Lid abscess with periorbital cellulitis caused by *Dirofilaria repens*

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ABSTRACT

Dirofilaria is a common parasite of domestic and wild animals. Man gets infected accidentally by inoculation of arthropods infected with the microfilariae during their blood meal. Human infection with *Dirofilaria repens* results in coin lesions in the lungs, subcutaneous mass anywhere in the body or ocular lesion that may be sub-conjunctival or periorbital. Human dirofilariasis is prevalent in several regions of the world and is on the rise in many parts of India, particularly in Kerala. We hereby report a case of ocular dirofilariasis that presented as lid abscess with periorbital cellulitis.

Key words: Abscess, *Dirofilaria repens*, emerging zoonotic infection, lid abscess, periorbital cellulitis

INTRODUCTION

Human dirofilariasis is a zoonotic infection prevalent in several regions of the world. The incidence of dirofilarial infection is on the rise in India too, particularly in Kerala. Dirofilaria is generally a natural parasite of domestic and wild animals. The genus Dirofilaria includes *Dirofilaria immitis*, *D. repens*, *D. tenuis*, *D. ursi*, etc. The infection is transmitted to human beings through the bites of vectors like mosquitoes, fleas and ticks after the biological incubation of larvae in them. Accidental infection with Dirofilaria results in lung nodule, inflammatory subcutaneous mass or subconjunctival nodule in man.[1,2]

CASE REPORT

A 56-year-old male was referred to the Ophthalmology out-patient department (OPD) from a local hospital who presented with complaints of swelling in the periorbital region of about one month duration. As his vision was normal and suspecting cellulitis and lid abscess the patient was referred to ENT OPD.

On examination, there was congestion and oedema of left upper eye lid along with a firm, non-tender, non-fluctuant, palpable mass above the left eye lid on the medial canthus. The size of the swelling was about 2 × 2 cm [Figure 1a]. Routine examination of the blood and urine and X-ray Para nasal Sinus (PNS) were within normal limits. Anterior rhinoscopy was done and was found to be normal. No other abnormalities

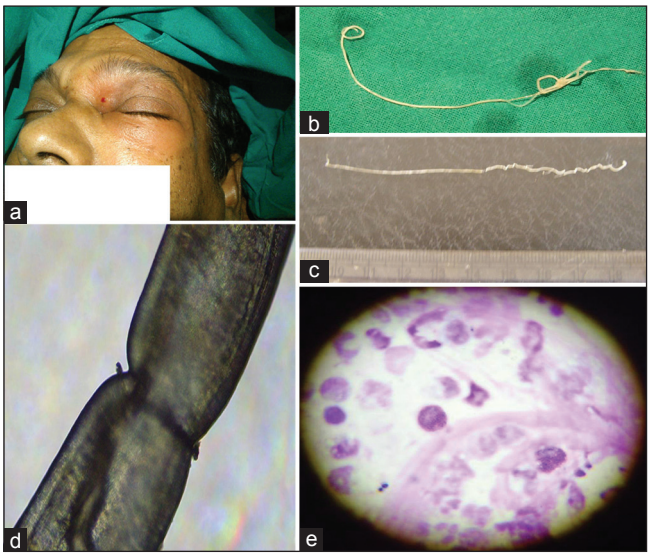

Figure 1: a) Lid abscess with periorbital cellulitis. Firm, non-tender, non-fluctuant, palpable mass above the left eye lid on the medial canthus; b) The extracted nematode; c) Thread-like, white to greyish, cylindrical worm measuring 10.5 cm in length and 0.5 mm in diameter; d) Microphotograph of the extracted Dirofilaria showing transverse striations and prominent longitudinal ridges on the cuticle (×100); e) Leishman stain of the pus showing polymorphs and eosinophils (×1000)

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pertaining to ENT were detected. With a provisional diagnosis of eye lid abscess, aspiration of the swelling was done with a wide bore needle. To our surprise, a dead, slender, thread-like worm of about 10 cm length, which was entangled in the soft tissue, came out with pus. The worm was later identified as *D. repens* by the Clinical Microbiologist. The patient was treated with antibiotics and analgesics and was advised to come for review a week later.

Follow up: The patient was asymptomatic on review and recovered fully well following the extraction of the nematode. No other nodules appeared.

Microbiological study

The extracted nematode was white to greyish, thread-like, cylindrical measuring 10.5 cm in length and 0.5 mm in diameter. [Figure 1b and c] The diameter was almost uniform throughout the length of the nematode.

On microscopic examination, it showed transverse striations with longitudinal ridges and smooth cuticle and it was unsheathed [Figure 1d]. The caudal end was bluntly rounded with a patent anus. On the basis of the clinical presentation of the lesion and the microbiological study, the extracted nematode was identified as female *Dirofilaria repens*.

Gram stain of the aspirated pus showed numerous inflammatory cells. No microorganisms were seen. Leishman stain showed presence of large number of eosinophils [Figure 1e].

DISCUSSION

Dirofilariasis is a zoonotic disease rare in human beings, though common in carnivorous animals, both domestic and wild, like dogs, cats, wolves, foxes and raccoons. Man gets infected accidentally by inoculation of arthropods infected with the microfilariae of Dirofilaria during their blood meal. The genus Dirofilaria infecting human beings consists of species like *D. immitis* that produce coin lesions in the lungs, *D. repens*, *D. tenuis*, *D. ursi*, *D. striata* and *D. subderma* that cause subcutaneous mass or sub-conjunctival nodules.[1,3] The suitable vectors are mosquitoes belonging to the genera Culex, Aedes and Anopheles, Fleas and Ticks.[4,5] Dirofilaria belongs to phylum Nematoda, Class Secermentea, Order Spirurida and Family Onchocercidae.

Thousands of microfilariae produced by adult female *Dirofilaria repens* circulate in the infected animals and are ingested by the blood sucking arthropods during a blood meal. After biological incubation of larvae in the vectors, animals like dogs and human beings get infected with the infective larvae when bitten by them. Development to adult stage occurs in 180 days in dogs, but the worms do not reach maturity in man and therefore do not produce microfilaria.[2] Infection in human beings usually manifests as a single subcutaneous nodule, which is caused by a microfilaria that is trapped by the immune system. Man is an aberrant host and accidental human infection can result in subcutaneous mass anywhere in the body, preferentially in and around the eye or in a sub-conjunctival nodule. Apart from ocular involvement, there are reports of dirofilarial infection involving the cheek, neck[6] and scrotal region.[7]

According to a review of world literature in 1995, a total of 397 cases of human subcutaneous dirofilariasis have been reported. In the past 12 months, cases are being reported from France, China and Romania as well. The first case of human ocular dirofilariasis was reported by Addario in 1885 from Milan, Italy and infection by *D. immitis* was first reported by Faust, Thomas and Jones in a lady in New Orleans in1941.[8] The occurrence of ocular dirofilariasis by *D. repens* has been reported widely throughout Europe, Asia and Africa. Dirofilariasis by *D. repens* is usually found in the Mediterranean region, Sub-Saharan Africa and Eastern Europe. Italy with 66% has the highest prevalence followed by France (22%), Greece and Israel. *D. repens* occurs more commonly in adults (40-49 years), but available literature shows wide variation in age, ranging from 14 to 70 years in India.[4] In Sri Lanka, children less than 9 years are most likely to be infected where a case is reported even in an infant aged 4 months. Although we have limited reports from other parts of India, the incidence is on the rise in several parts of Kerala. Apart from Kerala, incidence of human dirofilariasis has been reported from Orissa,[7] Tamil Nadu,[9] Karnataka,[5,10] Assam[11] and Maharashtra.[12]

The identification of Dirofilaria is made on its morphological characteristics. *D. repens* has a long thin filariform appearance. The males are short and vary in length from 4 to 4.8 cm, while the females are longer and vary from 8 to 13 cm in length.[9] The cephalic end is pointed while the caudal end has rounded tails with a patent anus. Mouth is simple without lips. It is unsheathed. All Dirofilaria have fine transverse striations on the cuticle and abundant somatic musculature.[4,10] *D. repens*, in addition has prominent external longitudinal ridges on cuticle which are absent in *D. immitis*. The extracted Dirofilaria is presumably identified as immature female *D. repens* based on its morphology, clinical presentation and geographical location of the patient.

The treatment of choice for patients with human dirofilariasis is either simple extraction of the worm or complete surgical excision of the subcutaneous lesion. Incidence of human dirofilariasis by *D. repens* is much more than what is reported in Kerala, as many of them are undiagnosed and therefore unreported and unpublished. It is a fast emerging zoonotic infection and awareness among the medical practitioners will increase the prevalence rate and help in early detection that will improve the patient care. Any subcutaneous mass especially in the periorbital region or subconjunctival nodule should be considered as a possibility of Dirofilariasis by *D. repens*.

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