



Human ocular dirofilariasis: A rare case from Nagpur region of Central India

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Abstract

Dirofilaria repens is a helminth of carnivorous animals, primarily domesticated dogs. Transmitted by zoo-anthropophilic mosquito species belonging to the genus *Anopheles*, *Aedes* and *Culex*. Humans are accidental hosts in which *Dirofilaria repens* rarely reach sexual maturity but induce local inflammation, mainly in subcutaneous and ocular tissues. In the present case the patient reached with the complaints of redness, pain and foreign body sensation in the right eye. On torchlight examination, thin, thread like, live motile, coiled worm-like structure was seen in the eyelid lesion. There was no travel history from native place Bhandara district in the last two years. Worms were recovered from subcutaneous tissue from the eyelid carefully using forceps and sent to the microbiology department of Government Medical College, Chandigarh for identification. PCR revealed the presence of dog heartworm *Dirofilaria repens*. Thus, dirofilariasis should also be considered in the differential diagnosis of redness, pain and foreign body sensation in the eyes, especially in endemic areas.

Keywords: Zoonotic, mosquito, pcr, dirofilaria repen

Introduction

Dirofilariasis infection is caused by the nematodes of the superfamily Filarioidea and is transmitted by zoo-anthropophilic mosquito species belonging to the genus *Anopheles*, *Aedes* and *Culex* [1]. Various species of *Dirofilaria* are natural parasites of dogs, cats, and wild mammals. The life cycle of this parasite is the same as that of other filarial infection. Microfilaria present in the blood of wild and domestic animals such as the dog, cat and raccoon ingested by vector species through blood meal and develop a third stage infective larva, which can develop into adult parasite when introduced in the body of the host [2]. In case of *Dirofilaria*, humans are dead-end host and the parasite will not produce any microfilariae [3].

Out of 40 species of *Dirofilaria*, *Dirofilaria immitis*, *Dirofilaria repens*, *Dirofilaria straita*, *Dirofilaria tenuis*, *Dirofilaria ursi* and *Dirofilaria spectans* are known to cause diseases in humans [4]. Among these, *Dirofilaria immitis* and *Dirofilaria repens* are increasingly reported as human pathogens [5].

Human infections caused by *Dirofilaria repens* have been reported throughout Asia, Europe and Africa. In India, it is not been widely recognized, but a few cases reported from Kerala, a southern state of India [6]. *Dirofilaria immitis* commonly infects cardiovascular system of canines and has the potential to involve human pulmonary system. *Dirofilaria repens* observe in the subcutaneous tissues of definitive host and in humans, infection usually presents as solitary nodule. The worm may migrate in the subcutaneous tissue causing creeping eruptions. This parasite rarely infects other organs like lungs, female breasts, or eye. Ocular involvement may be orbital, periorbital, sub-conjunctival or intra-vitreous [6]. Symptoms can vary from moderate discomfort sensation in the eye, redness, pain and itching to more serious complications like damaged vision, retinal detachment, glaucoma, opacity of the vitreous humor [7]. Morphological identification of *Dirofilaria* species is based on the body cuticle, which is smooth in *Dirofilaria immitis* and has external longitudinal ridges in *Dirofilaria repens* [8].

The principle of this case summary is to highlight the presence of this emerging zoonotic disease at Nagpur region of central India.

Case report

On September 01, 2019, a 30-years-old male visited the clinic (Research Cum Training Center of Lymphatic Filariasis) with complaints of redness, pain and foreign body sensation in the right eye. On torchlight examination, thin, thread like, live motile, coiled worm-like structure was seen in the eyelid lesion. Visual acuity of the patient with glasses was 6/6. On slit lamp examination, presence of thread like, white, live, motile worms were confirmed. Cornea was normal and had no evidence of any anterior chamber reaction. Pupil was circular and reacting to light. Left eye was normal. Fundus examination of both eyes was normal. The patient was non-hypertensive, non-diabetic with no other systemic illness. Worms were recovered from subcutaneous tissue from the eyelid carefully using forceps and sent to the microbiology department of Government Medical College, Chandigarh for identification. Polymerase chain reaction (PCR) specific for *Dirofilaria repens* revealed the presence of dog heartworm *Dirofilaria repens*. Considering nocturnal periodicity of filarial worms, night peripheral blood sample was collected by finger prick method. Stained the blood sample by Jaswant Singh Bhattacharya stain (JSB-I) and examined under microscope for the detection of microfilaria. No evidence of microfilaria was seen. As per verbal autopsy of the patient, the patient found black tiny particle in the right eye around two months ago. He ignored it considering it to be dust particles. There was no history of travel to other places than his native place Bhandara (District of Maharashtra state India) in the last two years.

Discussion

Dirofilariasis is a zoonotic infection that was once considered endemic to Mediterranean countries, is being reported from different corners of the world including Africa, Australia, America and Asia. In the eye, *Dirofilaria*

repens can be found in periorbital tissues (eye lids, orbit),^[9] intraocularly^[10, 11], subconjunctivally^[9, 12]. The first case of subconjunctival dirofilariasis by *Dirofilaria repens* in India was reported from Trivandrum, Kerala, India^[13]. Now this infection is becoming medically more important in India with an increasing tendency. General conception for dirofilariasis, human beings are dead-end host and the parasite will not produce any microfilariae^[3]. Exceptionally Sulekova *et al.*, reported presence of microfilaria of *Dirofilaria repens* from nodes of human being and submitted that, it did not reach peripheral blood^[14]. The only remedy for ocular dirofilariasis caused by *Dirofilaria repens* is removal of the parasite. Thus, dirofilariasis should also be considered in the differential diagnosis of redness, pain and foreign body sensation in the eyes, especially in endemic areas.

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Conflict of interest: None

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