

## Case report

# First case of ocular dirofilariosis in Bulgaria caused by gravid female *Dirofilaria repens*

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**ABSTRACT.** Dirofilariosis caused by *Dirofilaria (Nochtiella) repens* is recorded sporadically among people in Europe, Asia and Africa. Still a worldwide controversy exist upon human parasite hosting. Herein, the first case of ocular dirofilariosis in Bulgaria caused by gravid female is presented. A single nematode was removed from the eye of the 76-year-old patient in the course of cataract surgery. Microscopic examination of the histological slides revealed microfilariae in the parasite's uterus, but not in the blood. Knott's method for detection of microfilariae in the peripheral blood was negative and the rest of laboratory blood and biochemical tests were within reference limits. A comprehensive review of the etiology, pathogenesis and clinical presentation of *Dirofilaria repens* infection is also highlighted.

**Keywords:** human ocular dirofilariosis, *D. repens*, microfilariae

## Introduction

Dirofilariosis is caused by the filarial nematodes *Dirofilaria immitis* and *Dirofilaria (Nochtiella) repens*. It is a widely spread vector-borne zoonotic disease mainly among dogs and wild carnivores. Disease caused by *D. repens* is recorded sporadically among people in Europe, Asia and Africa [1–3]. Specific vectors are mosquitoes of the genera *Anopheles*, *Aedes* and *Culex* [1,3,4]. Unlike other animal hosts, erythematous nodules are always seen at the site of inoculation with the exception of the eye region [3]. An epidemiological study of 47 dirofilariosis cases revealed that 21.3% of the patients had subconjunctival localization [5]. To date, no case of human dirofilariosis caused only by *D. repens* was described in Bulgaria.

## Case report

Seventy-six year-old man underwent ambulatory examination by an ophthalmologist in General Military Hospital, Pleven to evaluate surgical treatment of left eye cataract. The patient was diagnosed with conjunctivitis and in order to prevent the risk of postsurgical complications preoperatively was treated with combination of moxifloxacin 0.5% ophthalmic solution and dexamethasone 0.1%, neomycin sulphate, polymyxin B sulphate-eye ointment. After a month of treatment the irritated eye calmed down and the patient underwent cataract surgery. The intervention was conducted without complications. When removing the blepharostat at the end of the operation, a motionless white roundworm with length of around 14.2 cm was found in the conjunctival sac. It was removed and

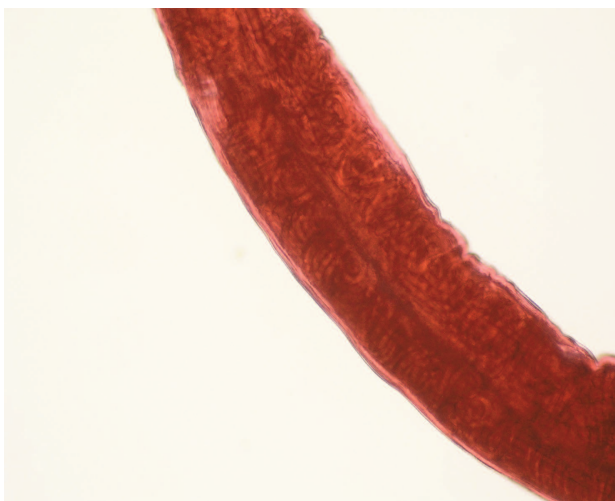


Figure 1. Microscopic view of the outer parasite's cuticle with longitudinal ridges

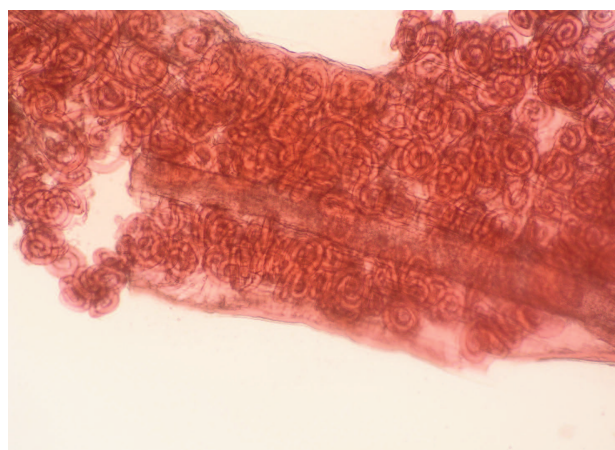


Figure 2. Microscopic view of the worm's uterus containing microfilariae

submitted for histological examination. Due to the unusual finding and suspicion of dirofilariasis caused by *D. repens*, slides were sent for further examination to the Department of Parasitology and Tropical Medicine at the National Center of Infectious and Parasitic Diseases, Sofia. The microscopic examination revealed the outer cuticle with multiple longitudinal ridges and confirmed the diagnosis (Fig. 1). Numerous microfilariae inside the parasite were well-visualized (Fig. 2). Knott's technique for parasitic verification was performed, however, no microfilariae were identified. Assuming possible cross reactivity rapid chromatographic immunoassay test for microfilariae (NADAL® Filariasis Test Cassette) was also performed, but the test was negative, too. All routine hematological and biochemical laboratory tests, together with IgE were within normal limits before and after surgery. No deviation was found in the humoral and cell mediated immunity.

## Discussion

For many years human was thought to be a biological "dead end" in the parasite-host system [6,7]. Recently many authors consider that the parasite can reach sexual maturity in 4–6 months after the season of transmission. This is confirmed by the morphology stages of some parasites and by single reports for microfilariae detected in aspirates from subcutaneous nodule, blood of an affected person [8], and in histological slides [9]. No microfilariae in the blood samples of our patient were not found, although the microscopic examination proved such in the parasite. No male subjects were found either. The absence of deviations in hematological and biochemical tests is not surprising because blood eosinophilia or elevated serum IgE levels are rarely observed in human dirofilariasis [10]. We assume that patient's conjunctivitis found in the primary eye examination was caused by the localization of the parasite in the subconjunctival space causing inflammatory and allergic reactions. In a previous study [5], 47 Bulgarian dirofilariasis cases were described, recorded over 39 years, and none of them showed ocular involvement caused by gravid female *D. repens*. The presence of microfilariae of *D. repens* removed from human host raises a number of questions about the biological development of the parasite in the human body. Further scientific research is needed to highlight these observations. Our patient did not serve as a specific end host probably due to his compromised immune response due to an advanced age.

In conclusion, the first case of ocular dirofilariasis in Bulgaria caused by gravid female *Dirofilaria repens* presented with inflammatory allergic conjunctivitis is herein presented. The parasite was found by accident during an eye surgery intervention. The specific peculiarity is the presence of microfilariae in the uterus of the parasite but not in the patient's blood.

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