

Dirofilaria Repens Infection of the Eye

Karl Engelsberg (✉ karl.engelsberg@med.lu.se)

Lund University: Lunds Universitet <https://orcid.org/0000-0001-7951-5709>

Jonas Bläckberg

Lund University: Lunds Universitet

Short Report

Keywords: subconjunctival *Dirofilaria Repens* in the Nordic countries, foreign sensation, Surgical removal.

Posted Date: December 3rd, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-1097286/v1>

License:   This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

Version of Record: A version of this preprint was published at Journal of Ophthalmic Inflammation and Infection on March 24th, 2022. See the published version at <https://doi.org/10.1186/s12348-022-00290-6>.

Abstract

We present the first report of a live subconjunctival *Dirofilaria Repens* in the Nordic countries. A woman had been in India five months before her symptoms started with redness and a foreign sensation in her eye. A worm that moved was found under her conjunctiva (film enclosed). She was instantly operated and the worm was removed (film enclosed). Surgical removal of the worm led to resolution of symptoms and a good clinical outcome.

Case Report

In the year 2020 a 43-year-old woman was referred to the Eye clinic at Skåne University Hospital. She had for 2-3 days noticed a redness and a foreign body sensation in the left eye. The symptoms had not deteriorated since they appeared, and her vision was not affected. She had no itching swellings on her skin and was in all other ways healthy. History revealed she had been staying in India, Pondicherry area, for three months. She had no previous visits to Central- or West Africa. The woman left India five months before her eye symptoms started.

Examination of her left eye revealed in the temporal half of the bulb a subconjunctival located worm (figure 1). It was convoluted and moved by itself (film 1). The overlying conjunctiva was inflamed, but the remaining conjunctiva gave a normal appearance. The bulb was clear as was also the cornea. There was no inflammation in the eye and the vitreous was clear. Retina had a normal appearance and vision was 20/20 on both her eyes without glasses.

She was instantly taken to the surgical theatre and operated (film 2). The conjunctiva at the site of the worm was opened and the worm could easily be taken out in its entirety with forceps. The conjunctiva was closed by a few stitches with 8/0 resorbable sutures (Vicryl® Rapide, Ethicon). Chloramphenicol ointment (Chloromycetin® 1%, Pfizer) was applied three times daily for one week.

The worm was put into a vial containing 70% Ethanol and sent for analysis, including PCR. Blood tests were taken for filaria serology and eosinophilia. The nematode was measured with a ruler to be 10 cm in length. The microscopic appearance and PCR- analysis confirmed it to be an adult female *Dirofilaria repens* nematode. ELISA showed antibodies to filaria, strongly indicative for a filaria infection. Her eosinophil count was normal.

One week after the operation the woman was reexamined and said she had no problem from her eye. Neither had she any other health problems. Her conjunctiva at the site of the worm had healed well and the rest of the eye gave a normal appearance.

Dirofilaria repens is a roundworm in the filarial nematode group. It usually affects dogs, but also other carnivores like cats, wolves and foxes can be infected. All mosquitos of the family Culicidae (e.g. *Aedimorphus*, *Anopheles*, *Culex* and *Mansonia*) are vectors (1). Humans can incidentally become infected when third-stage larvae are deposited on the human skin during the blood meal from an infected

mosquito (2). However, *Diofilaria repens* cannot reach maturity in humans and most of the larvae infecting humans are thought to die. Infections in humans usually manifest as a single subcutaneous nodule, which is caused by a microfilaria that is trapped by the immune system (3). Subcutaneous migration of the worm may result in local swellings with changing localization. In addition, rare cases of organ manifestation have been reported, affecting the lung, male genitals, central nervous system and the eye (3, 4). The nematode is endemic in the Old World and the Far East and its geographic range has expanded in recent years, probably due to increased movement of infected animals and changes of vector endemicity. The highest incidence of human cases in Europe is in Mediterranean and eastern European countries (5).

There exist some reports of ocular infection by *Diofilaria repens* (6, 7, 8) and with this article we would like to add one more case to highlight its possible increasing incidence. The combination of people traveling long distances and nematodes which can survive for extended periods before giving symptoms predict a future where we can expect to see more of these infections even in countries not having the vector for these nematodes as our case report exemplifies. It took around five months for the worm to grow and travel from the inoculated site on our patient to the eye which emphasize the risk of symptoms long after the patient left the epidemic region. To our best knowledge, we only found one previous report enclosing a film on removal of the *Diofilaria repens* from the eye (9). However, that film is rather blurry. Our film emphasizes the relative ease by which a *Diofilaria repens* can be extracted in its entire length from the eye.

In conclusion, we report the first incidence of a live subconjunctival *Diofilaria repens* in the Nordic countries. Surgical removal led to satisfactory resolution of symptoms with a good clinical outcome.

Declarations

The study complies with the principles of the Declaration of Helsinki.

Consent for publication: the patient signed consent for publication. See separate document.

The datasets used during the current study are available from the corresponding author on reasonable request.

Competing interests: the authors declare that they have no competing interests.

The authors have no funds to declare

Authors' contributions:

KE Examined the patient and performed the surgery. Wrote the manuscript.

JB Examined the patient and was in charge for the laboratory investigation. Read and commented on the manuscript.

References

1. Otranto D, Dantas-Torres F, Brianti E, Traversa D, Peric D, Genchi C, Capelli G. Vector-borne helminths of dogs and humans in Europe. *Parasit Vectors* 2013;6:16
2. Haim A, Kitchen M, Auer H, Rettenbacher T and Schmuth M. A case of human *Dirofilaria repens* infection, causing an asymptomatic subcutaneous nodule. *Parasitology Research* 2020;119:1703-1705
3. Pampiglione S, Rivasi F, Angeli G, Boldirini R, Incensati RM, Pasormerlo M, et al. *Dirofilaria* in Italy, an emergent zoonosis: report of 60 new cases. *Histopathology* 2001;38:344-354
4. Poppert S, Hodapp M, Krueger A, Hegasy G, Niesen W-D, Kern W, Tannich E. *Dirofilaria repens* infection and concomitant meningoencephalitis. *Emerg Infect Dis* 2009;15(11):1844-1846
5. Capelli, G., Genchi, C., Baneth, G. et al. Recent advances on *Dirofilaria repens* in dogs and humans in Europe. *Parasites Vectors* 2018;11, 663
6. Frenzen F S, Loewe I, Müller G, Schoenlebe J, Tappe D, Teichmann D. *Dirofilaria repens* infection of the eye with concomittant microfilaremia in traveller. *Journal of Travel Medicine* 2021;6;28 (1)
7. Mittal M, Sathish KR, Bhatia PG, Chidamber BS. Ocular dirofilariasis in Dubai, UAE. *Indian J Ophthalmol*. 2008;56(4): 325-326
8. Lippera S, Ferroni P, Lippera M. Ocular filariasis via *Dirofilaria Repens* in a fibrotic, filtering bleb. *JAMA* 2020;1;138 (7):e 194417
9. Otranto D and Eberhard M (2011) Zoonotic helminths affecting the human eye. *Parasit Vectors*. 4:41; 1-21

Figures



Figure 1

Examination of her left eye revealed in the temporal half of the bulb a subconjunctival located worm (figure 1).

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [Film1.mp4](#)
- [Maskfilm2.mp4](#)