

Case Report

Neurocysticercosis with initial clinical presentation of acute cysticercal meningitis coexisting with anterior chamber intraocular cysticercosis: a case report from a rural institute in India

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ABSTRACT

Acute cysticercal meningitis coexisting with intraocular cysticercosis is an extremely infrequent clinical presentation of neurocysticercosis. We report a 26 year old male, who presented with signs and symptoms of acute eosinophilic cysticercal meningitis with intraocular cysticercosis in the anterior chamber of left eye. Diagnosis was confirmed with demonstration of cerebrospinal fluid (CSF) eosinophilia, cysticercus specific IgG antibodies by CSF ELISA, sterile bacterial, mycobacterial and fungal CSF cultures, cystic lesions containing characteristic scolices consistent with neurocysticercosis on neuroimaging and histopathological demonstration of cysticercus cellulosae larva viscoexpressed from the eye. The importance of having high index of clinical suspicion highlighted along with need of examining cerebrospinal fluid with Wright-Giemsa stain so as not to miss cerebrospinal fluid eosinophilia and diagnosis of this extremely under-reported clinical entity, when there is concurrent presence of brain and other extracerebral lesions consistent with cysticercosis.

Keywords: Neurocysticercosis, Intraocular cysticercosis, Acute cysticercal meningitis, Cerebrospinal fluid eosinophilia

INTRODUCTION

Neurocysticercosis, the most common helminthic parasitosis of the human brain worldwide, has pleomorphic clinical manifestations depending on variable size, number, type, topography, stage of evolution and immune response of the host.¹ Cysticercal meningitis, usually presenting as sub-acute or chronic eosinophilic meningitis, is a rare manifestation of neurocysticercosis. Acute cysticercal meningitis is extremely rare; therefore, without well-defined

classification and diagnostic criteria.² Intraocular cysticercosis, an important cause of preventable blindness, is most commonly seen in subretinal space followed by vitreous; causing iritis, iridocyclitis, uveitis, vitreitis, ultimately phthisis bulbi. Anterior chamber ocular cysticercosis is rarely seen.³

CASE REPORT

A 26 year old right handed vegetarian male presented with two days history of high grade continuous fever, frontal headache, recurrent projectile vomiting and

diminution of vision in left eye. There was no history of alteration in sensorium, convulsions, cough, skin rash, ear discharge, weakness of limbs, paresthesias, lacrimation, eye pain, eye discharge, flashes of light, floaters or double vision. There was no past history of head injury, convulsions, contact with a tubercular patient or consuming pork. General physical examination revealed a conscious, oriented but febrile patient with stable vitals. Neurologic examination revealed signs of meningeal irritation in form of nuchal rigidity and positive Kernig's sign; no focal motor or sensory deficits; no cranial nerve palsy; no cerebellar signs; no involuntary movements; no signs of brainstem involvement and no signs of cognitive dysfunction. Ophthalmological examination revealed slight conjunctival congestion of left eye, visual acuity of 6/6 in right eye and 6/60 in left eye, normal intraocular pressure in both eyes and one cystic opacity in the anterior chamber of the left eye. Dilated fundus examination revealed bilateral stage 2 papilledema on Frisen scale. Slit lamp biomicroscopic examination of left eye confirmed the presence of a live greyish white cyst in the anterior chamber with characteristic undulating and contracting movements. A dense white spot suggestive of scolex was visible within clear fluid of the cyst (Figure 1).



Figure 1: The left eye of patient showing a cysticercus cyst attached to the angle of anterior chamber.

Patient was admitted in the emergency department with the provisional diagnosis of acute meningitis with intraocular cysticercosis. Routine investigations were within normal limits. High index of suspicion of possible acute cysticercal meningitis prompted us for obtaining cerebrospinal fluid (CSF) samples for Wright-Giemsa staining to specifically look for eosinophils and appropriate cultures before starting empirical antibiotic therapy. CSF analysis revealed 650 cell/cu. mm with polymorphonuclear cells 66%, lymphocytes 10% and eosinophils 24%, CSF protein 210 mg/dl, CSF glucose 40 mg/dl (concurrent RBS 76 mg/dl.). CSF gram staining, AFB and India ink smears revealed no abnormalities. CSF cultures for bacteria, mycobacteria and fungi were sterile. CSF ADA was within normal limits. CSF and serum ELISA were positive for cysticercus specific IgG antibodies. MRI Brain revealed numerous cystic lesions of variable shape and size with focal perilesional edema

and pathognomonic hyperintense eccentric mural nodules (Figure 2).

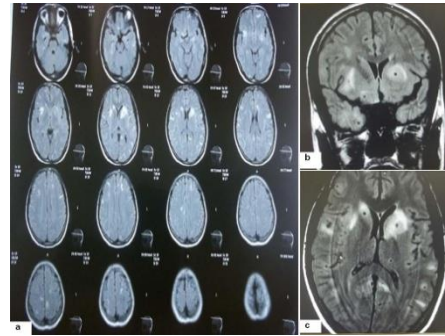


Figure 2: The MRI brain of the patient showing multiple cysticerci; some of them containing scolices and some are surrounded by edema.

On the basis of compatible clinical and CSF profile, a diagnosis of acute cysticercal meningitis was established. Empirical antibiotic therapy was stopped but corticosteroid therapy; decongestive measures to reduce intracranial hypertension and general supportive care were continued. We did not use specific cysticidal therapy because of two reasons. First, it could exacerbate inflammatory response because of release of cysticercal antigens from dying parasites, further exacerbating intracranial hypertension. Secondly, cysticidal therapy is contraindicated in intraocular cysticercosis because parasite death in intraocular tissue could cause a severe allergic blinding panuveitis.^{3,4}

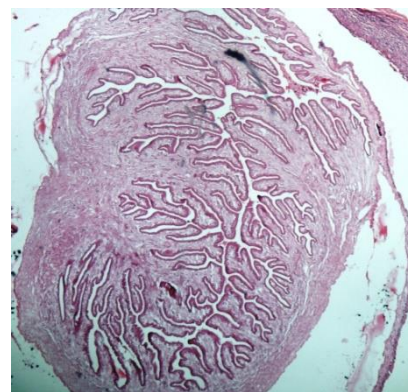


Figure 3: The photomicrograph of cysticercus larva showing prominent investing tegument or cuticle and aggregated subcuticular cells with smooth muscle cell fibers, (H & E×40).

After symptomatic improvement, patient was shifted to ophthalmology operation theatre on third day of hospitalization, where cystic lesion from the anterior chamber of left eye was surgically removed using viscoexpression double incision technique and sent for histopathological examination. Gross examination showed a greyish white cystic structure measuring 8 mm × 5 mm with a translucent wall filled with clear fluid. Microscopic examination revealed an intact scolex

possessing a discernible prominent investing tegument or cuticle, aggregated subcuticular pseudoepithelial layer; smooth muscle fibres and four suckers armed with birefringent hooklets; diagnostic of *Cysticercus cellulosae* (Figure 3). Patient achieved post-operative visual acuity of 6/9 and continued to receive prophylactic anti-epileptic, systemic and topical corticosteroid therapy for another seven days. Patient improved significantly and hospital stay was uneventful. He was discharged with stable vitals on tapering doses of oral corticosteroids and prophylactic anti epileptics. Patient remained asymptomatic on anti-epileptic monotherapy with oxcarbazepine during one year of regular follow up.

DISCUSSION

Definitive diagnosis of neuro and intraocular cysticercosis was confirmed with demonstration of characteristic cystic lesion containing invaginated scolex, identified as a white dense spot - receptaculum capitis with slit-lamp biomicroscopy; consistent neuroimaging and histopathological findings.⁵ Presence of CSF eosinophilia, negative gram staining, AFB and India ink smears; sterile CSF cultures for bacteria, mycobacteria and fungi; presence of *Cysticercus* specific IgG antibodies in CSF demonstrated with ELISA; and coexisting brain and intraocular cysticercosis established the diagnosis of acute cysticercal meningitis.⁶ In the absence of Wright-Giemsa staining of CSF, eosinophils can be mistaken for polymorphonuclear cells, thereby missing the diagnosis.^{6,7,10} Other CSF abnormalities consistently reported in cysticercal meningitis especially in sub-acute and chronic meningitis, usually reveal moderate mononuclear pleocytosis rarely beyond 500/cu. mm, normal glucose levels and moderately elevated CSF proteins (50-300 mg%). However, acute cysticercal meningitis is reported to have marked polymorphonuclear pleocytosis up to 1000/cu. mm and hypoglycorrhachia in 12-18% of case.^{7,8} *Cysticercus* specific IgG antibodies detected in serum and CSF by ELISA have been reported to have sensitivity of 85% and 90% respectively and specificity of 96% with a partially purified cysticercal antigen and almost 100% specificity with crude cysticercal antigens.⁹

On literature review, most cases of cysticercal meningitis described are chronic in evolution, with one case series reporting it in 0.3% of total cases of neurocysticercosis. However, acute cysticercal meningitis is extremely rare with only few published case reports in literature so far.⁷ To the best of our knowledge, acute cysticercal meningitis coexisting with rare anterior chamber intraocular cysticercosis is not reported in literature so far.

Owing to its extremely infrequent occurrence, there are no published well defined diagnostic and classification criteria for acute cysticercal meningitis, thereby making a

specific diagnosis of this rare clinical entity difficult. Therefore, the diagnosis of acute cysticercal meningitis is often missed and remains under-reported.⁷

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