Nepal J Ophthalmol 2019; Vol 11 (22): 227-231

Case Report

Confrontation with a live subretinal parasite

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Abstract

Background: Parasitic infestation of the eyes are a major cause of ocular diseases across the globe. Filarial and filarial-like nematodes top the list of the nematodes that affect the eye.

Case: A rare case of live sub retinal worm is reported in a 25 years old apparently healthy young male. The case presented with unilateral loss of vision and floaters in the affected eye. Upon examination a live subfoveal worm was identified with continuous wriggling movements and diffuse retinal edema. The worm was removed surgically and sent for parasitological examination.

Observation: The worm was identified microscopically as *Loa Loa*. However detailed histopathological examination could not be incorporated. The patient's vision improved to 6/12 (0.30 LogMAR) from the initial presentation of 3/60 (1.30 LogMAR) after three months follow-up.

Conclusion: The rare sub retinal live worm presents a challenge in management. The management depends upon the location and viability of the parasite. Surgical management is aimed at worm removal and vision preservation.

Key words: Live, Subretinal, Worm, Microfilaria, Loa Loa

Introduction

Parasitic infestation of the eyes are a major cause of ocular diseases across the globe. The causative agents range from simple organisms such as unicellular protozoans to complex metazoan helminths. The disease spectrum varies depending on the geographic location, prevailing hygiene, living and eating habits of the inhabitants, and the type of animals that surround them (Padhi et al, 2017).

Zoonoses are an important cause of human parasitic diseases worldwide and a major threat to the socio-economic development, mainly in developing countries. Importantly, zoonotic helminths that affect human eyes may cause blindness with severe socio-economic consequences to human communities. These infections include nematodes, cestodes and trematodes, which may be transmitted by vectors, contaminated food consumption and those acquired indirectly from the environment. Adult and/or larval stages of helminths may localize into human ocular tissues externally (lacrimal glands, eyelids, conjunctival sacs) or intraocular (intravitreal, retinal, anterior and or posterior chamber) causing symptoms due to the parasitic localization in the eyes or to the immune reaction they elicit in the host. Unfortunately, data on zoonotic helminths are scant and mostly limited to case reports from different countries (Otranto & Eberhard, 2011).

Financial Interest: Nil
Conflict of Interest: Nil
Received: 02.03.2019 Accepted: 14.05.2019
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Filarial and filarial-like nematodes top the list of the nematodes that affect the eye (Nanavaty et al, 2001).

We report a case of live Loaina Filarial nematode removed from the sub retinal tissue from a case residing in a non-endemic area.

Case Report

A 25 years male from Dharan, Sunsari reported himself to the Retina Department of Bharatpur Eye Hospital with the complain of blurred vision in left eye for six days and noticed a constantly moving floaters about in front of his left eye for the same duration. He did not complain of any symptoms other than a feeling of heaviness on the left side of his head. His general health was good. The patients gives a history of co-habitation with domesticated cattle and lives nearby forest.

His visual acuity (VA) in right eye was 6/6 (0.00 LogMAR) and left eye was 3/60 (1.30 LogMAR) respectively with no improvement in refraction, with otherwise unremarkable anterior segment and normal right posterior segment findings. The left fundus revealed a glistening white worm in the subfoveal region with continuously wriggling motion and surrounding retinal edema. Optical coherence tomography (OCT) showed a macular hole (Figure 1). Full blood count showed eosinophilia whereas biochemistry, serology, stool and urine examinations were normal. No any systemic abnormalities detected.

When the patient was scheduled for surgery, the worm had already migrated away from the macula with increased retinal edema and the surgery was abandoned (Figure 2). On the next day, the worm was present in the subfoveal region with part of it protruding through the macular hole. Surgery was carried out with 23 Gauge transconjunctival pars plana vitrectomy, posterior vitreous detachment with the aid of triamcinolone acetonide and the worm was extracted live and intact with the help of back flush needle. The worm was preserved in normal saline solution and sent for parasitological evaluation.

Macroscopically, the worm was a thin, whitish, thread like semitransparent, cylindrical structure measuring 15 mm in length. The microscopic examination divulged a microfilaria with coarse nuclei extending up to the tail which suggested *Loa loa* (Figure 3), however detailed histopathological examination couldn't be performed. Chest X-Ray (Figure 4) and peripheral blood smear revealed no evidence of systemic parasitemia. Tablet Ivermectin 9mg single dose was administered as per physician consultation.

The patient recovered without any complication and three months follow-up revealed a best corrected VA of 6/12 ((0.30 LogMAR) and spontaneous closure of macular hole on OCT (Figure 5 and 6).

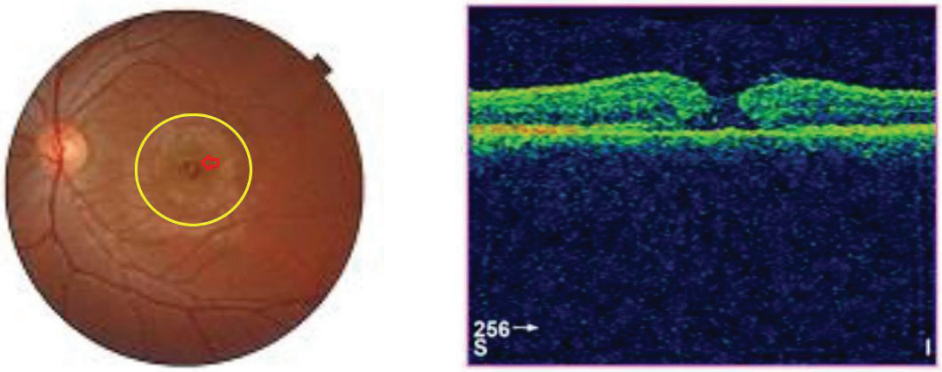

Figure 1: Pre-operative A.Fundus photo showing subretinal worm (red arrow) and retinal edema (yellow circle). B. OCT showing macular hole

Figure 2: Fundus photo showing photoaversion (red arrow depicts worm away from the macula and yellow circle denotes increased retinal edema).

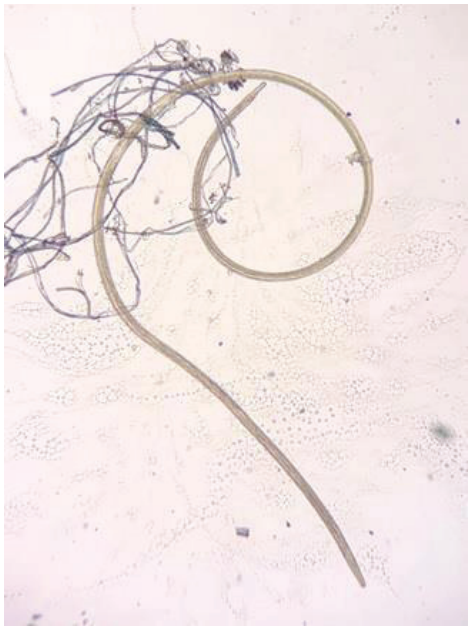

Figure 3: Microscopic appearance of the microfilarial worm.

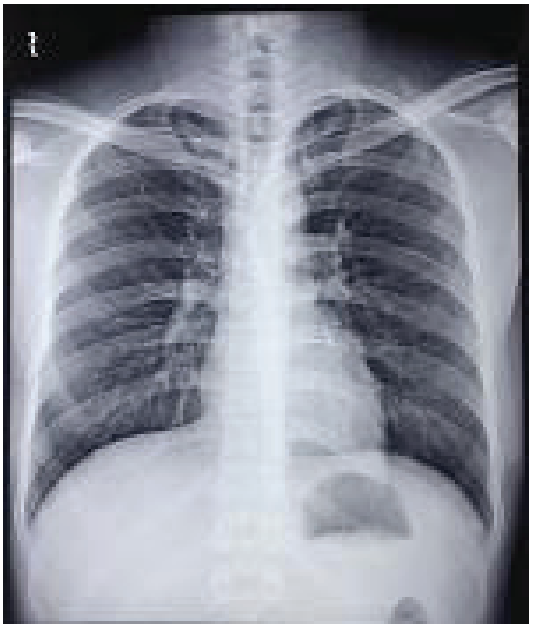

Figure 4: Normal Chest X-Ray appearance

1st Post-op 5th Post-op 2 weeks Post-op

Figure 5: Serial fundus photo of post operative period.

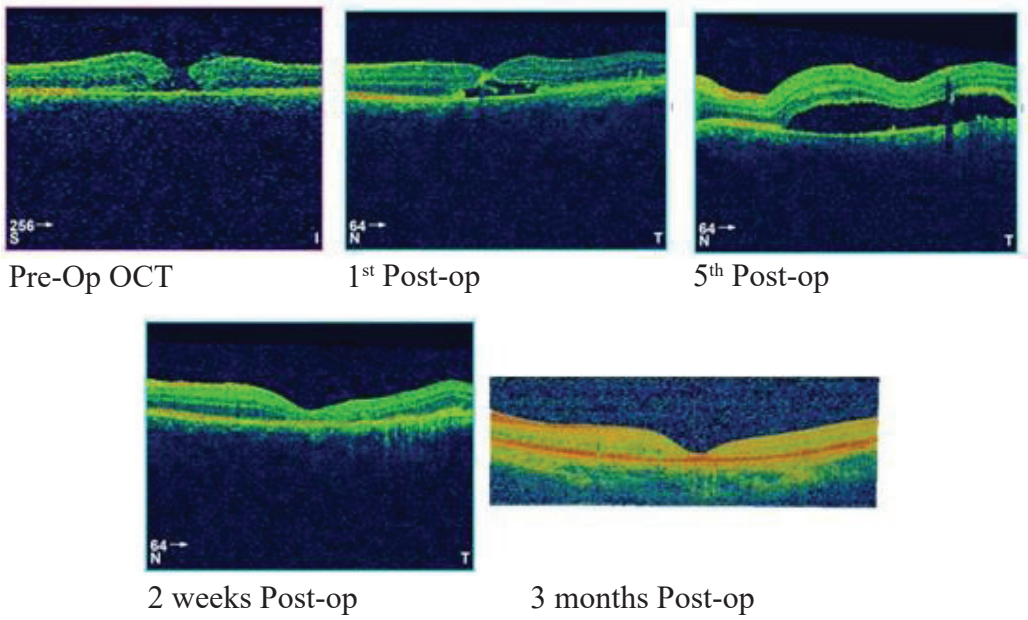

Figure 6: Serial OCT of post operative period.

Discussion

Loa loa is a sheathed nematode (roundworm) that lives freely in the subcutaneous tissues of humans. Its vector, in which the parasite undergoes larval stages, is a bloodsucking fly of the genus *Chrysops*. Adult worms (macrofilariae) are 30–70 mm long and can live for several years in the host. They produce microfilariae, which can be found circulating in the peripheral blood during the day. Most cases of loiasis are asymptomatic and clinical signs can appear years after infection (Padgett & Jacobsen 2008).

The classic clinical sign is pruritic calabar swelling, which is edema in the subcutaneous tissue caused by maturing larvae migrating away from the site where they were injected by the vector flies (Khetan 2007). Eye infections may occur when the adult worm meanders into the sub conjunctival tissues prompting the synonym "eye worm". The infection mostly remains asymptomatic for a long period. The microfilaria of *Loa loa* may not be often demonstrated in these cases, probably because the worms are not mature or only males are present in infection (Satyavani & Rao, 1993).

Loa loa is one of nine nematode worms that use humans as the definitive host. It is endemic in West Africa, where prevalence in some areas is as high as 50% (Kamgno & Boussinesq, 2001). However, the patient's history need not include recent foreign visit or travel to endemic area. After inoculation by an infected fly, adult worms take approximately 3–4 years to mature in the human host and have been reported to live for as long as 17 years (Padgett & Jacobsen 2008). Sporadic cases have been reported from other parts of the world including India (Barua et al, 2005).

Laser photocoagulation being used as first line of management for cases of diffuse unilateral subacute neuroretinitis, in which live worm can be identified. OCT is an additional tool other than fundus photograph, which may be helpful in understanding the amount of photoreceptor and RPE destruction caused by worm (Sheth et al, 2014). Subretinal nematodes are a rare but well-known etiology for severe exudative retinal detachments and endophthalmitis as well (Goodar,et al, 1985).

Blood films taken at noon and midnight are important in the detection and quantification of

microfilaraemia. Definitive diagnosis of filarial species is made parasitologically (Walther & Muller, 2003). The principal treatment used for loiasis is diethylcarbamazine, starting with 1 mg/kg/day and increasing over 3 days to 6 mg/kg/day. In heavy infestations, rapid microfilaricide may precipitate febrile reactions and encephalopathy, and pre-treatment with corticosteroids may mitigate this. Ivermectin and albendazole are alternative systemic treatments (Bowler et al, 2011).

To the best of our knowledge, this might be the first case of loiasis of posterior chamber of the eye reported from Nepal. The absence of microfilaria in the peripheral blood further corroborates the identity of the worm to be a male (Barua et al, 2005).

In summary, we report a case of loiasis encountered in a non-endemic region characterized by its subretinal location without the usual features of microfilaraemia and calabar swelling and managed surgically by worm removal in toto.

Acknowledgement

Mr. Ram Janaki Pandey, Optometrist, Bharatpur eye hospital for taking the fundus photos and recording OCT.

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