

# Periorbital Dirofilariasis: A Rare Case from Western India

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## ABSTRACT

Dirofilariasis is a zoonotic disease caused commonly by *Dirofilaria repens* and *Dirofilaria immitis*. The definitive hosts are domestic dogs and cats. Human beings are accidental dead end hosts, and acquire infestation through mosquito bites. So far, very few cases have been reported from western India.

We report a case of a 27-year-old male who presented with preseptal cellulitis right eye and a firm mass in the lower lid. Histopathological examination after surgical excision of the mass revealed a diagnosis of dirofilariasis. Although rare in Western India a diagnosis of dirofilariasis should be considered in cases of preseptal cellulitis associated with a periorbital mass.

**Keywords:** *Dirofilaria*, Preseptal cellulitis

## CASE REPORT

A 27-year-old male reported to the outpatient department with complaints of painful swelling of the right lower lid and cheek of 2 days duration. Ophthalmic examination of the right eye revealed inflammation involving the lower lid and cheek. Ocular movements were normal. There was no proptosis. Distant visual acuity was 6/6 in both eyes. Anterior and posterior segments and the intra ocular pressure were normal in both the eyes.

A diagnosis of preseptal orbital cellulitis right eye was made and treatment with Capsule Doxycycline 100mg twice daily, Tab Ibuprofen 400mg and Paracetamol 325mg twice daily was instituted for 5 days. Subsequent to the resolution of cellulitis, a firm, non tender, discrete oval swelling measuring 2x1cm could be palpated in the medial half of the right lower lid. The mass was mobile and not adherent to the overlying skin [Table/Fig-1].

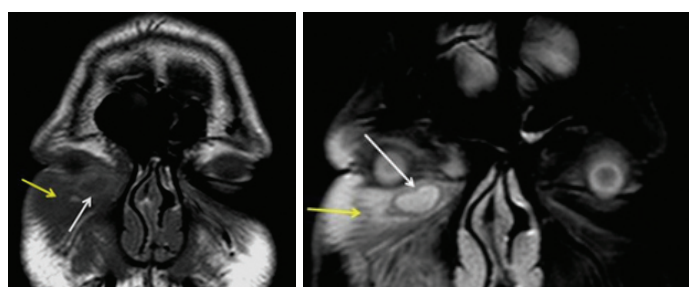
General and Systemic examination was within normal limits. No other subcutaneous lesions were found. Routine haematological investigations, including complete haemogram, ESR and blood sugar levels were within normal limits.

In view of the firm, nontender, mobile mass in the lower lid a differential diagnosis of dermoid cyst and cysticercosis was entertained. MRI Brain and orbits was advised to exclude neurocysticercosis and to determine the dimensions of the lesion and its intra orbital extension prior to planning any surgical intervention.

MRI Brain was reported as within normal limits. MRI Orbits (T1weighted images, T1 post contrast images and STIR images) showed a well defined, elliptical, hypointense lesion in the right lower eyelid measuring 14.6 x 6.5mm with a relatively hyperintense margin. The surrounding soft tissue showed evidence of subcutaneous oedema and cellulitis [Table/Fig-2a&b].



**[Table/Fig-1]:** Preoperative appearance of the patient, showing a swelling in the Right lower lid



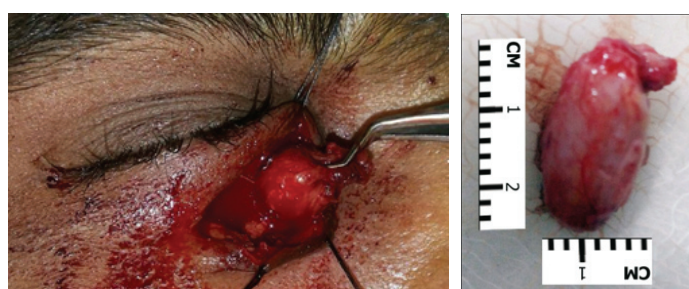
**[Table/Fig-2]:** (a) T1 weighted coronal MRI image of orbits showing a well defined, elliptical, hypointense lesion with hyperintense margins in the Right lower lid (White Arrow). Surrounding soft tissue appears hypointense suggestive of subcutaneous oedema (Yellow Arrow) (b) STIR coronal image showing corresponding hyperintense signal within the lesion with a hypointense periphery (White arrow). No focal hypointensity within the lesion to suggest calcification. Subcutaneous oedema (yellow arrow)

No calcification was seen in the cyst. There was no intraorbital extension and the globe was normal.

Surgical exploration was performed, which revealed a well encapsulated, firm mass, measuring 2.5 x 1.5x 1 cm, lying beneath the orbicularis oculi and anterior to the orbital septum. It was excised in toto and subjected to histopathological examination [Table/Fig-3,4].

Histopathology reported a single, elongated, grey white tissue bit measuring- 2.5 x 1.5 x 1cm. On cut section homogenous white necrotic areas were seen.

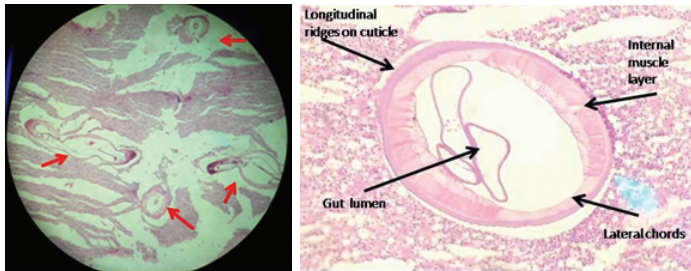
Microscopic examination of the sections studied from the swelling over the eyelid showed a thick walled cyst. The cyst showed a well circumscribed lesion composed of dense mixed inflammatory exudate with infiltration by histiocytes, mononuclear cells, and eosinophils. The lumen showed multiple cross sections of a parasite having outer thick multilayered cuticle with longitudinal ridges,



**[Table/Fig-3]:** Intraoperative appearance of cyst **[Table/Fig-4]:** Excised Cyst

internal muscle layer with lateral chords, and a gastrointestinal tract, suggestive of *Dirofilaria repens* [Table/Fig-5,6].

Postoperative recovery was uneventful [Table/Fig-7]. Monthly follow up over a period of 6 months showed no recurrence of the mass or any subcutaneous nodule.



**[Table/Fig-5]:** Histopathological image (H&E Stain, X 50 magnification) showing a well circumscribed lesion with infiltration by histiocytes, mononuclear cells and eosinophils. Multiple cross sections of the parasite seen **[Table/Fig-6]:** High power view (100X) showing thick, multilayered cuticle with longitudinal ridges, internal muscle layer with lateral chords and the gastrointestinal tract of the parasite



**[Table/Fig-7]:** Appearance on 4<sup>th</sup> Postoperative day

## DISCUSSION

Dirofilariasis is a zoonotic disease caused commonly by *Dirofilaria repens* and *Dirofilaria immitus*. The definitive hosts are domestic dogs and cats. Other hosts include wolves, coyotes, foxes, muskrats, and sea lions etc. The Aedes, Anopheles and Culex mosquitoes act as intermediate hosts and vectors [1]. Human beings are accidental dead end hosts, and acquire infestation through mosquito bites.

The prevalence of human dirofilariasis is very high in Italy and Srilanka [1]. Cases have also been reported from United States, Canada, Japan, and Australia [1]. Reports have also been published from the Indian states of Kerala [2], Karnataka [3] and Tamil Nadu [4]. So far, very few cases have been reported from western India.

The epidemiology of human Dirofilariasis directly correlates to the prevalence of canine infestation. In India, most cases have been reported from Kerala and Karnataka; few cases have also been noted in Assam [5] and Orissa [6]. A study done to assess the prevalence of canine infestation in Leh, Mumbai, Sikkim and Delhi revealed a prevalence of 8% to 16.7% in Mumbai [7]. However, reports of human dirofilariasis with ocular symptoms are relatively rare, with only four cases reported so far from Maharashtra [8-10]. This is the fifth case of ocular human dirofilariasis from Maharashtra.

Canines are the definitive hosts in the life cycle of *Dirofilaria* and are infected with the 3<sup>rd</sup> stage filarial larva following a bite from an infected mosquito. The adult worm is present in the subcutaneous tissues of the dog and may live for 5 to 10 years. The microfilariae are found in the peripheral blood of canines. Humans are infected accidentally and are poor hosts. The worm generally dies before reaching sexual maturity and does not release viable microfilariae. Only one report of circulating microfilariae in a human exists in medical literature [1].

Human Dirofilariasis usually manifests as subcutaneous nodules or lung disease which may often be asymptomatic. *D. immitus* is responsible for human pulmonary disease, whereas *D. repens* infestation usually presents as subcutaneous lumps, which may be painful. The common sites of the lesions are face and eyelids, chestwall, upper arms, thighs, abdominal wall and male genitalia [1]. Ophthalmic involvement may be periorbital [2], subconjunctival [8], subtenons or intraocular [11]. Most frequent ocular involvement has been seen in the periorbital tissues. Of the four cases reported from Maharashtra, three had a cystic mass in the lids and one patient had a subconjunctival nodule [8-10]. All cases were managed successfully with excision. The diagnosis in these cases was established after histopathological examination of the excised mass.

Our case presented as preseptal cellulitis involving the lower lid and cheek. A subcutaneous mass in the lower lid was detected on subsidence of inflammation. In reported cases of periorbital inflammation along with cystic lesions in the lids, differential diagnoses of orbital abscess, inflammatory pseudotumour, sebaceous cyst and metastases have also been considered [12]. These were excluded in our patient by MRI studies and furthermore there was complete resolution of inflammation with treatment.

Though orbital dirofilariasis is a known manifestation, the diagnosis is usually made after surgical excision. However, it is now being reported that high resolution ultrasonography of the lesion may detect a live worm [13]. CT-scan orbits may show the cyst as a well defined, peripherally enhancing lesion. MRI orbits reveal a hyper intense signal on Short-Tau Inversion Recovery image (STIR) and rim enhancement on post contrast T1 weighted images [2]. MRI findings in our case also showed a similar picture, however the presence of the worm was not reported. High resolution ultrasonography if performed might have suggested the diagnosis preoperatively. Eosinophilia may be detected in up to 20% of cases of Human Pulmonary Dirofilariasis (HPD), however eosinophilia and elevated serum immunoglobulin E levels are rarely observed and are of limited value in screening for dirofilariasis [1].

Treatment of subcutaneous dirofilariasis consists of complete excision. Ivermectin or Diethylcarbamazine may be advised for deeper multiple lesions [1]. Preoperative Ivermectin or Dec may be considered if the diagnosis is suspected prior to surgery. However, most cases are diagnosed after histopathological examination of the excised tissue. Our case showed complete recovery after excision of the cyst. No recurrences were detected during a six month follow up.

## CONCLUSION

Human Dirofilariasis, a newer emerging zoonosis, is now being reported more often from various parts of the world as well as India. Though uncommon, this case highlights the importance of *Dirofilaria* being considered as a differential diagnosis in cases of periorbital or orbital inflammation. A high index of suspicion should be maintained in cases of orbital cysts and high resolution ultrasonography may be useful in confirming the diagnosis prior to surgical excision.

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