

CASE REPORT

Medicine Science 2021;10(4):1538-9

Dirofilaria repens is a rare cause of red eye: A case report**^{ID}Erkan Bulut¹, ^{ID}Adem Gul², ^{ID}Mehmet Dokur³, ^{ID}Fadime Eroglu⁴**¹Beylikduzu State Hospital, Department of Ophthalmology, Istanbul, Turkey²Liv Hospital, Department of Ophthalmology, Samsun, Turkey³Biruni University Faculty of Medicine, Department of Emergency Medicine, Istanbul, Turkey⁴Aksaray University Medical Faculty, Department of Parasitology, Aksaray, Turkey

Received 07 May 2021; Accepted 31 July 2021

Available online 24.11.2021 with doi: 10.5455/medscience.2021.05.159

Copyright©Author(s) - Available online at www.medicinescience.org

Content of this journal is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License.

**Abstract**

Dirofilaria is usually stable in cats and circulates as microfilaria. A human being is the final host (dead-end host), which often leads to human dirofilariasis. We present a case of *Dirofilaria repens* infection located in the bulbar subconjunctival space of a 53-year-old male who presented to the emergency department with red-eye. Slit-lamp examination revealed a white-colored motile worm in the subconjunctival space of the left eye along with redness, mild chemosis, and conjunctival elevation. The parasite was surgically removed and remained undamaged. There was no symptomatic recurrence following parasite removal. The present case report also emphasizes the typical clinical features of *Dirofilaria repens*. *Dirofilaria repens* should be considered in the differential diagnosis of a persistent red-eye disease, especially if it is associated with the presence of a mobile foreign body.

Keywords: *Dirofilaria repens*, diagnosis, red eye, surgical removal**Introduction**

Dirofilariasis is a zoonotic illness, rarely seen in humans. *Dirofilaria* species should be considered in the differential diagnosis when an ophthalmic examination reveals a moving foreign body in the subconjunctival space in a patient with a complaint of red-eye. *Dirofilaria repens* is a more vigorous parasite than other *Dirofilaria* species. According to the current literature, the most appropriate treatment is surgical removal of inactive or non-reproducing *Dirofilaria repens* from the subconjunctival space, where it causes specific symptoms. The purpose of this case report was to discuss the typical ocular symptoms and therapeutic features of an adult patient admitted to the emergency room with *Dirofilaria repens*.

Case presentation

A 53-year-old male traveling in South Asia had redness in his left eye as a result of a fly hitting his eye while he was sleeping.

After returning to Turkey, the patient complained of mild redness and discomfort along with itching and a foreign body sensation in his left eye for three weeks. He was presented to the emergency department, where he underwent a detailed ophthalmic examination. His best corrected visual acuity was 20/20 in both eyes.

A slit-lamp examination revealed a white-colored motile worm in the subconjunctival space of the left eye along with redness, mild chemosis, and conjunctival elevation. The ophthalmic examination of his right eye was normal. Under topical anesthesia, a small cut was made on the lower medial bulbar conjunctiva, and the parasite was gently removed. A single absorbable 8/0 vicryl suture was used to close the conjunctiva (Video 1). The length of the parasite was measured at approximately 9 cm (Figure. 1). The parasite was sent to the microbiology and parasitology laboratory for parasitological examination. Macroscopically, it was reported as an immature adult female *Dirofilaria repens*. The patient was not administered antihelminthic treatment because the parasite was inactive in terms of reproduction. After surgical removal of the parasite, the patient's symptoms rapidly disappeared and he had no complaints during his clinical follow-up.

*Corresponding Author: Erkan Bulut, Beylikduzu State Hospital, Department of Ophthalmology, Istanbul, Turkey
E-mail: erkanbulut@outlook.com



Figure 1. An immature adult female *Dirofilaria repens* that measured approximately 9 cm in length removed intact from bulbar subconjunctival space

[VIDEO 1](#) Subconjunctival presentation of a *Dirofilaria repens* infestation and surgical extraction of *Dirofilaria repens* from the subconjunctival space.

Discussion

Dirofilaria parasites are found in dogs, cats, and wild animals similar to other parasites and they could be found in the circulation of these animals as microfilaria [1]. *Dirofilaria* is prevalent in countries with temperate, tropical, and subtropical climates [1]. Bugs and flies receive these microfilariae from these animals into their circulatory system, when they bite these resources. Then they transfer the microfilaria to human being or other living species. The final host is human beings [2]. There are over 200 species of *Dirofilaria*, but only six of them are harmful to human being. Among these six species, only *Dirofilaria repens* can cause ocular involvement. Due to their frequent association with the orbit, these worms were formerly referred to as *Filaria conjunctivae* and later as *Dirofilaria conjunctivae* [3].

Dirofilaria repens is endemic to the Mediterranean region, most notably Italy, and has also spread to Central, Northeast, and East Europe in recent years [2]. The parasite's emergence in non-endemic regions can be explained by the increased frequency of travel between geographical regions [4,5]. Infection occurs as a result of a bite from a blood-sucking mosquito (family Culicidae) that acts as a vector. The main reason for preferring under the skin for this parasite may be related to the anatomical and histological structure of these areas [7]. With a few exceptions, the majority of confirmed cases of subconjunctival dirofilariasis are caused by *Dirofilaria repens*. *Dirofilaria repens* is a parasite that is more aggressive than other *Dirofilaria* species; mature female worms reach a maximum length of 17 cm and a maximum diameter of 650 mm, while males reach a maximum length of approximately 7 cm and a maximum diameter of 450 mm. Microfilariae partially migrate and grow into adult parasites; however, they do not reproduce on local tissue. They usually reproduce on the skin, subcutaneous tissues, and mucous membranes (76%). They are also presented in nodules around the eyes, on the eyelids, or in the bulbar subconjunctival space [3,8].

Various methods have been identified for the diagnosis of *Dirofilaria* species. The most effective diagnostic methods include detecting circulating microfilaria in peripheral blood using various staining techniques and identifying the causative agent using serological tests. In comparison to conventional microbiological analysis, advances in molecular techniques in recent years have made it easier to identify *Dirofilaria* species.

Polymerase chain reaction (PCR), polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP), and real-time PCR methods are used to successfully differentiate species [9,10].

Macroscopic identification was acceptable in this case report because *Dirofilaria repens* is a well-known species in ophthalmic surgical practices. As in our case, current literature only suggests that the primary method of treatment is the surgical removal of inactive or non-reproducible *Dirofilaria repens* from the subconjunctival space [2,6,12,8,12].

The patient's history of *Dirofilaria repens* parasitosis, emerging clinical results, current effective treatments, and location of the parasite within the body were all consistent with evidence-based medicine.

Conclusion

Although less common in the emergency department, awareness of the typical clinical features of *Dirofilaria repens* is crucial for accurate diagnosis and appropriate treatment, especially in endemic areas. *Dirofilaria repens* should be considered in the differential diagnosis of a persistent red-eye disease, especially if it is associated with the presence of a mobile foreign body.

Conflict of interests

The authors declare that they have no competing interests.

Financial Disclosure

All authors declare no financial support.

Patient Informed Consent

The patient was admitted for the patient's care, and he had consented to an investigation. However, he was urgently referred to another institution for life-saving surgical intervention. The authors have tried to obtain consent to publish. The patient's anonymity was preserved, and this article does not contain any personal or demographic details that can be linked to the patient's identification

References

1. Stoyanova NS. A Case of Subconjunctival Dirofilariasis in Bulgaria. *Folia Med (Plovdiv)*. 2018;60:323-7.
2. Macarie SS, Dobre C, Suci MC, et al. Subconjunctival ocular filariasis -Case report. *Rom J Ophthalmol*. 2017;61:76-9.
3. Orihel TC, Eberhard ML. Zoonotic filariasis. *Clin Microbiol Rev*. 1998;11:366-81.
4. Poppert S, Hodapp M, Krueger A, et al. *Dirofilaria repens* infection and concomitant meningoencephalitis. *Emerg Infect Dis*. 2009;15:1844-6.
5. Genchi C, Kramer L. Subcutaneous dirofilariosis (*Dirofilaria repens*): an infection spreading throughout the old world. *Parasit Vectors*. 2017;10:517. Published 2017;9.
6. Choure AC, Palewar MS, Dohe VB, Mudshingkar SS, Madhuri K, Bharadwaj RS. Subconjunctival dirofilariasis caused by *Dirofilaria repens*: A case report with short review. *Indian J Pathol Microbiol*. 2015;58:332-4.
7. Tarbet KJ, Lemke BN. Clinical anatomy of the upper face. *Int Ophthalmol Clin*. 1997;37:11-28.
8. Davis R, Barsoumian A, Mauffray R, et al. *Dirofilaria* presenting as orbital mass. *Orbit*. 2015;34:38-40.
9. Eroglu F. The *Dirofilaria* Species Caused of Disease in Human and *Dirofilaria* infestation. *Sağlık Akademisi Kastamonu* 2017;2:232-41
10. Miterpáková M, Antolová D, Ondriska F, et al. Human *Dirofilaria repens* infections diagnosed in Slovakia in the last 10 years (2007-2017). *Wien Klin Wochenschr*. 2017;129:634-41.
11. Kalogeropoulos CD, Stefanidou MI, Gorgoli KE, et al. Ocular dirofilariasis: a case series of 8 patients. *Middle East Afr J Ophthalmol*. 2014;21:312-6.