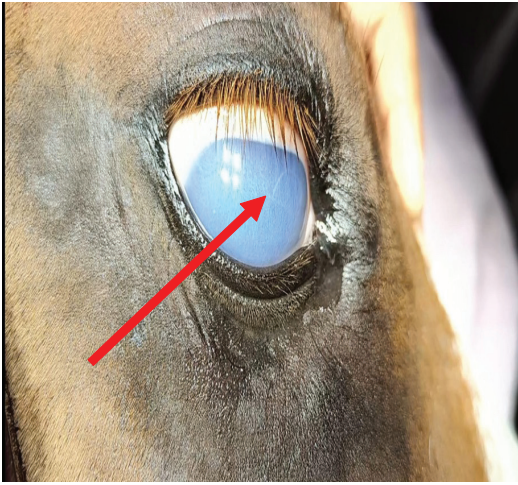


Fig.1: Worm in the anterior chamber

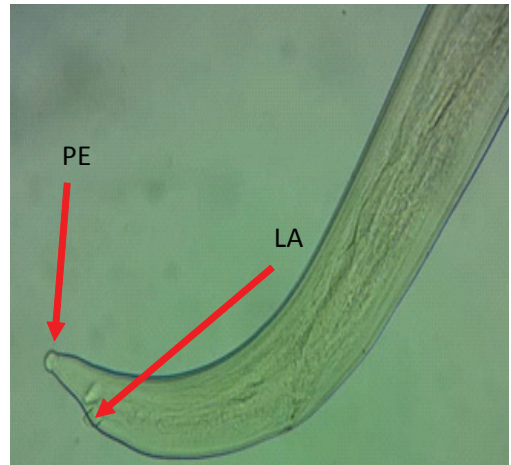


Fig.2: Caudal end of *S. digitata* with pair of lateral appendages (LA) and smooth knob (PE).

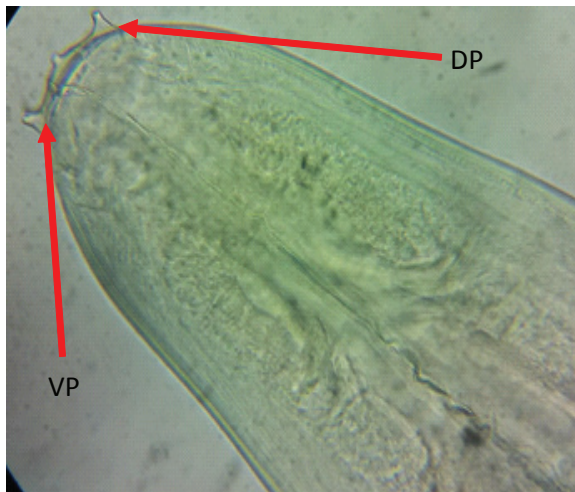


Fig.3: Cranial end of *S. digitata* with dorsal projection (DP) and ventral projection (VP).

REFERENCES

- Ansari, M.M. and Buchoo, B.A. (2005). Surgical technique for removal of intraocular parasite in horse. *Intas Polivet*, **6**(2):256.
- Bazargani, T., Eslami, A., Gholami, G.R., Molai, A., Ghafari-Charati, J., Dawoodi, J. and Ashrafi, J. (2008). Cerebrospinal nematodiasis of cattle, sheep and goats in Iran. *Iranian Journal of Parasitology*, **3**:16–20.
- Jayakumar, K., Dharmaceelan, S., Rajendran, N., Senthilkumar, S., Kathirvel, S., Nagarajan, L. and Kumaresan, A. (2012). Ocular setariasis in a pony. *Indian Veterinary Journal*. **89**: 64–66.
- Moore, C.P., Sarazan, R.D., Whitley, R.D. and Jackson, W.F. (1983). Equine ocular parasites: a review. *Equine Veterinary Journal Supplement*, **2**:76–85.
- Muhammad, G. and Saqib, M. (2007). Successful treatment of ocular equine microfilariasis (*Setaria* species) with ivermectin. *The Veterinary Record*. **160**: 25–26.
- Patil, D.B., Parikh, P.V., Nisha, J., Jhala, S.K., Din, D.M.U. and Tiwari D.K. (2012). Equine eye worm: a review of 50 cases. *Indian Journal of Veterinary Surgery*, **33**:61-62.
- Peng, T.L., Armiladiana, M.M., Ruhil, H.H., Maizan, M. and Choong, S.S. (2019). First report of equine *Setaria digitata* (von Linstow 1906) infestation in Malaysia: case report. *Veterinary Parasitology Regional Studies Reports*, **17**:100310.
- Perumal, A.N.I., Gunawardene, Y.I.N.S. and Dassanyake, R.S. (2016). *Setaria digitata* in advancing our knowledge of human lymphatic filariasis. *Journal of Helminthology*, **90**:129–138.
- Radwan, A.M., Ahmed, N.E., Elakabawy, L.M., Ramadan, M.Y. and Elmadaawy, R.S. (2016). Prevalence and pathogenesis of some filarial nematodes infecting donkeys in Egypt. *Veterinary World*, **9**:888–892.
- Rahman, M., Rana, E.A., Tanvir, M.I., Sabuj, A.A.M., Imtiaz, M.A. and Hasan, T. (2017). A case study on needling technique as a treatment for ocular setariasis in eye of a horse. *Asian Journal of Medical and Biological Research*, **3** (3):398-404.
- Sharma, S., Saini, D., Arora, N., Tiwari, D.K., Tikoo, A. and Singh, B.(2020). Surgical management of ocular setariasis in stallion. *Journal of Entomology and Zoology Studies*, **8**(5) :1953-1955.
- Shukla, B.P., Jain, R., Agrawal, V., Parihar, A. and Chaurasia, A. (2022). Management of eye worm disease in two horses; case report. *Journal of Pharmaceutical Innovation*, **SP-11**(3):01-03.

- Singh, K.P., Singh, S., Singh, R.V., Singh, P. and Singh, S.K. (2018). Needle paracentesis for management of ocular setariasis - a Study of eight horses. *Intas Polivet*, **19**(1):7-10.
- Tamilmahan, P., Zama, M.M.S., Pathak, R., Muneeswaran, N.S. and Karthik, K. (2013). A retrospective study of ocular occurrence in domestic animals: 799 cases. *Veterinary World*, **6**(5):274-276.
- Taylor, M.A., Coop, R.L. and Wall, R.L. (2007). *Veterinary Parasitology*. 3rd Edn. 131.
- Tung, K.C., Cheng, F.P., Lai, C.H., Wang, K.S., Wang, J.S. and Lee, W.M. (2004). Demonstration of vector competence of *Culex quinquefasciatus* (Diptera: Culicidae) for *Setaria digitata*. *Veterinary Parasitology*, **123**:279–284.
- Tuntivanich, N., Tiawsirisup, S. and Tuntivanich, P. (2011). Success of anterior chamber paracentesis as a treatment for ocular setariasis in equine eye: case report. *Journal of Equine Veterinary Science*, **31**(1):8-12.
- Verma, N.K., Reetu, Raghuvanshi, P.D.S., Gautam, D. and Saxena, A. (2019). Surgical management of equine ocular setariasis: a review of 10 cases. *Indian Journal of Veterinary Surgery*, **40**(1):62-63.