

CASE REPORT

SUBCONJUNCTIVAL DIROFILARIASIS IN INDIA

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Abstract. Human dirofilariasis caused by *Dirofilaria repens*, have been reported to occur widely throughout Asia, Europe and Africa. Reports of this infection from India are however limited. Herein we report a case of subconjunctival dirofilariasis from Karnataka state of India. A 42 year old man presented with a history of pain and swelling in the left eye. A live parasite measuring 3.5cm in length was surgically removed from the nodular swelling in the conjunctiva. The parasite was identified as *Dirofilaria repens*, adult male.

Human dirofilariasis is a cosmopolitan zoonosis (Bruijning, 1981). The dirofilaria are natural parasites of mammals and are transmitted to man by zoonophilic mosquitos. Though nearly forty species of dirofilaria have been identified, only a few have been reported to cause human infection (Boreham *et al*, 1997); the most common being *Dirofilaria immitis*, a parasite of dogs, *D. tenuis* a parasite of raccoons, *D. repens*, a parasite of dogs and cats, and *D. ursi* a parasite of bears (Orihel and Eberhard, 1998). Of these species *D. repens*, *D. ursi*, *D. tenuis* and *D. striata* are found in the subcutaneous tissues; while *D. immitis* and *D. spectrum* are found in the heart and blood vessels of man (Bruijning, 1981). Cases of human subcutaneous and ocular infection with *D. repens* have been reported sporadically from France, Italy, Turkey, Africa, Thailand, USA and Southeast Asia (Joseph *et al*, 1977). Reports of human dirofilariasis in India are very few (Joseph *et al*, 1977; George and Kurian, 1978; Sekhar *et al*, 2000). Here we report a case of subconjunctival dirofilariasis from Karnataka State of India. This is the first time such a case has been reported from this geographical area and the fourth report of ocular infection with *D. repens* from this country.

A 42 year old man from the coastal town of Karwar in Karnataka State of India, presented with a history of pain and frequent watering of left eye since one month. Pain shifted gradually in a clockwise direction. On examination, there was a tender inflamed nodular swelling in the conjunctiva at the inferomedial quadrant of the left eye (Fig 1). Marked conjunctival hyperemia was noted. Slit lamp examination showed a pale motile worm in the subconjunctiva. There was no other skin nodule anywhere on the body. There was no lymphadenopathy. The patient was not suffering from any other systemic or local manifestation. Routine laboratory tests were within normal limits. Examination of urine and blood showed nothing abnormal. There was no eosinophilia. Blood smear was negative for microfilaria. Using local anesthesia a live parasite was surgically removed by excising the nodule on 3rd May 1998. After surgical removal of the worm the patient was symptom free.

The worm was thin and cylindrical measuring 3.5 cm in length with a maximum diameter of 0.45 mm resembling a white thread (Fig 2). Microscopic examination of the worm revealed that the anterior end of the worm was slightly tapering and had a rounded head (Fig 3). The cuticle of the worm had longitudinal ridges with transverse striations (Fig 4). Morphologically the worm resembled the

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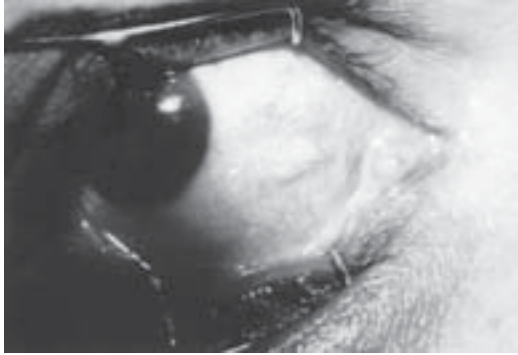


Fig 1—Nodular swelling of the conjunctiva of left eye.

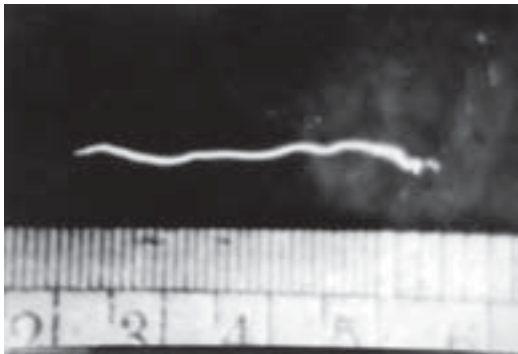


Fig 2—Photomicrograph of adult male *Dirofilaria repens* removed from the subconjunctiva.

genus *dirofilaria*. The size of the worm, the typical location, striations and ridges on the cuticle support our diagnosis of dirofilariasis. The worm was preserved in formalin and sent to National Center for Infectious Diseases, CDC Atlanta for confirmation, where it was identified as *Dirofilaria repens* - adult male.

Review of world literature shows that 397 cases of human subcutaneous dirofilariasis caused by *D. repens* are recorded from 30 countries (Pampiglione *et al*, 1995). *Dirofilaria* may be divided into two subgenera, subgenus *dirofilaria* represented by *D. immitis*, and subgenus *noctiella*, representative species being *Dirofilaria (Noctiella) repens* and *D. tenuis* (Jariya and Sucharit, 1983). The species may vary according to the geographical area. In the United States *D. tenuis* and in Europe, Middle Eastern countries and Southeast Asia, *D. repens* are most often responsible for human dirofilariasis. (Ruiz-



Fig 3—Photomicrograph of the anterior end of *D. repens*. 50X.

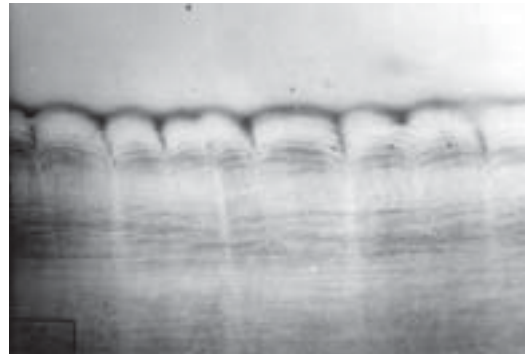


Fig 4—Photomicrograph of the surface cuticle of *D. repens*. 450X.

Moreno *et al*, 1998). The first case of human ocular dirofilariasis was reported by Addario in 1885 from Milan, Italy and was described as an infection by *Filaria conjunctivae*. Dirofilariasis is accidentally transmitted to the humans through the bite of mosquitos carrying infective larvae, acquired from microfilaria rich blood of animal hosts parasitized with dirofilaria. Man is the suboptimal host. It is assumed that dirofilaria cannot fully mature in human tissue. The parasite dies before producing microfilaria (Jelinek *et al*, 1996).

Symptoms vary in severity. In most cases the infections are asymptomatic or mild and uncomplicated, especially until the worm dies. Only after their death *in situ*, painful inflammatory reactions occur around the worms causing subcutaneous nodular lesions, necessitating excision. During the migration of the worm through subcutaneous tissue inflamma-

tory reactions may develop like mild fugitive swelling or subcutaneous nodule which can be painful and tender (Bruijning, 1981). These nodules occur preferably in areas not covered by clothes especially the head. 76% of patients presented nodules on the upper half of the body (Pampiglione *et al*, 1995).

The most common symptoms in ocular dirofilariasis are localized pruritis, pain, swelling, edema, hyperemia of the conjunctiva, sensation of movement under the skin or conjunctiva. However allergic reaction with fever, urticaria, facial edema may occur (Jelinek *et al*, 1996). In a majority of instances parasites are found in excised nodule and tissue biopsy specimens. Less frequently they are removed from the tissues intact. Typically only one or sometimes two worms are removed from an individual. Female worms were found with greater frequency than male (Orihel and Eberhard, 1998).

D. repens is a nematode with a long thin filariform appearance. There is wide variation in the reported size of male and female worms in different parts of the world. All dirofilaria have fine transverse striations on the cuticle and abundant somatic musculature. All except *D. immitis* and few others have prominent external longitudinal ridges. Longitudinal ridges of *D. repens* are broader than long, less distinctly raised and appear to have a more branching effect. They have rounded anterior end with buccal cavity. In contrast to the rounded short tail of female worm, the male worms have a coiled tail with several perianal papillae (Wong MM and Brummer, 1978).

The diagnosis is usually established with the surgical removal of the adult worm. Microfilaria have never been reported in humans (Joseph *et al*, 1977). Eosinophilia occurs in less than 15% cases with *D. immitis* and rarely with *D. repens* (Jariya and Sucharit, 1983). In this case also repeated blood smears were negative for microfilaria and there was no eosinophilia.

Surgical removal of the worm not only establishes the diagnosis in most cases but presents a definitive cure. 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 (Jelinek *et al*, 1996).

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