

Ocular Dirofilariasis: A Rare case from Mumbai, India

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ABSTRACT

Dirofilariasis is a worldwide zoonotic filariasis. Human dirofilariasis is a zoonotic infection most commonly caused by *Dirofilaria repens*. Dirofilariasis, caused by *Dirofilaria repens*, has been reported to occur widely throughout Asia, Europe, and Africa. It has not been widely recognized in India; however, several cases have been reported in the last few years. Ease and frequency of international travel has probably contributed to the increase in the number of cases. There is probably a focus of human infection with *D. repens* in Kerala, India. We report a case of ocular dirofilariasis, from the Western part of India. Among the Indian case reports of human dirofilariasis caused by *D. repens*, majority had ocular infections and few had subcutaneous involvement of the face.

Keywords: Deworming, Hetrazan, Microfilariae, Nematode, Subconjunctival

CASE REPORT

A 55-year-old male patient presented with redness, pain and foreign body sensation in the right eye since one day. On torchlight examination, a thin, thread like, motile, coiled worm like structure was seen in the temporal subconjunctival space in the right eye [Table/Fig-1]. Visual acuity of patient with glasses was 6/6. On slit lamp examination, presence of a thread like, white, live, motile worm was confirmed. Cornea was normal and no evidence of any anterior chamber reaction was seen. Pupil was circular and reacting to light. Left eye was normal. Fundus examination of both eyes was normal. Under topical anaesthesia, a small incision was made in the conjunctiva overlying the coiled worm. A white coloured coiled live worm was visualised and extracted carefully with forceps. All investigations including haemogram, X-Ray chest, urine and stool examinations, ultrasonography of abdomen and MRI of brain were normal. Patient gave travel history to New Zealand 12 months ago for a period of two months and to New Jersey, USA nine months ago for a period of six months. There was no other significant history. Morphometric analysis revealed a worm measuring 6 cm long [Table/Fig-2] with thick cuticle showing longitudinal ridges and transversal striations. In our case, the helminth was identified as *Dirofilaria* sp. by history of travel to endemic region, parasitological observation and morphometric analysis. Based on the morphologic features, the worm was identified as *Dirofilaria repens*. Systemic deworming with ivermectin and a course of hetrazan was also given. Patient was followed up for three weeks. Congestion in the eye settled down on topical treatment with steroids and antibiotics.

DISCUSSION

Human dirofilariasis is an uncommon zoonotic parasitic infection caused by the parasite *Dirofilaria* species. The genus *Dirofilaria* belongs to the family Onchocercidae of the order Spirurida and phylum Nematoda. This parasite is found in dog, cat, raccoon, bear and other wild animals. It replicates in the animal's body and enters circulation in the form of microfilariae, which are transmitted to other animals or humans by mosquito (*Culex*, *Aedes*, or *Anopheles*) bites, which are also intermediate hosts. The most common *Dirofilaria* spp. causing infections in humans are *D. repens* and *D. immitis*.

This nematode parasite cause pulmonary, ocular or subcutaneous lesions in humans who are dead end host. The worm is usually localised and confined to the subcutaneous tissues of eyelids,

fingers, cheeks and breasts. Ophthalmic involvement is usually periorbital, intraocular or in the eyelids. Subconjunctival localization is also reported [1-7]. The first case of subconjunctival dirofilariasis was reported by Joseph K et al., from Trivandrum, Kerala, India, caused by *D. repens* [1]. *D. repens* commonly causes subcutaneous infections, while *D. immitis* is usually involved in pulmonary infections in humans [8]. *D. repens* has been more commonly associated with dirofilariasis in India, irrespective of anatomical sites involved. Redness, swelling, increased lacrimation with foreign body sensation are the presenting features. Our patient seems to have contracted the infection in New Jersey as he presented with redness, pain and foreign body sensation in the right eye after nine months.

Diagnosis of dirofilariasis is based on detailed history and microscopic species identification (under dissecting microscope) based on morphological characteristics such as total length, presence of cuticular ridges, length of cephalic space, anterior end to nerve ring and last body nucleus, and nucleus-free tail tip of the helminth cross-section. The cephalic space of *D. repens* is short and terminated by a distinct pair of nuclei that are separated from the remaining somatic nuclei of the microfilaria. The cephalic space of *D. immitis* is longer and does not have the distinct nuclei separated from the somatic column nuclei near the anterior end. The cephalic space is a criterion used routinely for the easy differentiation of these microfilariae and identification of the species. Also, morphologically longitudinal cuticular ridges are absent in *D. immitis* whereas are present in *D. repens* [9]. Infection can be prevented by avoiding mosquito bites in endemic areas for dirofilariasis. Treatment usually involves surgical deworming or removal of nodules and granuloma of



[Table/Fig-1]: Subconjunctival localization of worm in right eye of patient.
[Table/Fig-2]: A 6 cm long worm extracted from subconjunctiva of patient.
(Images from left to right)

infected site. Increasing cases of dirofilariasis in India is an alarming sign to spread awareness about the infection. Epidemiological surveys are required to control incidence of dirofilariasis in India.

CONCLUSION

Human infections caused by *Dirofilaria* spp. are usually undiagnosed and are mostly under reported. Hence, lack of awareness and constraints in diagnostic modalities are often responsible for undiagnosed and under reporting of cases. Awareness, high index of suspicion with morphological identification of the parasite are the keys to diagnose human dirofilariasis.

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