



Subconjunctival dirofilariasis

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Abstract:

Many species cause dirofilariasis i.e., *Dirofilaria repens*, *Dirofilaria immitis*, *Dirofilaria tenuis* of which *Dirofilaria repens* is the most common causative agent of human dirofilariasis especially in India. The disease is zoonotic in nature; sporadic cases of human dirofilariasis have been reported from various parts of India involving eyes, face, chest wall and lung parenchyma. We report a case of subconjunctival dirofilariasis in a 38 year old male who had only foreign body sensation and redness in left eye. Thus early diagnosis in this patient helped in preventing serious ophthalmic complications.

Key words: *Dirofilaria repens*, Dirofilariasis, Foreign Bodies, Animals.

Introduction

Human dirofilariasis is caused by a filarial nematode belonging to the genus *Dirofilaria*. *Dirofilaria repens* is the most common causative agent of human dirofilariasis. Once thought to be rare; cases are being increasingly reported making it a point for considering dirofilariasis an emerging zoonotic infection. We report a case of subconjunctival dirofilariasis from a small village of Maharashtra.

Case Report

A 38 years old male from a small village in Wada, Maharashtra presented with a foreign body sensation and redness in his left eye. About 5 days later, he complained of some pain in left periorbital area. There was no history of trauma, injury or an

insect bite, except that he visited a nearby village in the same district for a short time.

Ophthalmic examination revealed sub-conjunctival congestion. A slowly moving worm in sub-conjunctival space was detected on slit lamp examination. Complete hemogram and other laboratory parameters were within normal limits. There was no peripheral blood eosinophilia and microfilariae were not detected on peripheral blood smear.

Surgical excision of the worm was carried out under general anaesthesia. Symptoms resolved promptly following surgical removal of the worm. Grossly the worm was intact on extraction, whitish,

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motile and 13 cms in length by 0.5 mm in breadth. It was preserved in 10% formalin for identification.

Microscopic examination of the worm was carried out using lactophenol, which showed smooth, thick, multi-layered cuticle. The outer surface showed transverse striations and prominent longitudinal ridges. Below the cuticle, there was a well-developed thick muscle layer [Fig.1,2]. Based on the size, colour and cuticular features, the worm was identified as *Dirofilaria repens*.

Discussion

An endemic focus for dirofilariasis has been reported to be Europe and Sri Lanka. In India, the first few cases have been reported from South India, especially Kerala in 1976 and 2004 respectively [1,2]. This is explained by the fact that Kerala is geographically in proximity to Sri Lanka [3]. Later in 2009, infection due to *Dirofilaria repens* involving lower part of the body was reported from Orissa, i.e. Eastern India [4] and in the year 2010, three cases from Assam [3]. From Western India, there has been only one case report of sub-conjunctival dirofilariasis from rural Gujarat in 2009 [5] and one case from Mumbai in 2012 [6]. There are many species involved, i.e. *Dirofilaria repens*, *Dirofilaria immitis*, *Dirofilaria tenuis* in the disease process, however, *Dirofilaria repens* is commonly involved. The life cycle of *Dirofilaria* depends upon two hosts, a definitive and an intermediate host. Vertebrate species, i.e., domestic or wild animals act as a definitive host, canines being the principal reservoir hosts. Humans are not the natural host of this parasite. The most important risk factors for human infection are density of mosquito, warm climate and extended mosquito breeding season.

Mosquito species which act as an intermediate hosts belong to the genera *Aedes*, *Culex*, *Anopheles* and *Mansonia*. Fleas, lice,



Fig.1: Gross appearance of *D. repens*.



Fig.2: Lactophenol mount of *D. repens* showing external cuticular ridges.

and ticks are also presumed to act as vectors. The adult worm of *Dirofilaria repens* lives in the subcutaneous tissues of the definitive host and produce microfilariae which circulate in their blood. These are then taken up by the intermediate host. It takes about two weeks for the development of the infective third stage larvae in the intermediate host which migrate actively through the mouth parts and enter the tissue of the vertebrate hosts through bite.

Humans acquire infection accidentally by the bite of the infected mosquitoes. The infective third stage larvae into humans can invade a variety of tissues, undergo some development and remain as the dead end of the parasite typically manifesting as either subcutaneous nodules, ocular manifestation or as lung parenchyma disease. Subcutaneous nodules generally develop on face, sometimes on chest wall, upper arms, thighs and abdominal wall. Ocular involvement when occurs is usually periorbital, orbital, subconjunctival. When living worm enters the conjunctiva, the patient may suffer acute symptoms like redness of conjunctiva, foreign body sensation, and excessive lacrimation. The percentage of reported cases of ocular dirofilariasis has been increasing in the past 4 years. This has been attributed to improved epidemiological surveys and climatic changes [7].

Ocular Dirofilariasis may progress to serious consequences like damaged vision, floaters, glaucoma, retinal detachment, vitreous opacity, loss of visual acuity and even blindness. Side effects are also associated with surgical removal especially if sensitive areas like the optic nerve are in the vicinity. This case was diagnosed much earlier in the disease process even before the complications occurred i.e. the patient had only redness and foreign body sensation. This emphasizes the need for early diagnosis to prevent serious complications.

Identification of the species of *Dirofilaria* relies upon its gross and microscopic characteristics [8]. *Dirofilaria repens* is identified by the presence of external longitudinal cuticular ridges and transverse striations, which are absent in *Dirofilaria immitis* [1]. Whenever such a worm is extracted it should be washed thoroughly in normal saline and then subjected to hot 70% alcohol. Lactophenol mount of the worm is prepared to visualize the internal structures. The dehydration process relaxes the musculature of the worm and hence internal

structures are better visualized. Lactophenol helps in clearing and better visualization.

The treatment of choice for human dirofilariasis is extraction of the worm. The use of antifilarial medication for *Dirofilaria repens* is not indicated in the literature, whereas *Dirofilaria immitis* requires the use of anti-helminthic agents making it mandatory to be differentiated from *Dirofilaria repens*.

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