Subconjunctival Cysticercosis: A Case Report

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Cysticercus cellulosae occurs worldwide, mainly in poor regions with insufficient sanitary conditions. Ocular cysticercosis develops from Taenia solium larvae in ocular structures. The eye could be the prime location for such parasitic infection because of its rich vascularization and almost all structures such as orbit, extraocular muscles, conjunctiva, anterior segment, and posterior segment can be involved. Diagnosis is usually made on history, clinical examination, radiological findings, and histopathology. We report a case of a 13-year-old girl who presented with a subconjunctival cyst. It was diagnosed as implantation cyst based on history and clinical findings. Complete surgical excision was done. On histopathological examination, ocular cysticercosis was confirmed. The patient was given oral albendazole and prednisolone, postoperatively. The ocular cysticercosis is an oft-reported problem in North India. Surgical excision is the treatment of choice. Inaccessible cysts are best treated with oral albendazole along with prednisolone.

Keywords: Ocular cysticercosis, Subconjunctival cysticercosis, Taenia solium

INTRODUCTION

Parasitic infections are a common cause of morbidity in developing countries. The cysticercus cellulosae occurs worldwide, mainly in poorly developed rural regions with insufficient sanitary conditions. The cysticercus cellulosae, the pork bladder worm, is the larval stage (cysticercoid and metacestode) of Taenia solium, a human tapeworm parasite that has pig and wild boars as intermediate hosts and humans are the definitive hosts getting infected by eating infected pork. The cysticercosis is common in areas of inadequate sanitation, and the infection is acquired by ingestion of tapeworm eggs through contaminated food and water or dirty hands. Latin America, Southern Africa, India, Southeast Asia, and Eastern Europe are the most frequent locations of its occurrence.1,2

Ingestion of encysted pork will not directly cause cysticercosis - It produces an intestinal infection of the adult tapeworm and a carrier state for the T. solium eggs. These eggs shed in human feces may contaminate food such as fruits and vegetables and water. Infected food handlers with poor hygiene can also be a source of fecal-oral contamination. Autoinfection in such people can occur due to the retrograde transmission of proglottids from the intestines into the stomach with subsequent release of T. solium eggs into the human gut.

When ingested these eggs become oncospheres in the human gut which penetrate the intestinal wall, and they invade the blood stream, lodging in various organs such as brain, skeletal muscles, eyes, and subcutaneous tissues. Thus, even populations who do not eat pork (e.g., vegetarians) can develop cysticercosis. The growth of larvae of T. solium in ocular tissues causes ocular cysticercosis. The ocular cysticercosis can involve any part of the eye. Approximately 4% involve the eyelid or orbit, 20% involve the subconjunctival space, 8% involve the anterior segment, and 68% involve the posterior segment.3

CASE REPORT

The 13-year-old girl came to the ophthalmology department with the chief complaint of a pea sized painless swelling in the left eye, gradually enlarging over 20 days, which was associated with foreign body sensation in the eye. There was a history of mild trauma in the same eye with a wooden twig 2 months back. On taking further history, it was found that patient was vegetarian. No history suggestive of intestinal parasitic infestation was found. No other significant history was elicited.
On examination, her vision was normal. There was no restriction of extraocular movements. Locally, there was a white, opaque subconjunctival cystic swelling measuring approximately 8 mm × 5 mm from near medial canthus reaching up to 3-4 mm from the limbus with surrounding mild hyperemia. The swelling was deep to the conjunctiva, firm in consistency, and the overlying conjunctiva could not be moved. Mild tenderness was elicited on deep palpation. We suspected the mass to be a secondary inclusion cyst, and a provisional diagnosis of traumatic implantation cyst was made which was consistent with the history given (Figure 1). Fundus examination was normal. The routine general examination was normal. On complete blood count, there was mild eosinophilia (1200 cells/µL). The rest of the counts was within normal limits. Stool examination was also negative for any parasite.

Total excision of the cyst was planned under local anesthesia (Figures 2-4). The conjunctiva covering the cyst along with Tenon’s capsule was held with non-traumatic forceps, a small incision was given and the blunt tip of scissors introduced between cyst and Tenon’s to separate the cyst from the surrounding tissue. Care was taken to keep the tip of the corneal scissors away from the cyst. After separating the cyst from all sides, its base was dissected carefully, as the base of the cyst ruptures the most common during the dissection. Conjunctiva above the cyst was pulled in the opposite direction of the dissection area so that fibrous attachments at the base of the cyst were stretched and became easily visible which helped in intact cyst removal.

On gross histopathological examination, the cut-surface showed a small cystic cavity with one white spot in the cyst (Figure 5). Microscopic examination of the cut section showed a cystic cavity with cysticercus larva having invaginated scolex and hooklets with an outer integument. Surrounding host tissue showed mixed inflammatory response comprising of neutrophils, eosinophils, lymphocytes as well as plasma cells. Congestion of the wall is also seen with fibrous tissue proliferation. No

![Figure 1: Small hemispherical swelling in medial quadrant of white of the left eye](image1.png)

![Figure 2: Separation of the conjunctival cyst from the overlying conjunctival tissue](image2.png)

![Figure 3: Dissection of conjunctival cyst from its base](image3.png)

![Figure 4: Removal of conjunctival cyst as a whole](image4.png)
calcification was seen (Figure 6). A diagnosis of cysticercus cellulosae was made.

Since the diagnosis was unexpected, we ordered further investigations to rule out the systemic spread of cysticercosis, such as,

Contrast-enhanced computed tomography (CECT) head and spinal cord
A. which showed:
   i. Bulky and edematous medial rectus muscle of left eye
   ii. Intracranial cavity showed findings within normal limits
   iii. CECT spinal cord was also within normal limits.
B. Immunoglobulin G enzyme-linked immunosorbent assay (ELISA) for cysticercosis, which patient refused.

Treatment
Since medial rectus was found to be edematous, and the patient had refused further investigation to rule out cysticercosis elsewhere in the body, empirical treatment with oral albendazole and prednisolone was decided upon. The patient was admitted, and albendazole (15 mg/kg body wt./day) in two divided doses for 3 weeks along with prednisolone (1 mg/kg body wt./day) tapering over 3 weeks was given (Figure 7a and b).

DISCUSSION
The first case of ocular cysticercosis was reported by Sommering in 1830 and larva was demonstrated and extracted by Schott in 1836.\textsuperscript{1,2} The ocular and adnexal involvement occurs in 13-46% of infected patients.

The commonest site of involvement in ocular cysticercosis is sub-retinal (35%) followed by vitreous (22%), conjunctiva (22%), anterior segment (5%), and orbit (1%).\textsuperscript{3} Involvement of conjunctiva is the most common reported in India.

Reports point to the predominance of intraocular involvement in the western countries and in North India, and extraocular involvement in South India. The reason for this might be differences in the types of platyhelminths in the different areas or perhaps due to climatic or environmental factors.\textsuperscript{4,5}

The cysticercosis subconjunctival lesions tend to present as hyperemic epibulbar masses that are sometimes fluctuant. Cysticerci of the posterior segment are usually seen in the vitreous body or in the subretinal space. The parasite is brought via the posterior ciliary artery to the subretinal space usually in the region of the posterior pole.

Diagnosis of cysticercosis is usually made on history, clinical examination and radiologic investigations and by histopathology when it can be excised. The clinical manifestations of ocular cysticercosis, like elsewhere in the body are determined by the location, size and by the host’s immune status and inflammatory reactions.

The association of brain tissue cysticercosis is very rare with eye cysticercosis.\textsuperscript{6} The same is seen in our case. There was no involvement of brain parenchyma in our case.
Few studies have advocated the use of oral albendazole along with prednisolone for ocular cysticercosis that is not amenable to surgical excision. We also opted for empirical treatment with the same drugs post-operatively since the medial rectus adjacent to the site of the cyst was found thickened on CT scan, and because patient had refused ELISA test on monetary grounds.7-9

CONCLUSION

Ours was a case of subconjunctival cysticercosis cyst which was diagnosed histopathologically after surgical excision. The case showed neither Taenia ova in stool nor clinical or radiological evidence of cranial or subcutaneous cysticercosis except the mild eosinophilia. The case was well managed surgically in which the cyst was excised with intact walls to prevent recurrence.

A high index of suspicion is required for the diagnosis of ocular cysticercosis because of the endemic nature of the infestation in this geographic location. CT scan, ultrasonography B-scan, and ELISA for anti cysticercal antibodies help to establish the diagnosis.

REFERENCES