**Cause of hypereosinophilia shows itself after 6 years: Loa loa**

Corresponding Author. Dr Scott Rory Hicks, Locum Appointed Service Registrar Infectious Diseases, Royal Liverpool Hospital.

Dr Tim O’Dempsey, Senior clinical lecturer Liverpool School of Tropical Medicine, Consultant Infectious Diseases, Royal Liverpool Hospital.

Dr Fadil Khoyratty, Ophthalmic Specialist Registrar, Manchester Royal Eye Hospital

Ms Abha Gupta, Consultant Ophthalmic Surgeon. Manchester Royal Eye Hospital

Dr Alexander Stockdale, Specialist Registrar Infectious Diseases, Royal Liverpool Hospital

Jayne Jones MSc, Clinical Diagnostic Parasitology Laboratory, Liverpool School of Tropical Medicine  
Iain Slack MSc, Clinical Diagnostic Parasitology Laboratory, Liverpool School of Tropical Medicine

**Author Contribution**

Dr Scott Rory Hicks – Conceptualisation, literature search, figures, Investigation, visualisation, writing – original draft, and writing – review & editing

Dr Tim O’Dempsey - Conceptualisation, Investigation, supervision, validation, visualisation, writing – original draft, and writing – review & editing.

Dr Fadil Khoyratty – Investigation, writing – review & editing

Ms Abha Gupta - Investigation, supervision, writing – review & editing.

Dr Alexander Stockdale - Investigation, visualisation, writing – original draft, and writing – review & editing

Jayne Jones – Investigation, visualisation, figures

Iain Slack - Investigation, visualisation, figures

**Conflicts of Interest/ Role of funding**

All authors have declared no conflicts of interest. No source of funding was required.

**Cause of hypereosinophilia shows itself after 6 years: Loa loa**

A 25-year-old man attended his primary care physician reporting recurrent swellings on his hands and forearms. The patient said the lesions were itchy, but not painful, and had been appearing every week or so for the past few months.

He had no significant medical history. On examination, the patient was apyrexial and physically well; an erythematous swelling was found on his right hand. Investigations found no abnormalities apart from a hypereosinophilia of 2·5 × 109 per L (normal 0–0·5).

The patient was referred to the haematologists who found no cause for the eosinophilia but reviewed him every 6 months for the next 3 years.

6 years after his initial presentation, the patient attended a regional ophthalmology centre complaining of red, irritated right eye with a worm moving around in it. On examination he was systemically well but had a subconjunctival worm moving about in his right eye. The worm was removed under local anaesthetic with forceps. A random microfilaria count of the patient’s serum was 1500 microfilaria per mL; the eosinophil count at that time was 2·0 × 109 per L and he was referred to our tropical medicine hospital (figure; video). Exploration of his travel history found that, 7 years earlier, he had spent 3 months in Ilesa—a state in the southwest of Nigeria. The patient said he lived alongside a local family in a traditional hut and visited forested national parks nearby.

We identified the worm as an adult female Loa loa worm and a sample of venous blood—taken at midday— showed a microfilaria count of 5230 microfilaria per mL. Filaria serology on ELISA was strongly positive for antibodies; it was weakly positive to Strongyloides spp— probably due to cross-reactivity since stool analysis for ova, cysts, and parasites was negative—and positive to Schistosoma spp but no ova were found in the patient’s stools, urine, or semen.

To reduce the risk of meningoencephalitis, the patient was treated with a 21-day course of albendazole which lowered the microfilaria count to 950. He was then treated for a further 21 days with diethylcarbamazine; 1 month later the microfilaria count was zero.

He was seen 3 weeks later and found to be well with an eosinophil count of 1·1 × 109 per L. 1 month later the eosinophil count was normal.

Eosinophilia can occur in a wide range of conditions: common causes include helminth parasitic infections, adverse reactions to medications, and atopic and allergic diseases.

*L loa*—also known as the African eye worm—is a filarial parasite endemic in central Africa and parts of southern Nigeria. It is transmitted by a bite from the deerfly Chrysops; migration of the adult worm may cause episodic angio-edema—so-called Calabar swellings— which we assume were the lesions initially reported by our patient. Diagnosis—which may be made years after the patient first experiences symptoms—is confirmed by detecting microfilaria in peripheral blood.

**A**



**Figure 1.** Adult *Loa loa* worm traversing eye subconjunctivally



**Figure 2.** Thin blood film, x100 objective, x10 eyepiece. Stained with reverse Fields. One microfilaria present approximately 240µm in length. Photographs taken by Clinical Diagnostic Parasitology Laboratory. Liverpool School of Tropical Medicine.