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SHORT COMMUNICATION

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# Subcutaneous tumor of the lower eyelid: A potential manifestation of a *Dirofilaria repens* infection

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**PURPOSE.** *To report a case of *Dirofilaria repens* presenting as a subcutaneous tumor of the lower eyelid.*

**METHODS.** *Interventional case report.*

**RESULTS.** *A 29-year-old man of Greek origin without systemic symptoms presented with a 3-week history of a small painless mass localized in the medial part of the lower eyelid. There was no history of a preceding trauma, injury, or visual impairment; however, the patient had recently been on a holiday in Italy. The lesion persisted after systemic antibiotic treatment. Routine blood tests were normal and the efferent tear ducts were patent. Upon surgical intervention a yellowish, pea-sized cyst-like structure was found beneath the orbicularis muscle and removed in toto. Histologic examination revealed the presence of a wormlike structure with the characteristic features of a single adult *Dirofilaria repens* nematode.*

**CONCLUSIONS.** *Infection with the nematode *Dirofilaria repens* has to be considered in the differential diagnosis of malignant and benign tumors of subcutaneous periocular tissues in patients who traveled to endemic areas. (Eur J Ophthalmol 2005;15: 129-31)*

**KEY WORDS.** *Infectious disease, Eyelid, *Dirofilaria repens*, Adnexal tumors*

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## INTRODUCTION

A variety of acquired lesions exhibiting a cystic appearance can occur in the eyelids and the diagnosis may range from cysts arising from the sweat glands or the pilosebaceous follicles to simple epidermal inclusion cysts as a result of trauma or previous surgery or vascular malformations such as cavernous hemangioma. Among the infectious causes of cystic subcutaneous tumors the mosquito-transmitted zoonotic infections by *Dermatobia hominis* (human botfly) and the *Dirofilaria* nematode should be included in the differential diagnosis. The former is widely distributed

throughout Central and South America, whereas *Dirofilaria* species are common parasites of cats and dogs especially in the European countries surrounding the Mediterranean. However, infections with *Dirofilaria* have been reported not only in Italy, Greece, France, and Spain, but also in Norway, the United Kingdom, the Netherlands, Belgium, and Germany (1-8). The purpose of the present report is to describe a case of an acquired subcutaneous nodule in the lower eyelid of a young man, refractory to anti-inflammatory treatment. Only on surgical extirpation of the tumor could the correct diagnosis of a subcutaneous single adult *Dirofilaria repens* worm be made.

## Case report

A 29-year-old German man of Greek origin presented to the eye casualty department of our hospital with a 3-week history of a small, painless tumor localized in the medial part of the right lower lid. Preceding the onset of the swelling the patient reported a mild flu-like illness. There was no history of trauma, injury, or impairment of visual acuity. The lesion had been treated by the patient's private ophthalmologist with a course of systemic ampicillin followed by doxycycline to no apparent effect.

On examination the skin overlying the tumor was normal in appearance. Inspection of the right globe showed no abnormalities. The efferent tear system was patent. Routine blood tests were normal. Initially, it was decided to wait and observe the lesion as no subjective symptoms were present. However, after a further 2 weeks, the tumor suddenly increased in size and became painful on palpation, the skin of the right lower lid was red and edematous, and the overall appearance of the lower lid resembled the initial stage of a preseptal cellulitis (Fig. 1). A course of systemic cefuroxime was commenced and the patient scheduled for lump removal in general anesthesia after the inflammatory reaction had subsided. Immediately beneath the orbicularis muscle a yellowish, pea-size, cyst-like structure was identified and removed in toto. Examination by our Ophthalmology-Pathology Service revealed the presence of a worm-like structure (Fig. 2). The distinct features of the histologic specimen led to the diagnosis of an infection with a single adult *D. repens* nematode.

## DISCUSSION

*Dirofilariae* are nematodes with a long, thin, and filariform appearance. They are natural parasites of a wide variety of canine and feline hosts. A prevalence of between 60% and 80% of *Dirofilaria* infestation in dogs has been reported for various regions in Italy and Greece (1-3). The animal hosts are infected after being bitten by arthropods, such as *Anopheles*, *Aedes*, and *Culex*. Man becomes infected as an accidental host via the same route. Increased air travel appears to account for the higher incidence of human infections reported in recent years in the Euro-



Fig. 1 - Clinical appearance of the inflamed lesion of the right lower lid.

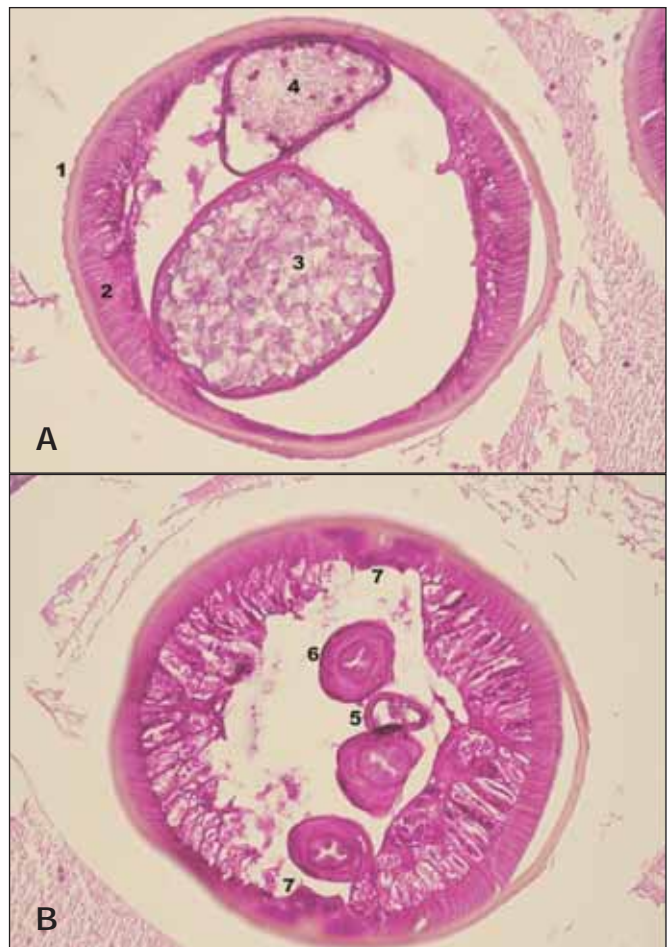


Fig. 2 - (A, B) Periodic acid-Schiff stain of a transverse section through different levels of the removed tumor. External ridges on multilayered cuticle (A1) typical for *Dirofilaria repens*. Muscle tissue (A2), uterus (A3), oviduct (A4), intestine (B5), vagina (B6), and lateral chords with several nuclei (B7).

pean countries and throughout the world (2-8). Our patient had been to his native Greece 5 months prior to presenting to our department. He had no pets. For man, two members of the over 20 known *Dirofilaria* spp. seem to be most important: *Dirofilaria immitis* (or "canine heartworm"), which inhabits the heart and vascular system of their hosts, and *D. repens*, which has predilection for the subcutaneous tissues. The infectious larvae of *D. repens* enter the skin released by mosquito vectors and wander through dermis and subcutis for 3 to 12 months. They develop into subcutaneously located adult worms and can survive in a sexually mature form for up to 20 years. Usually only one worm is present. Microfilaremia is encountered in immunocompromised individuals only. A fixed or migratory, often painless nodule may appear anywhere in the body (9-11); however, for reasons that are not entirely clear, the parasite has a strong tendency to localize on the face, near the orbit or in the conjunctivae (4, 8, 12). Eosinophilia and increased serum IgE levels are not commonly observed. The di-

agnosis is established upon surgical removal of the adult worm or histopathologic work-up of the sections obtained from the removed tissue nodule, as in the case presented here. The cuticle of *D. repens* (in contrast to *Dimmitis*) displays longitudinal ridges and transversal striae (Fig. 2), making a diagnosis possible on the basis of the histologic sections alone, if the nematode is well preserved (12, 13).

As infection in man is usually due to a single worm, its surgical removal presents a definitive cure. Oral treatment with diethylcarbamazine and/or ivermectin in addition has been advocated by some researchers (8) but is usually not necessary.

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