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Case Report

Subconjunctival Loa Loa: A case report

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ABSTRACT

Loa loa is a nematode that is highly endemic in the tropical rainforests of Western and Central Africa. It is also known as "African eye worm". Occasionally the adult parasite is seen in the subcutaneous tissue space of humans and occasionally into the subconjunctival space. Our case is a 29-year-old male presented to the outpatient department with history of swelling, redness and foreign body sensation in the inferior bulbar conjunctiva of his right eye. Slit lamp examination shows, a nodular swelling in the inferior conjunctival space and diagnosed as subconjunctival granulomatous lesion. In the operation theater, the lesion was explored and a live worm was removed from the subconjunctival space. The worm was measured about 3.5 cm in length. The worm was confirmed to be a Loa loa adult specimen. The patient was treated with 400 mg oral albendazole for 3 weeks and 60 mg prednisone. Ophthalmologists should be aware of the typical manifestations and possible unusual presentations. An increasing number of subconjunctival Loa loa cases are reported from non-endemic areas are due to increased travel and migration. This report illustrates an unusual ocular disease, which is usually not found outside of Africa, but easily diagnosed and treated.

1. Introduction

Loa loa is a nematode that is highly endemic in the tropical rainforests of Western and Central Africa.[1–11] It is also known as "African eye worm".[1,2,6,9,10] Loa loa infestation is a helminthic disease called filariasis.[1,2,11]

The infection is transmitted to humans through the day-biting deerfly (Chrysops silicea and C. dimidiate), horsefly and mangofly.[1,2,4–6,9,10,12,13] When larvae pass from the fly to the human, it develop slowly into a mature adult.[6,12,13] Parasitic infection in human at the adult and/or larval stages affects the adnexal tissues (eyelids, conjunctival sac, subconjunctival space and lacrimal gland) or the globe (optic nerve, vitreous, retina, anterior and posterior chamber).[14] Many patients infected with loa loa appear to be asymptomatic.[6] The adult parasite is commonly seen in the subcutaneous tissue space of humans and occasionally into the subconjunctival space.[1,6,9,11,12] The most common manifestations associated with Loa loa are transient localized angioedemas found predominantly in the limbs near the joints called "Calabar swellings".[1,3,4,6,7,9,11]

Worm in the subconjunctival tissue leads to itching, tearing, mild hyperemia and foreign body sensation.[1,4,9,15] The adult worm has been reported to infest the eyelids, the anterior chamber[9,10] and also into the posterior chamber causes retinal detachment, vitreous haemorrhage and raised intra ocular pressure.[1,3,4,6,16]

This case report is the removal of a live Loa loa worm from subconjunctival space of a patient in Bangladesh.

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2. Case Report

A 29-year old male presented to the Oculoplasty Department, complaining of a swelling and redness in the inferior bulbar conjunctiva of his right eye. He also had the sensation of a foreign body in right eye. There was no discharge, photophobia nor any visual disturbance. There was a history of use of topical antibiotic and steroid eye drops for the last one month with no improvement. The patient did not give any history of travel to Africa or any other country.

General physical examination was unremarkable with no evidence of subcutaneous swellings. On slit lamp examination, a nodular swelling and congestion was seen in the inferior conjunctival space of the right eye. The anterior and posterior segment did not show any sign of inflammation. It was diagnosed as subconjunctival granulomatous lesion. The patient was advised for exploration and removal of the granulomatous lesion in the operation theater. After a conjunctival incision we found that the mass was a live worm whose remaining part was deep and surrounded by fibrous tissue. The worm was long and thread-like. The complete worm was removed and measured about 3.5 cm in length. It was immediately placed in saline (later transferred to ethanol 70%). We suspected worm to be Loa loa and sent it for histopathological examination.

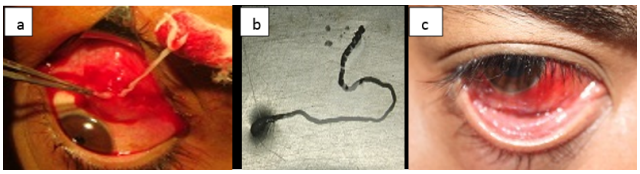

Fig. 1: a: Per-operative removal of subconjunctival loa loa; **b:** Loa loa worm after removal. **c:** 1st post- operative after removal of the worm.

After surgical removal of the loa loa and the conjunctival fibrous tissue, the conjunctival gap was repaired with amniotic membrane graft (AMG). Post-operatively the patient was treated with topical antibiotic eye drop and antibiotic eye ointment.

The parasite was confirmed as Loa loa. Blood examination revealed eosinophilia. The microbiological analysis of peripheral blood sample was done to identify the presence of microfilaria. There was no microfilaria in the sample. There were no other clinical features of loaiasis present.

After the diagnostic confirmation the patient was treated for systemic disseminated microfileria. He received 400 mg oral albendazole for 3 weeks and 60 mg prednisolone tapered over 3 weeks. An antihistamin was also given during the first 7 days. To avoid potential allergic reactions, steroid and antihistamin treatment was started and tapered progressively.

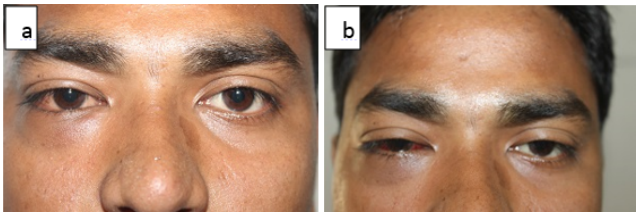

Fig. 2: a: Pre-operative photograph of right eye subconjunctival Loa loa; **b:** Post-operative after removal of right eye subconjunctival Loa loa.

3. Discussion

Loiasis is a nematode infestation caused by Loa loa that belongs to the superfamily Filaroidea.[1,3,7,8,10] This group includes all worms commonly known as “filariae”, causes group of diseases called filariases.[1] The different filarioids have been reported infecting the eye, resulting in migration of a worm across the conjunctiva or is encapsulated in a nodule on the conjunctiva or eyelid.[1,11,14,17] These referred to as Filaria conjunctivae.[14,17] Adult worm is long and slender with a blunt tail. The worms are viviparous that they give birth to larvae and do not lay eggs. Male worm measures 3 cm in length and 350 micron meter in width. Female worm measures 6 cm in length and 450 micron meter in breadth.[3,6,18]

Ocular parasitic infection in human is more prevalent in geographical areas where environmental factors and poor sanitary conditions favor the parasitism between man and animals. Travel history from endemic to nonendemic area is important to determine the source of infection. Ocular damage can be caused directly by the infectious pathogen or indirectly by the toxic products, immune response incited by infections, or ectopic parasitism of the preadult or adult stages.[12,19–22] Parasitic infections are sources of morbidity and mortality.[23]

An Ophthalmologist, Stephen Mckenzie, identified microfilaria, in 1890. A Scottish Ophthalmologist, Douglas Argyll-Robertson, in 1895, observed a localized angioedema in Calabar, a coastal town in Nigeria, resulting in the name “Calabar swelling”.[32] Loa loa is endemic in Africa and the disease affects millions of people in this region. An increasing number of subconjunctival Loa loa cases are reported from non-endemic areas also, generally in African immigrants or travelers.[1,3,9,24] There are some case reports from different countries: USA, Germany, Spain, Italy, Norway, Korea, Australia, India, Pakistan and Brazil.[1,3,9–11,25–32] This is the first case report in Bangladesh.

The definitive diagnosis of filariasis should be done by morphological evaluation of the adult worm.[1] Eosinophilia can also be supportive diagnosis.[6,7,11] Other investigations include, analysis of blood peripheral smear for microfilariae, C-reactive protein and IgE quantification can be supportive

of diagnosis.[1,3,6,11] Thick blood examination needs to be performed; however, some patients may not have them detectable in the blood due to the diurnal periodicity of Loa loa microfilariae.[1,6] In our case, the Loa loa worm was detected by morphological and histopathological analysis. Patient's eosinophil count was also high.

Patients infected with Loa loa may remain asymptomatic.[6] Adult microfilaria may migrate from the periorbital subcutaneous tissues into the subconjunctival space or develop from a microfilaria inside the anterior chamber of the eye.[1,11] It is also hypothesized that they might come from the ciliary vessels or penetrate directly through the sclera.[1] Though Loaloa can be seen in the subconjunctival space, eyelid, anterior chamber and vitreous cavity.[1,6,9,11,24] Subconjunctival migrations cause no permanent damage to the patient but can cause localised discomfort due to swelling of the conjunctivae.[1,6] The adult worm in the anterior chamber may be accompanied by chronic uveitis, cataract, glaucoma, corneal edema, retinal detachment and it can be associated with significant vision loss.[1,6,24]

The patients may occasionally develops unusual features like acute allergic symptoms, fever and frequently recurring episodes of angioedema.[6] Antinori et al, also describe evidence of pleural effusion, cardiomyopathy, encephalopathy or nephropathy.

Most of the cases of subconjunctival Loa loa reported are live worms[1,6,7,9,11,13] while case reports of removal of dead worm recorded in Pakistan and Africa.[3,24] Chronic abscesses formation followed by granulomatous reactions and fibrosis of subconjunctival tissue can occur from dying worm.[6] World travel and migration history was present in most of the case reports.[3,6] Loa loa prevalence is higher in Africa, an increasing number of reports are coming from non-endemic areas also.[3,9] Therefore, any patient with an unusual ocular presentations should be investigated for filarial disease.[3,9] In our case, we have removed a live Loa Loa worm and there was no history of travel to Africa.

The management involves surgical removal of the adult worm from the subconjunctival space.[1,6,9,11,12,24] Systemic treatment should be considered for eradication of remaining adult worms and disseminated microfilariae to reduce transmission.[1,6,11,12,24] Medical treatment include Diethyl Carbamazine (DEC),6,11 Albendazole(ALB) and Ivermectin(IVM).[1,11,24] Di-ethyl-carbamazine and Ivermectin has been shown to be highly effective antifilarial drug for the past 40 years in treating loaiasis.[6,11,12] Severe hypersensitivity responses may occur during the early treatment stage due to an acute and massive number of dying microfilariae.[6,11,12] Albendazole may be a safer option because it reduces the microfilariae load slowly as compared to DEC and ivermectin.[1,11] It has slower onset of action and lesser incidence of encephalopathy.[1,11] An anti-histaminic drugs and corticosteroids should be given to reduce the risk of this complication.[1,6,11] Repeated courses sometimes necessary, as microfilaraemia may reappear after months to years of the initial treatment.[1]

4. Conclusion

Subconjunctival Loa loa worm is rare in Bangladesh. Raised number of reports in different countries are due to increased travel and migration. Ophthalmologists should be aware of the typical manifestations and possible unusual presentations. Recent advances in the diagnosis and control of these parasitic infestations prevents significant ocular morbidity. Appropriate coordination between clinicians, pathologists and parasitologists are required for effective management of ocular parasites.

5. Conflict of Interest

The authors declare that there are no conflicts of interest in this paper.

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