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Case Report

# Isolated eye lid Cysticercosis: Report of a rare case with review of literature

Amoolya Bhat, Aparna Narasimha *, Vijaya C.

*Department of Pathology, Sapthagiri Institute of Medical Sciences and Research Centre, Bangalore.*

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## Abstract

Cysticercosis is a parasitic infection caused by larval form of Taenia solium. Humans become the intermediate hosts for this parasite when the eggs are consumed through contaminated food and water. It is endemic in India. Approximately 50 million people worldwide are infected with the Taeniasis/Cysticercosis complex and 50,000 succumb to death annually. The commonest site of cysticercosis is central nervous system in humans followed by muscles, eyes and subcutaneous tissue. Ocular or adnexal involvement occurs in 13-46% and 1.8-4.5% of the Western and Indian patients suffering from cysticercosis, the commonest ophthalmic site being subretinal space. The anterior segment is the commonest location in Indians where as in Western population it is posterior. The orbit is involved in only 1% of the cases. Only a handful of cases of eyelid cysticercosis have been reported in the past. We report a rare case of isolated eyelid cysticercosis in a young girl who presented with an asymptomatic slowly growing painless mass in the right eyelid.

**Key words:** Cysticercosis, eyelid, Histopathology.

## Introduction

Cysticercosis is endemic in Mexico, Africa, South East Asia, Eastern Europe, Central and South America and India. Prevalence is high in Northern states of Bihar, Orissa, Uttar Pradesh and Punjab of India. The prevalence of Taeniasis was 0.5-2% among the inpatients of hospitals in Northern India to 12–15% in labour colonies [1]. Neurocysticercosis is the commonest form of human cysticercosis worldwide, other sites being muscles, subcutaneous tissues and eyes [1,2]. Isolated eyelid cysticercosis without neuromuscular involvement is very rare [2]. We present an uncommon case of isolated eyelid cysticercosis diagnosed after histopathological examination.

## Case History

A 17 years old girl presented with a painless slowly growing swelling over the right upper eyelid since two years. There were no other significant symptoms. On examination the swelling was firm. The visual acuity, movement of eyeball, and fundoscopy were unremarkable. The left eye was unremarkable. External angular lipodermoid, accessory lacrimal gland and tumor of lacrimal gland were the clinical diagnoses considered.Her haemogram was unremarkable. CT scan showed a well defined thick walled ovoid cystic lesion measuring 1x0.7cm is seen in the right upper eyelid, anterior to zygomatic bone. Calcifications, perilesional infiltrations, intraorbital and intracranial extensions were absent. Bilateral optic nerves, globes and the extraocular muscles were unremarkable.

The features were suggestive of sebaceous cyst. The swelling was excised and sent for histopathological examination.The gross specimen consisted of a single grey brown nodule measuring 1x0.8x0.5cm. Cut surface was gelatinous and grey white (Fig. 1a). Microscopy revealed a cystic structure containing degenerating cysticercus larva, caudal end of which showed duct like invaginations lined by homogenous membrane. Parenchymal layer showed mesenchymal cells and calcerous spherules. Scolex had features of hyaline degeneration. Hooklets and sucking discs were not discernible. Cyst wall showed mixed inflammatory cells composed predominantly of eosinophils embedded in fibrous tissue(Fig.1 b-d).

*Corresponding Author

Dr. Aparna Narasimha, Department of Pathology, Sapthagiri Institute of Medical sciences and Research Centre, Bangalore.

Email Id : Sonrichie14@gmail.com.





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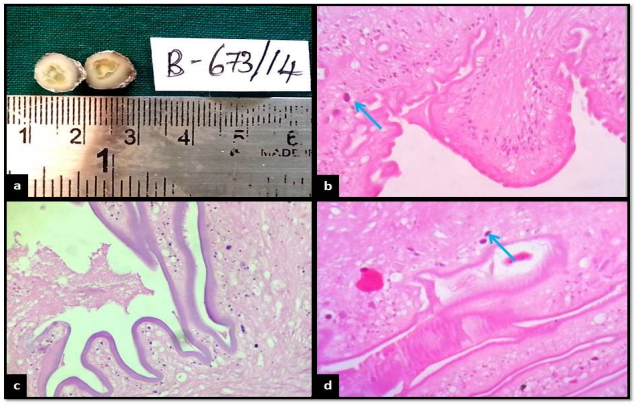


Figure 1: (a) Gross photograph showing gelatinous grey white cut surface. (b)Photomicrograph of larva showing row of tegumental cells with small nuclei(H&E;X400). (c) and (d) The caudal end of the larva seen as the duct-like invaginations lined by the homogeneous membrane and parenchymal layer showing ovoid basophilic calcarous spherules (blue arrows)(H&E;X400).

## Discussion

Cysticercosis is a parasitic infection caused by larval form of a cestode, Taenia Solium. The human being becomes the intermediate host by ingesting the eggs in contaminated eatables like raw/ undercooked pork, raw vegetables and drinking water.[2] . Cysticercosis seroprevalence among the healthy blood donors was 6.5% in Pondicherry and 22.4% in rural India. Solitary lesion is the most common presentation in India, incidence being 47.7% - 53.4% [1].Ocular cysticercosis accounts for 1.4-4.5% cases of cysticercosis in India [3]. Orbital cysticercosis was the commonest ocular manifestation in Southern India [4]. Conjunctival cysticercosis more common Indian patients as compared to others [2].

The frequency of occurrence of cysts in the eye is, subretinal (35%), vitreous(22%), conjunctiva (22%), anterior segment (5%) and orbit(1%). The eyelid is involved in 0.6% of cases. Other studies claim that involvement of eyelid or orbit is 4%, subconjunctival space is 20%, anterior segment is 8%, and posterior segment is 68% [1,2]. Ophthalmic cysticercosis accounts for 1–3% of all orbital infections. Extraocular muscle is the commonest intraorbital site [2]. Medial rectus is commonly involved followed by lateral rectus and superior oblique, superior rectus is rare. Our case was an isolated eyelid cysticercosis without involving muscles, incidence of which is about 0.6%. [2]. Isolated cysticercosis without central nervous system involvement[5] and simultaneous involvement of brain and eye can occur [1,2]. Bilateral ocular involvement occurs in disseminated cysticercosis and is rare.

Left eye is more commonly affected than right and medial aspect is more frequently involved than lateral aspect [2]. In our case, no other organ was affected except right eye.

CT scan shows, in vesicular stage, hypodense area containing hyperdense scolex surrounded by non enhancing cyst wall, in colloidal vesicular stage, ring enhancing cyst surrounded by edema and hyperintense fluid, in nodular stage, enhancing nodule surrounded by edema, in calcified stage, single or multiple calcified nodules. MRI shows hypointense cyst with a hyperintense scolex, it fails to detect calcified cyst [1].Fine needle aspiration of cysticercus cyst shows clear fluid rich in eosinophils, lymphocytes, neutrophils, multinucleated giant cells, fibrillary material with embedded multiple small nuclei, and very rarely hooklets[5,6].Grossly cysticercus cysts appear as round or oval vesicles, ranging in size from a few millimetres to 1–2 cm. A giant cyst can reach several centimeters in diameter. Viable cysts are translucent, filled with clear fluid through which the scolex can be seen as a whitish nodule of 2–3 mm diameter. Histopathologically larva within the cyst cavity is surrounded by double layered membrane and a connective tissue capsule having inflammatory cells[7].The cephalic end of the larva reveals an invaginated scolex having four sucking discs and 22-32 refractile hooklets arranged in two rows. The caudal end of the larva reveals duct-like invaginations lined by a homogenous membrane. The outer, cuticular/ tegumental layer of larva appears smooth and hyalinized. Beneath this is a row of tegumental cells. The inner layer or parenchyma is loose and reticular, containing mesenchymal cells and spherical, noncellular calcerous corpuscles which appear bluish purple in hematoxylin and eosin stained sections [8].

In viable cysts taeniastatin and other molecules evade host cellular immune response. Appearance of HLA molecules on the surface of the parasite and physical factors such as non-expansile host tissue cause parasite degeneration [6]. Cyst involution has three stages durations of which depend upon host immunity. The colloidal stage shows opaque and dense vesicular fluid and irregular, shrunken edges. The scolex shows hyaline degeneration. Eosinophils, lymphocytes and histiocytes appear. In granular stage coarse mineralized granules replace scolex and wall shows thickening due to fibrosis and granulation tissue. Calcified stage follows granulomatous reaction, fibrosis and calcification of parasitic debris. Calcification starts in the cephalic portion and progresses to the wall, forming a rounded, whitish, calcified nodule [1,8].

In our case the cyst was in colloidal stage as the scolex showed hyaline degeneration. Indirect haemagglutination tests (IHA) test are more sensitive and specific than complement fixation tests (CFT). Enzyme-linked immunoblot transfer blot (EITB) assay has high sensitivity and specificity and can demonstrate serum or CSF anticysticercal antibodies. Enzyme linked immunosorbant assay is widely available, but has low sensitivity and specificity. Serology may be negative in isolated cysts [1]. Vaccinating the pigs in endemic regions can prevent taeniasis and human cysticercosis. Health education programmes, meat inspection and better animal husbandry practices can reduce the risk of cysticercosis. Mass administration of antihelminthic agents in endemic areas can reduce formation of carrier state [1].

Albendazole and praziquantel are used in human cysticercosis. Toxins from the involuting cysticercus cause inflammatory reaction leading to vitritis and loss of vision. Thus intraocular and central nervous system involvement should be ruled out and corticosteroids should be used with larvicidal drugs in such cases. Intraocular lesions are treated surgically [1,2].

## Conclusion

We present a rare case of isolated eyelid cysticercosis in a young girl. It is common in developing countries and should be suspected as a differential diagnosis of subcutaneous swellings. A fine needle aspiration of the swelling could have prevented surgery in this case. However, radioimaging of common sites like brain and intraocular areas are a must to prevent inflammatory response following antihelminthic agent induced death of the larva.

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