# A Rare Case Report of Disseminated Cysticercosis

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## Abstract
One of the most important parasites which frequently causes blindness in humans is the cysticercus cellulosae, in which humans are the intermediate hosts in the life cycle. Ophthalmological involvement can affect eyelids, conjunctiva, anterior chamber, uvea, vitreous, retina, extra ocular muscles and optic nerve. We report the case of a 55 years old female who presented with multiple swelling in all limb, difficulty in walking and loos of vision in right eye. On ocular examination, there was subconjunctival cyst in inferior forniceal region in left eye and ill-defined ruptured cyst in vitreous cavity in right eye. On physical examination, multiple cystic swellings were observed over her skull, arms, forearm, thighs, fingers and toes. Simultaneous involvement of eye, limbs and CNS is rare in routine scenario. Diagnosis of cysticercosis is based mainly on orbital imaging because of its highly specific appearance. Medical therapy is the main stay of treatment.

**Keywords:** Disseminated cysticercosis, ocular cysticercosis, neurocysticercosis.

## Introduction
Cysticercosis is a preventable cause of blindness in India.[1] Being endemic, ocular cysticercosis accounts for 1.4%-4.5% cases of cysticercosis in India. It usually affects individuals aged 10-30 years. [1] Involvement of eyelid or orbit occurs in 4% cases, subconjunctival space in 20%, anterior segment in 8%, and posterior segment in 68%.[2] It is a parasitic infestation caused by Cysticercus cellulosae, which has a complex two-host life cycle and human beings are the only definitive hosts, whereas both humans and pigs can act as intermediate hosts. The first case of a live anterior chamber cysticercosis was reported in 1829 by Soemmering.[2] Neural cysticercosis was recognised as an international public health issue by the World Health Organization. Entry of the Taenia solium eggs into the human intestine can occur either through autoinfection or by ingestion or inhalation of egg-contaminated food or water. These cysticerci are then carried by the bloodstream to muscles, brain and subcutaneous tissues, causing

varied clinical manifestations.[3] Association between orbital and systemic cysticercosis is uncommon. We present here this rare case report with a multi-organ involvement.

## Case Report

A 55 years female residing in a tribal area of Madhya Pradesh presented to us with complaints of multiple swelling in all four limbs and face for 1 year, difficulty in walking for 8 months and loss of vision in right eye followed by left eye from 8 months. The patient had not sought any consultation anywhere before and there was no history of other systemic disease or surgery. The swellings did not increase in size on bending forward, coughing or sneezing. There was no history of diplopia, trauma, fever, malaise, or weight loss but the patient did give a history of eating uncooked meat.

On ocular examination her visual acuity in right eye (RE) was no perception of light and 6/12 on Snellen's chart in left eye (LE) which was not improving with pinhole. In the RE, anterior segment examination was found to be normal except for a relative afferent pupillary defect and mild restriction of adduction. . In the LE, there was a single, well defined subconjunctival cyst measuring approximately 10×5 mm in inferior forniceal region whose posterior limit could not be delineated. **(Figure 1)** Intraocular pressure (IOP) by Goldmann applanation tonometer was 12 mm Hg in RE and 10 mm Hg in LE respectively.


**Figure 1: Showing left eye subconjunctival cyst.**

**Figure 2: Showing cystic swelling in the body**

On general physical examination, the patient was well oriented to time, place and person and her vitals were stable. Multiple cystic swellings were observed over her skull, arms, forearm, thighs, fingers and toes. **(Figure 2)**

On fundus examination with an indirect ophthalmoscope, there was an irregular ill defined ruptured cyst in the vitreous cavity **(Figure 3a)** with grade III vitritis in RE and 0.8 cup disc ratio with no other abnormalities in LE. A-Scan ultrasonography of the RE showed high amplitude spikes corresponding to the cyst wall and scolex while B-Scan ultrasonography showed hanging drop sign i.e. hyper-reflective echoes corresponding to the cyst with the scolex attached to the inner wall **(Figure 3b)**

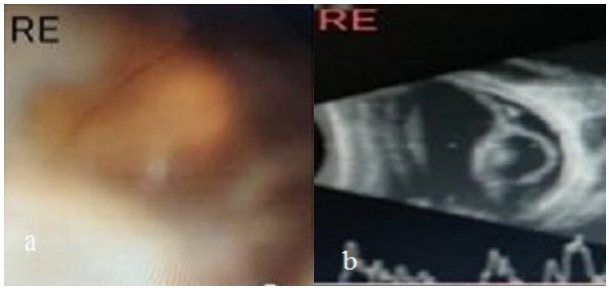


**Figure 3:- 3a) showing ruptured cyst in the vitreous cavity in right eye. 3b) showing USG of right eye (A-scan and B- scan)**

Blood investigations including complete blood counts, erythrocyte sedimentation rate and C - reactive protein were within normal limits. MRI brain with orbit confirmed the diagnosis of cysticercosis with intracranial involvement. Multiple small cystic lesions showing peripheral enhancement and adjacent oedema involving bilateral cerebral hemispheres, bilateral ganglio-capsular regions, cerebellar hemispheres, brainstem, scalp tissue and soft-tissue in upper neck region, both orbits and right eyeball were seen. MRI of forearm, thigh, tibia & fibula showed multiple systemic lesions with internal hypo intense foci suggestive of scolex nearly replacing all the muscles. MRI spinal cord also showed multiple cystic lesions. **(Figure 4)**

The patient was referred to neuro physician and managed with antiepileptic, anti-parasitic (Tab.Albendazole 800 mg daily for 15 days) and steroids.

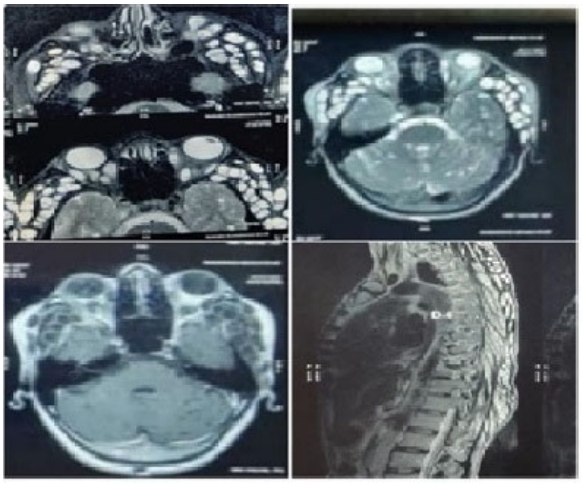

**Figure 4**:- **MRI brain with orbit & spine showing ocular cysticercosis with spinal and intracranial involvement**

## Discussion

Human cysticercosis occurs when Taenia solium eggs are ingested via fecal-oral transmission from a tapeworm host.[4] Disseminated neurocysticercosis is a rare entity, commonly seen in developing countries due to poor hygienic practices.

Intraocular cysticercosis is common in western countries while extra ocular cysticercosis is commonly seen in India.[5] Seventy eight percent cases of ocular cysticercosis have been reported from Andhra Pradesh and Pondicherry.[5] It is rare to find widespread systemic cysticercosis with ocular involvement. Orbital and adnexal cysticercosis have varied tissue involvement, with extraocular muscle form being the commonest type. One or more extraocular muscles may be simultaneously involved, although a propensity for involvement of superior rectus muscle complex and lateral rectus muscles has been noted.[6] An unusual case of neurocysticercosis along with ocular cysticercosis involving levator palpebrae superioris and superior rectus muscle has also been reported.[7] In our case report, involvement of inferior rectus muscle was observed.

Cysts can also be lodged in the subconjunctival space, eyelid, optic nerve and retro-orbital space. Lacrimal sac cysticercosis has also been reported.[8] Other clinical presentations reported are periocular swelling, proptosis, ptosis, diplopia, restriction of ocular motility, strabismus, decreased vision, lid edema and orbital cellulitis. Subconjunctival presentation could result from extrusion of a cyst from the primary extra ocular muscle site.[9] Occurrence of a live free floating cyst in the anterior chamber is rare with very few sporadic case reports of intracameral cysticercosis.[10] In our case report there was no involvement of the anterior chamber.

The cyst may often become adherent by its stalk to adjacent structures like the iris, anterior lens capsule or corneal endothelium.[11] The patient may remain asymptomatic or may present with diminished vision, floaters, leukocoria or pain and redness caused by iridocyclitis or glaucoma.[12] The glaucoma may be inflammatory in the presence of iridocyclitis [12] or due to pupillary block caused by the cyst.[13] Intracameral cysticercosis has been confused with cataract[13] or anteriorly displaced lens[14] It also has to be differentiated from other conditions presenting as ocular mass.

It is believed that the parasite reaches the posterior segment of the eye through the high flow choroidal circulation. The macular region being the thinnest and highly vascularized, the larva lodges in the subretinal space from where it enters into the vitreous cavity. In this process, it can cause a retinal detachment, macular hole or uveitis. As the cyst continues to grow, it can cause atrophic changes in the overlying retinal pigment epithelium, exudative retinal detachment or focal chorioretinitis.[15] In our report, an intravitreal well demarcated cyst causing exudative retinal detachment was found.

The clinical diagnosis of live intraocular cysticercosis can be made by viewing the morphology of the parasite through the ophthalmoscope or slit-lamp biomicroscope when the cyst and scolex show characteristic undulating movements. In the posterior segment, vitreous cysts are commoner than retinal or subretinal cysts.[15] A dying cyst can incite a severe inflammatory response from the leaking toxins being released from the micro perforations occurring in the cyst wall.[16] Inflammatory reactions are known to occur even with living parasites, and more so with vitreous cysts.

Complications of intraocular cysticercosis include severe inflammation (vitreous exudates, organized membranes in vitreous), severe anterior uveitis, retinal haemorrhages, retinal detachment, proliferative vitreoretinopathy, secondary glaucoma, complicated cataract, hypotony and even phthisis. [16] Differential diagnosis of posterior segment cysticercosis should include causes of leukocoria, choroidal tumours, serous retinal detachment, and other parasitic infections like toxoplasmosis and even diffuse unilateral subacute neuro-retinitis.

There are no established treatment & diagnostic guidelines for disseminated cysticercosis, so only symptomatic management has to be followed. Antiparasitic drugs like albendazole & praziquantel are given to decrease the parasitic load.[17] Albendazole is preferred over praziquantel because of its better central penetration. Corticosteroids are also administered to control the inflammatory response.[17]

## Conclusion

A high degree of suspicion for cysticercosis must be kept for any inflammatory swelling noted in the subconjunctival space. Meticulous systemic examination should be done as Taenia solium easily spreads hematogenously to various organs like brain, eyes, heart and spine. A definitive diagnosis made by ELISA for cysticercal antibodies and imaging techniques like B scan and MRI followed by prompt treatment can prevent further spread and help to salvage the vision and life of the patient.

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