



Case Report

Presence of adult *Loa loa* in the anterior chamber of the eye along with microfilaria from nonendemic region: A rare presentation from India

Varsha Kumari^a, Sofia Ahmad^b, Aradhana Singh^c, Tuhina Banerjee^{c*}

^aDepartment of Microbiology, Bokaro General Hospital (SAIL), Bokaro Steel City, Jharkhand, India, ^bDepartment of Ophthalmology, Bokaro General Hospital (SAIL), Bokaro Steel City, Jharkhand, India, ^cDepartment of Microbiology, Institute of Medical Sciences, Banaras Hindu University, Varanasi, Uttar Pradesh, India

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ABSTRACT

We report an unusual case of adult *Loa loa* infection in the anterior chamber of the eye of a 65-year-old female from rural area of Jharkhand, India, with no history of travel to endemic places but the presence of microfilaria of *Loa loa* in blood. Loiasis is endemic to African countries, with few sporadic cases affecting the Indian population. However, in none of the reports, microfilaria was detected. This atypical feature in this case adds to the epidemiological variations in parasitic presentations in nonendemic regions.

KEYWORDS: Blood, Eyeworm, Microfilaria

INTRODUCTION

Loa loa, commonly known as the African eyeworm, is usually restricted to the rain forests of West and Central Africa [1]. There have been sporadic reports of occurrence of this worm in India [2-8]. However, with the exception of the report by Lakshmi and Gururaj [2], in none of the reports, microfilaria could be demonstrated, thus leading to the conclusion that perhaps immature worms were present in these otherwise asymptomatic patients [4]. It is considered that sporadic cases of loiasis in travelers present with eosinophilia and increased antifilarial antibodies as opposed to natives of the endemic areas where asymptomatic microfilaria is most common [9]. On the contrary, in this report, we describe the presence of *Loa loa* in the anterior chamber of the eye of a 65-year-old female from Jharkhand, India, along with microfilaria in peripheral blood. Such presentations simply reveal the varied aspects of the condition in nonendemic regions like India.

CASE REPORT

A 65-year-old female from the rural areas of Balidih, Bokaro, Jharkhand, India, presented to the outpatient department of ophthalmology with complaints of foreign body sensation, blurring of vision, itching, and lacrimation in her left eye for the last 2 months. Her past history was unremarkable, and she had not traveled to any other place for the last 20 years. On general examination, the patient was thin built with mild pallor. There was non-pitting edema in her left leg.

However, there was no organomegaly or lymphadenopathy. On ophthalmic examination, her right eye was found to be normal and left eye had visual acuity of 6/24. On slit-lamp examination, keratic precipitates of moderate size, flare 3+ were found. The pupil was sluggishly reacting to light, the lens was clear, and the fundus was normal. There was neither subcutaneous swelling under the eyes or anywhere in the body nor any history of episodic swelling around the eyes or elsewhere. A white coiled structure resembling a worm was seen in the anterior chamber [Figure 1].

Her routine investigations were within normal limits with a mild hypochromasia and microcytic anemia (hemoglobin 9.3%) with normal eosinophil counts (304/μL). However, blood drawn for peripheral blood smear (PBS) at 11.00 a.m. demonstrated the presence of microfilaria. Additionally, as the state of Jharkhand is endemic for lymphatic filariasis [9], blood samples were also checked for the presence of microfilaria with nocturnal periodicity. PBS prepared from the blood samples drawn at 11.00 p.m. and 2.00 p.m. did not reveal the presence of any microfilaria.

A live worm was extracted by inferior nasal incision under anesthesia and sent to the microbiology department for identification. Under naked eye examination, the worm was slender,

*Address for correspondence:

Dr. Tuhina Banerjee,
Department of Microbiology, Institute of Medical Sciences, Banaras Hindu University, Varanasi - 221 005, Uttar Pradesh, India.
E-mail: drtuhina@yahoo.com

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Table 1: Cases of previously reported *Loa loa* from India

Region from where cases were reported	Site of isolation	Stage of parasite	History with visit to endemic areas	Microfilaria in PBS	References
Tirupati, Andhra Pradesh	Conjunctiva of the left eye	Adult female worm, microfilaria	Nigeria	Yes	[2]
Kakinada, Andhra Pradesh	Anterior chamber of eye	Adult male worm	-	-	[3]
Guwahati, Assam	Anterior chamber of eye	Adult male worm	None	No	[4]
Dhule, Maharashtra	Subconjunctival space	Adult male worm	None	No	[5]
Mumbai, Maharashtra	Left upper eyelid	Adult female worm	Israel	No	[6]
Kolkata, West Bengal	Subconjunctival space	Adult female worm	Himalayas	No	[7]
Kolkata, West Bengal	Vitreous cavity of eye	Adult male worm	-	-	[8]
Nagpur, Maharashtra	Anterior chamber of eye	Adult male worm	None	No	[12]
Bokaro, Jharkhand	Anterior chamber of eye	Adult male worm, microfilaria	None	Yes	This study

-: Not mentioned, PBS: Peripheral blood smear



Figure 1: Worm in the anterior chamber of the eye

whitish, and thread like with a length of approximately 35 mm and breadth of approximately 0.3 mm. Under light microscope, the worm was identified as a nematode covered with a cuticle [Figure 2a]. In the PBS, sheathed microfilaria with nuclei extending up to the tip of the tail was seen [Figure 2b]. This was sufficient for identifying the worm as an adult male *Loa loa*.

After surgical removal of the worm, the patient was treated with oral prednisolone in tapering doses and diethyl carbamazepine (DEC) 100 mg TDS for 3 weeks and asked for a follow-up.

DISCUSSION

The life cycle of *Loa loa* is comparable to that of *Wuchereria bancrofti*, the most widely prevalent filarial parasite in humans, with the exception of the vector *Chrysops* species (deer flies) in case of loiasis [9]. Interestingly, loiasis is usually confined to the rain forests of West and Central Africa [1]. Nonetheless, the vectors,

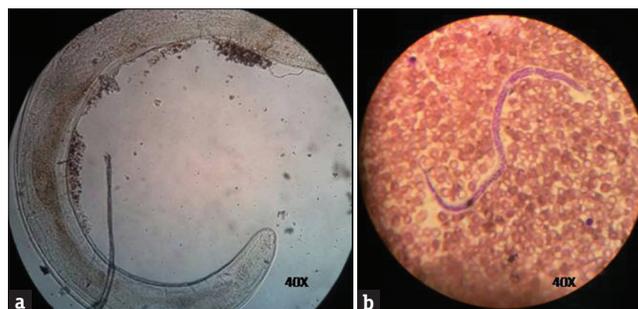


Figure 2: (a) Posterior end of the worm covered with cuticle; (b) microfilaria of *Loa loa* in peripheral blood smear

commonly the tabanid flies, are frequently distributed in moist bushy areas in and around cattle-rearing areas of Indian villages including the site of location of this particular case. Although a formal search for the vector following the notification of this case was not made, there has been evidence in literature regarding the widespread distribution of tabanid flies in Indian states including Jharkhand [10]. Therefore, it was presumed that there exists a possible animal reservoir as evident by the presence of the nematodes in blood meals of wild rodents and ruminants and ease in maintenance of human *Loa loa* isolates in primates [11]. Microfilaria of this nematode circulates in peripheral blood with diurnal periodicity, and hence the timing for blood collection is crucial for correct diagnosis. The characteristic morphology of microfilaria along with their special features is important in correct identification of the cause. In suspected cases of ocular filariasis, usually, sheathed microfilaria in blood with diurnal periodicity and showing a column of nuclei up to the blunt tail tip typically hints toward *Loa loa* infection. Similarly, unsheathed microfilaria from skin or tissue around the eyes with no periodicity and with pointed tail tip without nuclei indicates *Onchocerca* infection, and unsheathed nonperiodic microfilaria in blood with blunt tail tip and nuclei indicates *Mansonella* infection. Microfilaria

of *Wuchereria bancrofti* and *Brugia malayi* is nocturnal and sheathed and found in blood with the absence of nuclei in the pointed tail tip and presence of two widely spaced nuclei in the tail tip, respectively [9]. In this case, microfilaria could be demonstrated which also indirectly suggests the high worm burden in this patient.

Previously reported cases from India have demonstrated the presence of this worm in subconjunctival tissue [7] with Calabar swelling [2,5], anterior chamber [4], eyelid [6], and recently in vitreous [8]. However, microfilaria could be seen only in one of these cases who was a Nigerian male visiting India [2] as mentioned in Table 1. This case is unique as microfilaria was easily demonstrated in PBS, which is a common feature in residents of endemic areas unlike the sporadic cases. The changing epidemiological features of the parasite reflect their adaptability and survival strategies to flourish in nonendemic areas.

The isolation of *Loa loa* from scattered places in India, especially from patients with rural background or in association with the forest environment, hints toward the occurrence of unidentified foci of the worms in their vector flies. As most of these cases reported do not reveal any history of travel to endemic areas, a systematic survey to locate the hotspots of this condition is urgently required.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understands that her name and initial will not be published and due efforts will be made to conceal her identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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