Journal of Travel Medicine

International Society of Travel Medicine
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Journal of Travel Medicine, 2022, 1–3
https://doi.org/10.1093/jtm/taac060
Clinical Pearls

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Loiasis from where you don't expect it: an illustrative case of misled diagnosis

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Submitted 18 February 2022; Revised 2 May 2022; Editorial Decision 2 May 2022; Accepted 5 May 2022

Key words: Loa loa, loiasis, migrant, diagnosis, geographical origin

Case Description and Discussion

A 26-year-old man from Guinea Conakry presented at the Infectious Diseases Outpatient Clinic of San Martino Policlinic, Genova, Italy, in June 2021. He had left Guinea Conakry in August 2015 and arrived in Italy in June 2016, after travelling through Mali, Algeria and Libya. He reported a 3-month stay in Guinea Bissau in 2011 and no other travel abroad. He complained of recent onset dry cough, exertional dyspnoea, asthenia and intermittent diarrhoea without fever. Exams revealed eosinophilia ($1.75 \times 10^{\wedge}9$/L [n.v. $< 0.5 \times 10^{\wedge}9$/L]; 22%), with otherwise normal haematological and biochemical tests. Serology for *Schistosoma* spp. and filariasis (anti-filarial Bordier® ELISA Serological Index [SI] 2.16 [cut-off = 1]) were positive. Copro- and uro-parasitological tests, serology for *Strongyloides stercoralis*, HBV, HCV, HIV and IFN-γ release assay for tuberculosis were negative. Chest radiography and abdominal ultrasound were unremarkable. The analysis of daytime-collected blood revealed 4700 microfilariae/ml, provisionally identified as *Mansonella perstans* based on morphology (Figure 1A) and history of geographical exposure. The patient received mebendazole 500 mg/8 h for 28 days. At the end of treatment, microfilaraemia was still present (1440 mf/ml) and persisted (600–900 mf/ml) over the following 12 weeks; anti-filarial antibodies remained unchanged. Due to the unconvincing morphology of microfilariae and limited response to mebendazole, new blood samples were re-evaluated by microscopy and samples of both time points analysed by PCR (Figure 1B–D). Microfilariae were eventually identified as *Loa loa*. The patient received albendazole 400 mg/12 h for 28 days followed by ivermectin 15 mg single dose. One month post-treatment the patient was amicrofilaraemic, anti-filarial antibodies had subsantially decreased, and eosinophils were near-normal (SI 1.45; $0.6 \times 10^{\wedge}9$ eosinophils/L). Schistosomiasis was treated with praziquantel and persistent symptoms, attributed to gastroesophageal reflux upon endoscopy, managed accordingly.

Loa loa is a vector-borne filarial parasite affecting estimated 10 million people in West-Central Africa, with a limited geographical distribution: Angola, Cameroon, Central African Republic, Chad, Democratic Republic of the Congo, Equatorial Guinea, Gabon, Nigeria, Republic of Congo and South Sudan.[1] The diagnosis of loiasis can be elusive, and its treatment is not standardized.[2,3] Infection may be asymptomatic or cause non-specific manifestations; specific signs, Calabar swelling and subconjunctival parasite migration, are inconstant.[1] Diagnosis relies on identification of circulating microfilariae. These are 230–250 μm long, with colourless sheath in Giemsa-stained preparations, and nuclei extending to the tip of the tail.[4] They must be differentiated primarily from those of *M. perstans*, endemic throughout sub-Saharan Africa, having non-periodic, unsheathed, smaller (120–200 μm) microfilariae with a blunt tail.[4] Together with its limited distribution, morphological features should allow identification of *L. loa*. However, here morphology of microfilariae was not clear-cut (Figure 1A and B) and the patient's geographical exposure not evocative. With the caveat that no travel history was detailed, another case of loiasis from Guinea Conakry has been described.[5] Noteworthy, species

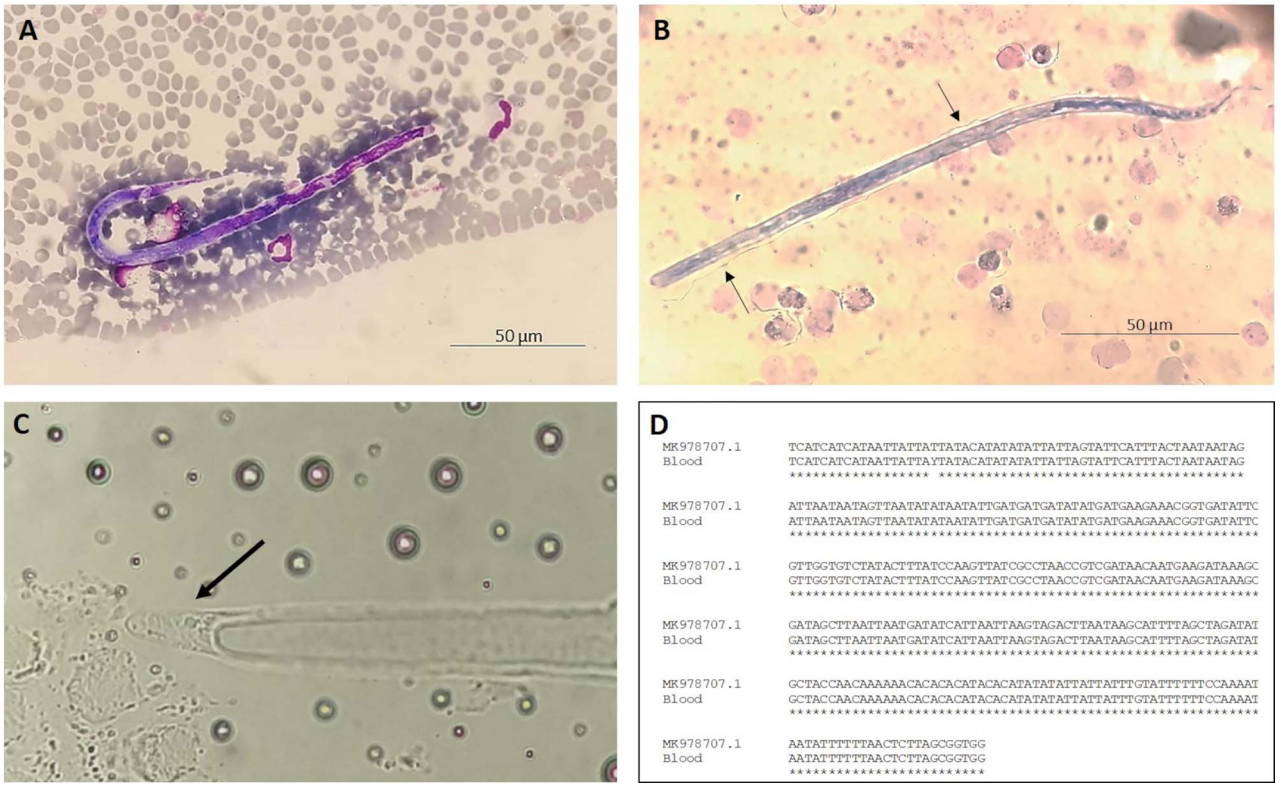

Figure 1. Parasitological and molecular identification of microfilariae. (A) Giemsa-stained 220-μm-long microfilaria showing nuclei distributed until the tip of a slender tail and no evident sheath. (B) May–Grünwald-Giemsa-stained 215-μm-long microfilaria with a sheath perceptible in some focus (arrows). (C) Particular of the tail of a fresh unstained microfilaria showing the sheath (arrow). (D) Sequence analysis of amplicons of pan-filarial rt-PCR targeting ITS1 region according to the protocol of Sandri *et al*. (J Infect Dis. 2021; 223:287–96) on DNA extracted from whole blood, showing 99.69% match with A.N. MK978707.1 *L. loa* sequence in GenBank. Asterisks indicate identical nucleotides. Matching was also found with sequences obtained from amplification of DNA extracted from Knott-concentrated microfilariae, and for both samples (blood and concentrate microfilariae), with other *L. loa* sequences deposited in GenBank (data not shown). No matching with *M. perstans* was found in samples obtained at both pre-mebendazole and post-mebendazole treatment time points, excluding mixed infection.

of *Crysops* different from *C. silacea* and *C. dimidiata*, distributed in the known *L. loa*-endemic areas and main vectors of *L. loa*, can transmit the parasite.[6] With increasing migration and changing ecology, the occurrence of parasitic infections outside their 'classic' geographical distribution should be envisaged since missed diagnosis may have severe clinical consequences.

Acknowledgements

The authors are thankful to Monica Degani and Stefano Tais, Department of Infectious-Tropical Diseases and Microbiology, IRCCS Sacro Cuore Don Calabria Hospital, Negrar, Verona, for the invaluable support and skills in the parasitological diagnosis and identification of microfilariae.

Author contributions

A.L.N., M.C., C.S., M.B., F.G.G. managed the patient clinically. F.T., E.P., M.M. carried out the laboratory diagnosis. F.T. drafted the manuscript. All authors approved the final version of the manuscript.

Funding

Molecular analyses were carried out thanks to Research Grant 2021 from the European Society of Clinical Microbiology and Infectious Diseases (ESCMID) to E.P. Publication is supported through funding from Italian Ministry of Health 'Fondi Ricerca Corrente'—L2 to IRCCS Sacro Cuore Don Calabria Hospital.

Conflict of interest

None declared.

Ethical statement

Written consent was obtained by the patient for the de-identified publication of the clinical case.

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