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Clinical Pearls

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Dirofilariasis presenting with recurrent solitary erythematous swellings and creeping dermatitis

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In June 2024, a 24-year-old female Swiss medical student experienced a solitary migratory painful erythema on the dorsal aspect of her right lower leg following a full body massage (Figure 1A). The lesion was tender to pressure, painful on movement and migrated locally about a week before disappearing. Following a 10-h flight mid-July 2024, the lesion reappeared on the right inner ankle during the flight (Figure 1B). The routine laboratory tests ordered by the general practitioner (GP) consulted revealed an unremarkable differential blood count, a slightly elevated C-reactive protein, a negative serology for Lyme disease and a negative D-dimer test. The GP prescribed ibuprofen and referred the patient to a rheumatologist. The rheumatologist considered an erythema nodosum in the context of Löfgren's syndrome or sexually transmitted infections, but rejected this suspicion after negative laboratory tests and thorax imaging. The ankle lesion faded over three weeks but in August a similar lesion appeared at the right inner thigh (Figure 1C). A punch biopsy was performed, revealing an unspecific perivascular eosinophilic infiltrate. A non-specific urticarial reaction was suspected and symptomatic treatment with antihistamines initiated. The lesion faded, but a month later a right-sided inguinal swelling was noted. Due to the evolving clinical pattern and the patient's extensive travel history (incl. Asia, Africa, America, Europe), the patient herself began to suspect a parasitic infection and consulted a dermatologist, who rejected this suspicion and denied the respective investigations. Thus, the patient consulted a tropical medicine specialist, who ordered serologies for *Fasciola, Filaria, Strongyloides* and *Toxocara*. These were uniformly negative and as the inguinal swelling had meanwhile subsided, an ultrasound examination was no longer possible. Over the next weeks, episodes of pain in the subcutaneous epigastric, interscapular, cervical and buccal region without visible or palpable lesions occurred. In December, the patient developed a painful node in her right temporal scalp area and was believed to have "an atheroma". A couple of days later she experienced swelling at the right temporal region following diving exercises at a depth of ~3 m (Figure 1D). Following another long-distance flight, the patient experienced temporal pain on the right side and consecutively a nodular lesion in the right infraorbital region (Figure 1E). Following another long-distance flight, a clearly demarcated migratory track appeared at the lower eyelid (Figure 1F). Creeping dermatitis was the final clinical presentation. Still abroad on vacation, the patient managed to extract a ~10 cm long nematode helminth with the help of a friend, a disinfected razor blade and a forceps (Figure 1G). After the patient's return to Switzerland, the nematode helminth was identified macroscopically as a macrofilaria and by PCR as *Dirofilaria*. Unfortunately, due to the degradation of the DNA, it was no longer possible to identify the species by sequencing.

Dirofilariae are globally distributed mosquito-borne helminths that infest various mammals. Human dirofilariasis is most commonly caused by *Dirofilaria repens* and *Dirofilaria immitis* for which the domestic dog is the primary host.[1] Humans are accidental dead-end hosts in which the parasite can develop into its adult form (macrofilariae), but usually remains sexually immature and no microfilariae (the mosquito-transmitted stage circulating in blood) are produced. Nevertheless, patent human infections with detectable microfilaremia are observed.[2] In our patient we suspect *D. repens* as the macrofilariae of this species typically lodge and migrate in subcutaneous tissue.[1] Due to the

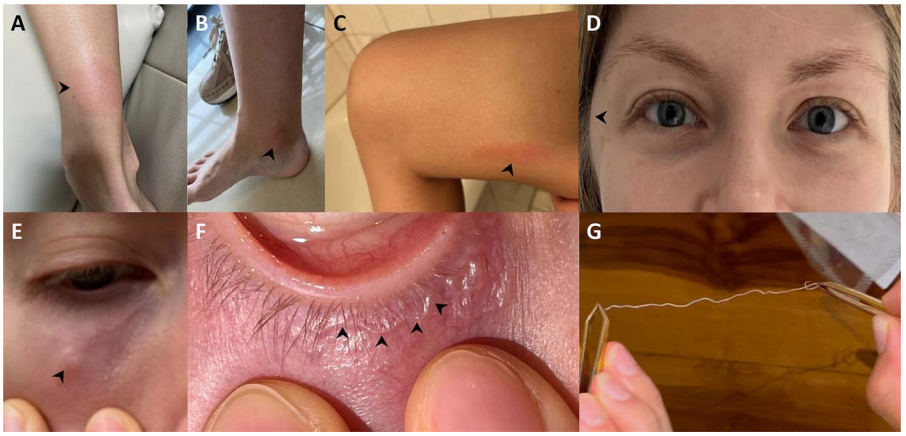

Figure 1 (A) migratory erythematous lesion on the dorsal aspect of her right lower leg; (B) erythematous swelling on the right inner ankle; (C) erythematous lesion on right inner thigh; (D) unilateral temporal swelling; (E) nodular lesion in the right infraorbital region; (F) migratory track at the lower eyelid; (G) the extracted, ∼10 cm long, adult *Dirofilaria* sp.

extensive travel history of the patient (including Fuerteventura, Portugal, the Seychelles, Qatar, Southern Italy and Sri Lanka) within the past 12 months prior the onset of symptoms and the widespread prevalence of dirofilariae, it remains unclear where she contracted her infection, possibly even at home in Switzerland.

Our case illustrates very well the different skin manifestations of dirofilariasis[3–5] and the fact that the diagnosis is difficult if there is no blood eosinophilia, and the serology is negative. Regarding the latter, it is of note that in human dirofilariasis, the humoral immune response, is often minimal or absent. This can be explained by the fact that microfilariae, which generally trigger a strong immune reaction in filarial infection, are rarely found in human dirofilariasis. Interestingly, our patient reported a putative correlation between macrofilarial migration activity and changes in ambient pressure (e.g. after flying and diving). Since the periodicity of microfilariae in the blood is related to the dynamics of oxygen tension due to the host's sleep–wake cycle,[6] it may be speculated that dynamics in ambient pressure could also influence macrofilarial activity.

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Conflict of interest

None.

References

1. Simón F, Siles-Lucas M, Morchón R *et al.* Human and animal dirofilariasis: The emergence of a zoonotic mosaic. *Clin Microbiol Rev* 2012;**25**:507–44.
2. Pupić-Bakrač A, Pupić-Bakrač J, Beck A *et al.* *Dirofilaria repens* microfilaremia in humans: Case description and literature review. One. *Health* 2021;**13**:100306.2.
3. Wilder-Smith AB, Caumes E. Approach to skin problems in travellers: Clinical and epidemiological clues. *J Travel Med* 2024;**31**:taae142.
4. Vanhaecke C, Perignon A, Monsel G *et al.* Aetiologies of creeping eruption: 78 cases. *Br J Dermatol* 2014;**170**:1166–9.
5. Hennocq Q, Helary A, Debelmas A *et al.* Oral migration of *Dirofilaria repens* after creeping dermatitis. *Parasite* 2020;**27**:16.
6. Hawking F. The 24-hour periodicity of microfilariae: Biological mechanisms responsible for its production and control. *Proc Roy Soc B* 1967;**169**:59–76.