Subconjunctival Loa loa worm: first case report in Brazil

Verme subconjuntival da espécie Loa loa: primeiro caso no Brasil

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INTRODUCTION

Loa loa infestation fits in the category of helminthic diseases called filariases. It is popularly known as “African eye worm”, due to a peculiar ocular manifestation of the disease\(^{11}\). The adult worms live freely in the subcutaneous space of humans and occasionally may migrate into the subconjunctival space\(^{20}\) where they invariably produce exuberant symptoms such as ocular pain, pruritus, tearing and foreign body sensation\(^{15}\). The adult worm has been described also in the anterior chamber of the eye and in the subcutaneous of the eyelids\(^{16}\). Other common manifestations are the so-called Calabar swellings: localized angioedemas found predominantly in the limbs, near the joints\(^{17}\).

The nematode is transmitted by the bite of an infected Chrysops fly. Both the agent and vector are originally found only in equatorial Africa\(^{18}\). The disease affects millions of people in that region but is rarely found in other continents, generally in African immigrants or travelers (the disease may remain asymptomatic for several years)\(^{19}\). In fact, there are only case reports in sporadic countries: USA, Germany, Spain, Italy, Norway, Korea, Australia, to name a few\(^{24,13}\) (Table 1). This is the first case described in Brazil.

CASE REPORT

A 33-year-old woman presented to our emergency service complaining of “something moving” in the left eye. She was original from Cameroon and was living in São Paulo, Brazil, for five years. She denied previous ocular or systemic symptoms. General physical examination was unremarkable with no evidence of subcutaneous swellings. On slit lamp examination, a moving opalescent worm was seen in the subconjunctival space of the left eye. Under topical anesthesia, a small incision was made in the superior conjunctiva and the worm was extracted intact with a forceps (Figure 1). It was immediately placed in saline (later transferred to ethanol 70%) and sent for an identification, which later was confirmed to be a male Loa loa adult specimen. Blood tests revealed microfilaremia of 129 mf/mL. The patient was treated with 400 mg oral albendazole for 3 weeks and 60 mg prednisone. This report illustrates an unusual ocular disease, which is extremely rare outside of Africa, but easily diagnosed and treated. Ophthalmologists should be aware of it, in face of an increasingly globalized world.

Keywords: Loa; Loiasis; Conjunctival diseases/parasitology; Eye infections, parasitic/parasitology; Filariosis; Brazil; Case reports

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**Table 1. A few case reports of ocular Loiasis outside Africa**

<table>
<thead>
<tr>
<th>Patient</th>
<th>Ocular manifestations</th>
<th>Extra-ocular manifestations</th>
<th>Last exposure in endemic region</th>
<th>Treatment</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil, african 33yo immigrant</td>
<td>Subconjunctival worm</td>
<td>None</td>
<td>5 years</td>
<td>Worm removal + albendazole + prednisone</td>
<td>Passos et al, 2011</td>
</tr>
<tr>
<td>England, african 21yo medical student</td>
<td>Subconjunctival worm</td>
<td>Calabar swelling in the elbow</td>
<td>6 years</td>
<td>Worm removal + diethylcarbamazine + prednisone</td>
<td>Bowler et al, 2011(8)</td>
</tr>
<tr>
<td>Italy, swiss 33yo woman</td>
<td>Subconjunctival worm</td>
<td>None</td>
<td>7 years</td>
<td>Worm removal</td>
<td>Aiello et al, 2010(7)</td>
</tr>
<tr>
<td>Norway, norwegian 38yo woman</td>
<td>Subconjunctival worm</td>
<td>Sporadic episodes of worm movement in subcutaneous tissues</td>
<td>Worked regularly in african countries</td>
<td>Worm removal + diethylcarbamazine</td>
<td>Varhaug, 2009(9)</td>
</tr>
<tr>
<td>Australia, nigerian 42yo immigrant</td>
<td>Subconjunctival worm</td>
<td>None</td>
<td>2 years</td>
<td>Worm removal + albendazole + prednisone</td>
<td>Jain et al, 2008(7)</td>
</tr>
<tr>
<td>South Korea, african 29yo immigrant</td>
<td>Subconjunctival worm</td>
<td>Calabar swelling on the forearm</td>
<td>5 years</td>
<td>Worm removal + ivermectin</td>
<td>Cho et al, 2008(7)</td>
</tr>
<tr>
<td>Spain, african 24yo immigrant</td>
<td>Subconjunctival worm</td>
<td>None</td>
<td>Visited Cameroon once a year</td>
<td>Worm removal</td>
<td>López-Rodríguez et al, 2007(10)</td>
</tr>
<tr>
<td>USA, african 29yo immigrant</td>
<td>Subconjunctival worm</td>
<td>None</td>
<td>Not described</td>
<td>Worm removal</td>
<td>Nam et al, 2008(11)</td>
</tr>
<tr>
<td>Germany, african 23yo student</td>
<td>Eyelid subcutaneous worm</td>
<td>Calabar swelling on the forearms</td>
<td>5 years</td>
<td>Worm removal + diethylcarbamazine</td>
<td>Sbeity et al, 2006(7)</td>
</tr>
<tr>
<td>India, indian 48yo man</td>
<td>Anterior chamber worm</td>
<td>None</td>
<td>Never went to Africa</td>
<td>Worm removal + diethylcarbamazine + prednisolone</td>
<td>Barua et al, 2005(7)</td>
</tr>
</tbody>
</table>

**Figure 1.** Highly mobile worm in the subconjunctival space and its removal through small incision under topical anesthesia.

**DISCUSSION**

Loiasis is the disease characterized by the infestation by *Loa loa*, a nematode belonging to the order *Spirurida*, superfamily *Filarioidea*.[2] This group includes all worms commonly known as "filariae", causative agents of a group of diseases called filariases.[3] Among those, three species are known to affect the eye: *Loa loa*, *Onchocerca volvulus* and *Mansonella perstans*. However, the ocular manifestations of these three agents vary greatly and the differential diagnosis usually can be made based on clinical and epidemiological thinking (Table 2).

*Onchocerciasis* or "river blindness" (caused by *Onchocerca volvulus*) has been considered one of the main causes of blindness in equatorial Africa and also in indigenous tribes in the Amazon Forest. It typically affects the cornea (progressive sclerosing keratitis), anterior chamber (chronic uveitis) or posterior segment (chorioretinitis, optic neuropathy), but the adult worm can never be seen in the subconjunctival space (they reside mainly in subcutaneous nodules).[2][3] *Mansonella perstans* have the same geographic distribution of *Onchocerca*. In fact, coinfection by filarial agents is commonly found in Africa. The ocular manifestations of mansoneliasis resemble those of loiasis, but differ greatly from those of onchocerciasis. In the first two diseases, the adult worm may migrate from the subcutaneous...
of periorbital tissues into the subconjunctival space or develop from a microfilaria inside the anterior chamber of the eye. When the adult worm is found only in the conjunctiva, severe ocular morbidity is null. However, when the adult develops in the anterior chamber, it may be accompanied by chronic uveitis, cataract, glaucoma, corneal edema, depending on the age of the patient and time of diagnosis. The exact mechanisms of microfilarial migration into the eye chambers remain speculative. It has been hypothesized that they might come from the ciliary vessels or penetrate directly through the sclera.

The definitive diagnosis of the type of filariasis should be definitively done by morphological evaluation of the adult worm and more importantly, analysis of the microfilariae. Nonetheless, some patients may not have them detectable in the blood due to the following reasons: a) diurnal periodicity of Loa loa microfilariae, b) infestation by a sole male or female adult and/or c) low parasitaemia load. The distinction from Mansonella may also be possible only by morphological analysis. In our case, the adult specimen was a male but even though, the patient had positive microfilaraemia, which presumes the existence of other gravid female adult(s). Sometimes, infected individuals do not present any symptoms. The worms can incubate for months to years before they start to migrate. This is the reason why some patients (as in the present case) may be asymptomatic for years after the first exposure to the agent.

Surgical removal of the adult worm from the subconjunctival space is always recommended. Still, systemic treatment should be considered for eradication of remaining adult worms and microfilariae in order to reduce transmission. Several options of anti-helminthic drugs have been described, but it is important to be aware that rapid killing of microfilariae in heavy infections with Loa loa can provoke encephalopathy, a serious complication that has been described when treating with ivermectin. Ivermectin and diethylcarbamazine have been classically used to reduce microfilaraemia, but albendazole may be a safer option because of its slower onset of action and lower risk of precipitating encephalopathy. The concomitant use of anti-histaminic drugs or corticosteroids also seems to reduce the risk of this complication. A 21-day regimen of 400 mg oral albendazole is considered safe and effective for individual cases. Also, repeated courses may be necessary, as microfilaraemia may reappear after months to years of the initial treatment.

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9. López-Rodríguez I, De-La-Fuente-Cid R, Camero-López JM, Cordido-Carballido M.
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