A rare case of subconjunctival dirofilariasis by *Dirofilaria repens* in rural Gujarat

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Dirofilariasis is a worldwide zoonotic filariasis with over 782 cases reported so far from different parts of the world. Human dirofilariasis, caused by *Dirofilaria repens*, have 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 last few years. There is probably a focus of human infection with *D. repens* in Kerala. Herein, we present a review of human infections by *D. repens*, along with a case report of subconjunctival dirofilariasis from rural part of Gujarat.

**Key words:** Dirofilariasis, *Dirofilaria repens*, subconjunctival dirofilariasis

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**Case Report**

A 70-year-old man presented in the ophthalmology OPD on 13th May, 2009 with complaints of foreign body sensation and redness of the right eye since 1 day, with no history of trauma or injury to eye.

Ocular examination revealed a localized subconjunctival congestion and swelling near medial canthus with some motility. A slowly moving worm in subconjunctival space was detected on slit lamp examination. Alive intact worm was gently extracted from the subconjunctival space under local anesthetic agent. The worm was white and actively motile on removal.

Both eyes were otherwise normal. No abnormality or swelling was detected on systemic examination by dermatologist. Stool examination ruled out presence of parasitic ova or cysts. On hematological investigations, absolute eosinophil count of the patient was higher i.e. 576 cells/mm³. Peripheral blood smear was negative for microfilaria. The serum was sent to JB Tropical Disease Research Centre and Department of Biochemistry, Sevagram, Wardha for filarial serology and was reported positive for immune-complexed antigen by “Seva Filacheck” but was negative for antibody to microfilarial antigen.

As the species of the worm was yet to be identified; patient was prescribed antihelminthic drugs. Symptoms resolved promptly following surgical removal with no ocular or systemic recurrences over a follow-up period of 1 year.

The extracted worm was preserved in 10% formalin and sent to Parasitology Department of Anand Veterinary College and Hospital in Anand, Gujarat for further identification. Grossly, the worm was slender about 6.5 cm in length [Fig. 1]. Histopathological sections of the worm showed thick cuticle with external longitudinal cuticular ridges and a thick muscle layer [Figs. 2-4]. Based on the morphologic features, the worm was identified as *Dirofilaria repens*.

**Discussion**

Zoonotic filarioidoses are common in humans. The number of human dirofilariasis reported in the last 50 years has gradually increased, and it may be described as one of the emerging zoonosis. The first case of *D. repens* was published in 1867 by Angelo Pace in Palermo. A report published in 2008 mentions 782 cases caused by *D. repens* worldwide with 372 of them being new cases, reported between 1995 and 2000. This figure is now expected to be more with fresh reports.

In India, while dirofilariasis is considered endemic in Southern India; there have been a few reports from Northern as well as Western India. The first case of human ocular dirofilariasis in India was reported from Kerala in 1976. A total of 19 documented case reports on “human dirofilariasis” in India could be retrieved in the literature search on pubmed on 15th July, 2011. However; none of them is from this part of Gujarat. Most of the documented cases of human dirofilariasis recorded in India had ocular infections, with few case reports of subcutaneous dirofilariasis.

The first case of subcutaneous infection with *Dirofilaria* from India, in 1989, was a child manifesting portal cavernoma with pulmonary dirofilariasis. Other incidences of dirofilariasis were subsequently reported between 2000 and 2009 involving various sites of the body. Recently, during 2010-11, 4 cases have been reported affecting lower part of body, eye, and subcutaneous sites. This clearly indicates that human dirofilariasis by *D. repens* is rapidly emerging in India.
The dirofilaria are accidentally transmitted to humans by bite of mosquitoes carrying infective larvae. Dirofilaria cannot mature fully in human tissue and dies before producing microfilaria. Most cases with ophthalmic infection present with pain in the eye, redness, sometimes blurred vision, and swelling of eyelids, which coincides with the worm entering the subconjunctiva.

There is no diagnostic blood test for ocular dirofilariasis; tests for filarial antibody and microfilaremia are also negative. Only 1 case of circulating diromicrofilaremia in humans has been reported in the medical literature. Eosinophilia occurs in less than 15% of cases with *D. immitis* and rarely with *D. repens*. In this case also, blood smears were negative for microfilaria; but the patient showed marked eosinophilia. Antigen detection proved to be a useful method to confirm the filarial etiology in the present case.

Species identification of dirofilaria is based on morphological characteristics of the helminthic cross-section. *D. repens* is identified by the presence of external longitudinal cuticular ridges and transverse striations, which are absent in *D. immitis*.

Simple extraction of the worm is the treatment of choice for human dirofilariasis. Use of antifilarial medication for *D. repens* is not indicated in the literature. Thus, it must be differentiated from *D. immitis*, which requires the use of anti-helminthic agents. In a small number of cases of *D. repens*, ivermectin and/or diethylcarbamazine has been tried with good results. An oral therapy with DEC 2 mg/kg destroys other not yet visible worms despite the fact that human dirofilariasis is usually regarded as an infection by a single worm.

In conclusion, dirofilarial infections due to *D. repens* appear to be increasing in India as well as throughout the world, suggesting the need for high suspicion, prompt diagnosis, and management.

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