A rare case of giant subretinal migration of cysticercosis cyst with extensive epiretinal membrane and subretinal fibrosis

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Cysticercosis is caused by cysticercus cellulosae, the larval form of pork tapeworm. In intraocular cysticercosis the cyst enters the subretinal space via the choroid and then gains entry into the vitreous cavity by piercing the retina. It is well established that the cyst can incite extensive intraocular inflammation. Other complications such as epiretinal membrane and cataract have been reported in the literature. Thus far, epiretinal membrane in intraocular cysticercosis has been reported at the site of entry of the cyst into the vitreous cavity. The data on the extent of epiretinal membrane is sparse. We report a rare case of migrating subretinal cysticercosis with extensive epiretinal membrane and subretinal fibrosis.

Key words: Cysticercosis, epiretinal, fibrosis, membrane, migration, scolex, subretinal

Cysticercosis is caused by cysticercus cellulosae, the larval form of Taenia Solium. In the life cycle of Taenia Solium humans are the definitive hosts and pigs are the intermediate hosts.[1] If humans ingest food contaminated with eggs of Taenia Solium they act as an intermittent host. Embryo invades the blood stream after penetrating the intestinal wall and gets lodged in various organs.[2] It has been hypothesized that the cyst enters the subretinal space via the choroid through the short ciliary vessels. The cyst gains access into the vitreous cavity by piercing the retina.[3] The presence of the cyst in the eye can incite inflammation, more so when the cyst dies. The most common manifestations are pain, redness, diminution of vision, vitritis, and even panuveitis.[4] Rarely, epiretinal membrane has been reported in cases of intraocular cysticercosis.[5] We describe a rare case of migrating subretinal cysticercosis with extensive epiretinal membrane and subretinal fibrosis.

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Case Report

A 17-year-old female presented with diminution of vision in right eye since 3 months. This was associated with occasional pain and redness. On examination, best corrected visual acuity (BCVA) in right eye was 1/60 and 6/6 in left eye. Right eye anterior segment examination revealed broken posterior synechiae on anterior lens capsule [Fig. 1a]. Right eye fundus examination revealed hazy media due to vitritis. Fibrovascular proliferation was noted extending from the disc to end of arcade temporally. Nasal to the disc, cyst was noted subretinally with a motile scolex. Left eye examination was normal. Ultrasonography of right eye showed a cystic lesion nasal to the disc, with hyper-echoic foci within [Fig. 1b]. Patient was advised Computerised Tomography scan of brain to rule out neurocysticercosis and, pars plana vitrectomy was decided as the treatment.

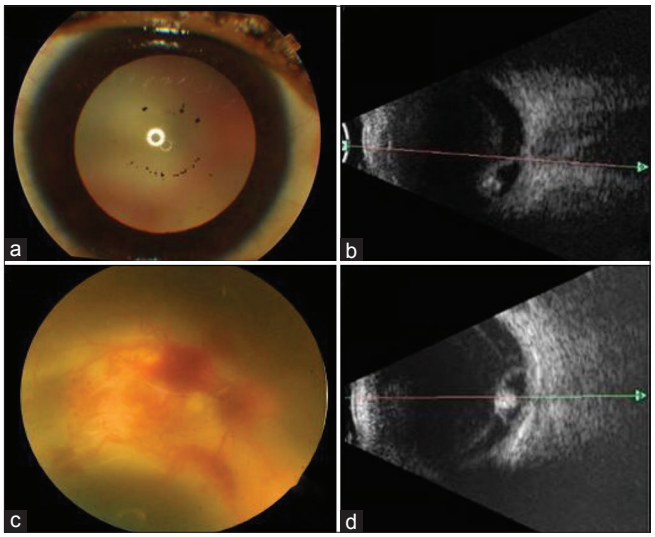

Figure 1: (a) Anterior segment photography of right eye at presentation showing broken synechiae on anterior surface of lens. (b) Ultrasonography of right eye at presentation showing cystic lesion nasal to the disc, with a hyperechoic foci within suggestive of cysticercosis cyst. (c) Color fundus photograph of right eye at 3 weeks demonstrating hazy media due to vitritis, a fibrovascular membrane extending from temporal arcade to inferonasal quadrant. (d) On ultrasonography the cyst was noted inferonasally

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The patient was lost to follow up and presented to us three weeks later. On right eye examination BCVA remained 1/60. Fundus examination revealed that the cyst, which was noted adjacent to the disc at presentation, had migrated anteriorly to the inferonasal periphery. Along the path of migration there was an extensive epiretinal fibrovascular membrane and subretinal fibrosis [Fig. 1c]. The scolex inside the cyst was immobile, implying that it was dead. On ultrasonography the cyst was noted inferonasally [Fig, 1d]. She underwent pars plana vitrectomy with removal of the fibrovascular proliferation [Fig. 2a and b]. The cyst was located inferonasally and was noticed to be protruding through the retina [Fig. 2c]. The cyst was removed trans-retinally using a cutter by applying minimal vacuum and it was aspirated into the cutter [Fig. 2d]. Retinectomy of the necrotic retina overlying the cyst was performed inferonasally and endolaser was performed with silicone oil as a tamponade [Video Clip 1]. At first post-operative visit, the BCVA was 2/60 and retina was attached, with extensive subretinal fibrosis noted extending from temporal to the disc to, the nasal periphery. At three months post-surgery, she had BCVA of 6/36 and retina was attached with extensive subretinal fibrosis [Fig. 3a]. She underwent silicone oil removal. On her last follow up 1 month post silicone oil removal, her BCVA was 6/60 and she had posterior subcapsular cataract with attached retina [Fig. 3b].

Discussion

Intraocular cysticercosis can involve either anterior or posterior segment. While anterior segment cysticercosis is rarely seen, posterior segment involvement is common. Kruger-Leite *et al*. reported that 35% of the cysts were found in the subretinal space, 22% in the vitreous, 22% in the subconjunctival space, 5% in the anterior segment, and 1% in the orbit.[6]

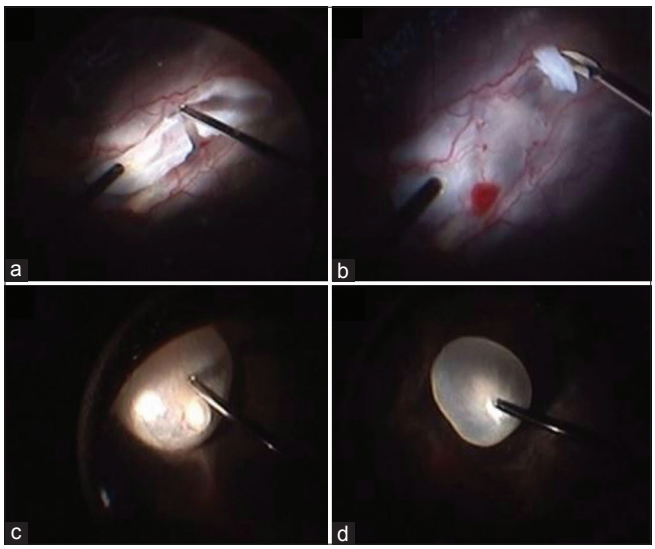

Figure 2: Still images of right eye captured intraoperative during pars plana vitrectomy. (a) Segmentation of the fibrovascular epiretinal membrane temporal to the disc using a 25-gauge cutter. (b) The residual membrane was dissected using intraocular scissors. (c) Subretinal cyst located subretinally in the inferonasal quadrant with the cyst protruding at the center. (d) The cyst was gently engaged with the vitrectomy cutter using minimal vacuum. The cyst was later aspirated into the cutter

It is hypothesized that the parasite reaches the posterior segment of the eye via the high flow choroidal circulation through the short ciliary arteries. The presence of cyst in the choroidal circulation can cause changes in the overlying retinal pigment epithelium, exudative retinal detachment, or focal choroiditis.[7] Once the cyst enters the subretinal space it can migrate into the vitreous cavity.

A dying cysticercosis cyst can incite a severe inflammatory response, due to the leakage of the toxins from the micro perforations present in the cyst wall.[4]

Manifestations of intraocular cysticercosis include severe inflammation involving both anterior and posterior segment, retinal detachment with proliferative vitreoretinopathy, secondary glaucoma, complicated cataract, hypotony, and phthisis.

Inflammatory reaction can be present even with a living parasite, and more so with vitreous cysts than subretinal cysts. This can explain the presence of extensive subretinal and epiretinal membrane in our case at presentation even when a live mobile scolex was noted in the cyst. At second visit this cyst was noted at inferonasal periphery and the membranes could be noted along the route traversed.

The pattern of epiretinal and subretinal membranes in our case suggests that subretinal migration of the cyst can incite intense inflammatory reaction both in pre and subretinal space. This localized membranous response to subretinal cyst migration has not been reported in the literature so far. A large case series of 22 eyes with ocular cysticercosis by Jon D. Wender *et al*. noted epiretinal membrane in 18.2% eyes. They also observed that epiretinal membrane was one of the major contributors for vision loss at presentation. The extent of epiretinal membrane was not commented on by Jon D. Wender *et al*. and no correlation was made with the migration of the cyst.[5] As authors of this report had the opportunity to examine the eye twice in a gap of 3 weeks, the route traversed by the cyst and corresponding membranous reaction could be traced.

In the literature the extent to which the subretinal cyst migrates has not been elaborated and, our case demonstrates that the cyst can migrate in the subretinal space extensively.

Our case demonstrates that cysticercus cyst can migrate extensively in the subretinal space. This migration can incite localized inflammatory response in the form of both pre-retinal and subretinal membranes along its path. So, this highlights the need to counsel the patients to undergo early surgery.

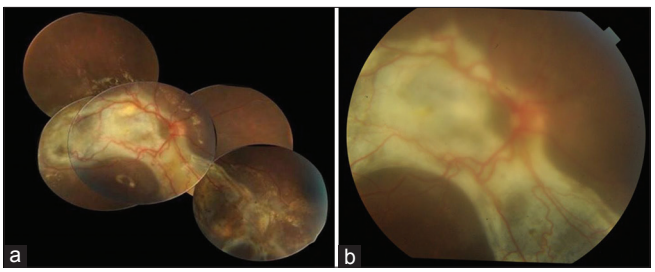

Figure 3: (a) Color fundus montage of right eye 3 months post-surgery showing attached retina with extensive subretinal fibrosis. (b) Color fundus photo 1 month post silicone oil removal showing attached retina with subretinal fibrosis involving macula. Media was hazy due to posterior subcapsular cataract

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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