International Journal of Environmental Sciences
ISSN: 2229-7359
Vol. 11 No. 20s, 2025
https://www.theaspd.com/ijes.php

Successful Nonsurgical Management Of Extraocular Cysticercosis In A Young Patient – A Rare Case Report

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ABSTRACT

Cysticercosis is an infection caused by Taenia solium, a cestode or tapeworm that preferentially affects the subcutaneous tissue, brain, muscle, and the eye. Humans become accidental intermediate hosts when they ingest raw or uncooked pork. In general, cysticerci preferentially infests subcutaneous tissue (24.5%), brain (13.6%), and the eyes (10.8%), a function of these tissue's high vascularity. Ocular cysticercosis may be extraocular (in the subconjunctival or orbital tissues) or intraocular (in the vitreous, subretinal space or anterior chamber). If the condition is misdiagnosed or left untreated can lead to blindness or spread to vital organs. Cysticercosis is a preventable cause of blindness. In this article we present a case report of an 8-year-old child who was diagnosed with extraocular cysticercosis of right lower eyelid. After a thorough clinical and radiographic evaluation his condition was managed with oral antihelminthics and steroids. Non-surgical management of ocular cysticercosis especially in young children is highly recommended to prevent spread of infection to other vital organs especially the brain which can be fatal.

KEYWORDS: *Cysticercosis, Ocular cysticercosis, Orbital cysticercosis, Extraocular muscle cysticercosis, Imaging in cysticercosis.*

INTRODUCTION

Cysticercosis is an infection caused by Taenia solium, a cestode or tapeworm that preferentially affects the subcutaneous tissue, brain, muscle, and the eye. The disease is caused by larval cysts of the tapeworm. Humans become accidental intermediate hosts when they ingest the eggs, hence, cysticercosis in humans is a dead-end cycle since the cestode life cycle cannot be completed.[1] Cysticercosis is endemic to certain developing regions, including Africa, India, East Asia, Mexico, and Latin America. However, because of migration from endemic to nonendemic regions in recent years, global prevalence is on the rise. [1,2] In general, cysticerci preferentially infests subcutaneous tissue (24.5%), brain (13.6%), and the eyes (10.8%), a function of these tissue's high

vascularity. [1,3] The clinical presentation in these tissues appears to be influenced by blood flow patterns, larval size, and additional immune-related processes.
Ocular cysticercosis may be extraocular (in the subconjunctival or orbital tissues) or intraocular (in the vitreous, subretinal space or anterior chamber). In this article we present a case report of an 8-year-old child who was diagnosed with extraocular cysticercosis of right lower eyelid. After a thorough clinical and radiographic evaluation his condition was successfully managed with oral antihelminthics and steroids.

PARASITOLOGY AND PATHOGENESIS

When humans ingest raw or undercooked pork, the larvae mature into an adult tapeworm in their intestine, where it can survive up to 25 years.[4] Humans get cysticercosis when they swallow these eggs that are excreted in the stool of people with the adult tapeworm. This happens when people drink water or eat food contaminated with tapeworm eggs or by external autoinfection when they put their contaminated fingers in their mouth. Cysticerci travel via the hematogenous route and usually lodge themselves at sites with high glycogen content (Miller 1995).Microscopically, the cysticercus consists of a vesicular wall, clear cystic fluid, and a scolex. The vesicular wall encloses the invaginated scolex that contains the suckers, hooklets and the neck.[1,5]
When an individual harbors the live larva, he or she may not exhibit any disease specific signs or symptoms for years. If the parasite is left untreated, it eventually dies after 2–4 years, releasing toxins which induce intense inflammatory reaction and could lead to dreadful sequelae (Gupta et al. 1998).[6]

CASE REPORT

An 8-year-old male child was brought to outpatient department (OPD) of Ophthalmology of D.Y. Patil medical hospital, Nerul, Navi Mumbai, India with a chief complaint of mild lower eyelid swelling in the right eye, progressively increasing in size since approximately 45 days. Patient's relative also gave a history of an alleged history of injury while playing and suspected that the swelling developed post the incident. There was no complaint of any diminution of vision or pain during eye movements. There was no axial proptosis, but the right eye had excess tearing and there was a significant amount of inflammation and ecchymosis with respect to the right lower eyelid. (Figure 1) Department of Ophthalmology referred the patient to the department of Oral and Maxillofacial surgery for further evaluation. On palpation, the mass was immobile, hard and non-tender. Visual acuity was within normal limits with respect to both right and left eye. The swinging-flashlight test was done, and no relative afferent pupillary defect (RAPD) was noted in the right and left eye. Regional lymph nodes were not enlarged. General examination revealed no other abnormality. A provisional diagnosis of periorbital abscess or hematoma of right eye or fracture of the right inferior orbital rim was made.

INVESTIGATIONS

Routine investigations showed eosinophilia.
Computed Tomography (CT) of orbit findings – no bony injury/ fracture, hyperdense area within the right retrobulbar space inferior to the right orbit probably suggestive of hematoma.
Ultrasonography (USG) colour doppler findings – hypodense lesion behind the right lower eye without vascular abnormality.
Magnetic Resonance Imaging (MRI) Brain + Bilateral Orbits (plain) – well defined signal intensity lesion involving the right inferior rectus muscle with minimal adjacent fat stranding? Infective aetiology (cysticercosis). No significant intracranial abnormality detected. Hypo-intense cystic lesion and hyper-intense scolex was noted with respect to the right orbital region. (Figure 2 and Figure 3)

TREATMENT

Patient was first started on analgesic dosage for the symptomatic treatment till the final diagnosis was made. Medical management was started post the MRI report. A combination of oral antihelminthics (albendazole, praziquantel) and oral steroids are the main stay of medical management in extraocular cysticercosis.[1] Patient was then put on oral albendazole (15 mg/kg/day) and oral prednisolone (1 mg/kg/day) for 4 weeks. Oral albendazole was stopped after 4 weeks and the oral prednisolone dosage was slowly tapered over the next month.

Within a few days of starting the above treatment, patient started showing signs of improvement and swelling started regressing.

FOLLOW UP

A regular follow up was done on OPD basis. After one month there was significant resolution in the condition. (Figure 4)

DISCUSSION

Orbital cysticercosis can present with varied signs and symptoms like acquired strabismus, diplopia, recurrent redness, and proptosis. It must be differentiated from other benign and malignant conditions presenting as ocular mass. One or more extraocular muscles may be simultaneously involved, although a propensity for involvement of the superior muscle complex and the lateral rectus muscles has been reported. [7,8]

Involvement of optic nerve can cause significant visual morbidity, and in patients with intravitreal cysts and subretinal cysts not involving macula have better functional outcomes with appropriate intervention. Visual results may be disappointing in sub macular cysticercosis due to disruption of photoreceptors, atrophy of retinal pigment epithelium and chorioretinal scarring; however, early intervention is imperative to prevent significant visual loss.[1]

The main determinant of the outcome of ocular cysticercosis is the location of the cyst. In general, intraocular cysts require surgical intervention, and extraocular cysts often respond well to medical management. Most cases of extraocular cysticercosis completely respond to medical therapy; however, the regression rate and secondary sequelae decides the eventual anatomical and visual recovery. Antihelminthic drugs are usually contraindicated in intraocular cysticercosis because, following the lysis of cyst, the intense inflammatory reactions can threaten vision.[1]

A combination of oral antihelminthics (albendazole, praziquantel) and oral steroids are the main stay of medical management in extraocular cysticercosis. Albendazole is a cysticidal drug, which depletes the glycogen stores of parasite by inhibiting its glucose uptake. Following cysticidal therapy, the death of parasite can result in massive release of larval antigens, leading to a severe inflammatory reaction, hence the need for systemic steroid coverage. Apart from this, oral steroids have been also reported to increase the plasma levels of albendazole. [1,9] Some patients with extraocular cysts may need surgical excision when there is no response to medical therapy.[1]

Patients with intraocular cysticercosis often need surgical intervention. Anterior chamber cysts have been managed by paracentesis, cryoextraction, erysiphake extraction, extraction with capsule forceps, and with visco-expression.

Cysticercosis is a preventable infection that is predominantly seen in low-socioeconomic sectors with poor hygiene. Thus, improving sanitation and creating public awareness are proven methods that needs to be practiced widely. [1,10] Apart from this, avoiding salads and undercooked foods, maintaining drinking water hygiene, and other described precautions are prophylactic [1,11]

CONCLUSION

Cysticercosis is a preventable cause of blindness. Promoting hygiene and creating awareness needs to be the long-term goals to alleviate this underestimated public health problem. In clinical practice, if a case of possible ophthalmic cysticercosis is encountered, then a high index of suspicion, thorough examination, and timely imaging are needed to reach the final diagnosis. Thereafter, treatment must begin as soon as possible, considering the clinical site, intracranial condition, and visual results. A single observer-based customised approach is advised throughout the length of medical therapy, and regimens that combine steroids and antihelminthics are favoured over standalone drug methods. An early diagnosis and prompt treatment is the key to successful management of ocular cysticercosis.

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Figure 1 - Right lower eyelid swelling

Figure 2 - MRI brain + bilateral orbits- coronal cut (red arrow shows the scolex)

Figure 3 - MRI brain + bilateral orbits- axial cut (red arrow shows the scolex)

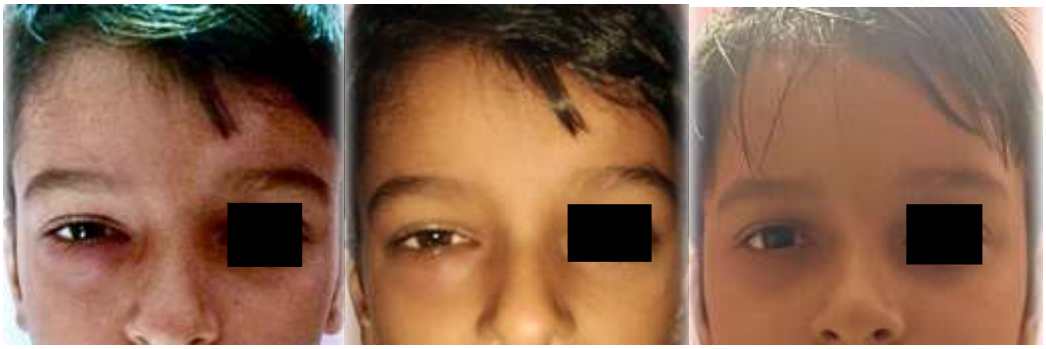

Figure 4 - Resolution of swelling of right lower eyelid

STATEMENTS
STATEMENT OF ETHICS –
CONSENT TO PUBLISH STATEMENT – TAKEN
CONFLICT OF INTEREST – NONE
FUNDING – NONE
CLINICAL TRIAL NUMBER – NOT APPLICABLE
CONSENT – WRITTEN INFORMED CONSENT WAS OBTAINED FROM THE PATIENT FOR PUBLICATION OF THIS CASE REPORT AND ACCOMPANYING IMAGES.

AUTHOR CONTRIBUTIONS –
Dr. Yogesh Kini – writing of manuscript, patient evaluation, follow up
Dr. Kalindee Padmawar – writing of manuscript, follow up, collection of data
Dr. Bhagyasree V – photographs, follow up
Dr. Vrushank Kadakia – collection of data, writing of manuscript
Dr. Deepanshu Parashar – photographs
Dr. Vishwa Shah- collection of data
Dr. Shyon Banjan- collection of data

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