Case Report

Repeated hydrocephalus in recurrent intraventricular neurocysticercosis: An uncommon presentation

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ABSTRACT

A rare case of a 42-years old man presented with repeated hydrocephalus due to the neurocysticercosis cyst (NCC) in the lateral ventricle. Patient was operated previously 2½ years back for a similar lesion at same site. Both times he was treated endoscopically with removal of the cyst. Interestingly there was no parenchymatous lesion at any stage of follow up. Isolated recurrent intraventricular NCC is a rare condition that has never been reported in the literature.

Key words: cysticercosis, endoscopy, hydrocephalus, intraventricular, recurrent NCC, third ventricle

Introduction

Neurocysticercosis is the most common parasitic infestation of the central nervous system worldwide. It is quite prevalent in India and Latin America. Brain parenchyma is most likely seeded through haematogenous dissemination.[1] The ventricular system, subarachnoid space, and basal cisterns are then seeded via the choroid plexus.[2] There is still no consensus regarding optimal treatment strategies in patients with intraventricular NCC. Various therapeutic modalities include antihelminthic medication, microneurosurgical removal, ventriculoperitoneal shunt, and endoscopic treatment. Endoscopic management of intraventricular NCC has shown encouraging results;[3,4] however, the literature regarding the use of this modality in the treatment of recurrent intraventricular NCC is scanty. There is no reported case in the literature of recurrent intraventricular NCC after a complete endoscopic removal.

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Case Report

A 42-yera old man resident of Delhi previously operated for intraventricular NCC presented with the headache for a fortnight that was holocranial, moderate not associated with any vomiting. There was no blurring of vision, diplopia. There were no other features of raised intracranial pressure. Fundus examination showed blurring of disc margins in both eyes.

On examination, patient's higher mental functions were normal. There was no cranial nerve palsy, motor, or sensory deficits. Lab investigations showed haemoglobin (Hb)-13.8 gm/dL, pack cell volume (PCV)-36, total leucocytes counts (TLC)-6000 cells/mm^3, N77L20E0M3, serum Creatinine-0.6 mg/dL, BT and CT-2'30$^{"}$ and 5", respectively. Serum ELISA test for NCC antibodies was negative. MRI showed a well-defined, nonenhancing mass in the lateral ventricle near the region of foramen of Monroe bulging into both the lateral ventricles [Figures 1 and 2].

Past history: patient had been operated previously 21/2 years back when endoscopic removal of third ventricular neuro cysticercus cyst along with endoscopic third ventriculostomy (ETV) was done. During the previous admission patient had presented in altered sensorium with decerebrate posturing. His Glasgow coma Scale (GCS) was E1M1V2. Both pupils were semi dilated and sluggishly

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reacting. Patient underwent emergency endoscopic removal of the cyst and ETV [Figure 3]. Intraoperatively CSF pressure was markedly raised. The floor of third ventricle was thickened along with membrane of Liliquest. There was a yellowish white cyst in the third ventricle obstructing the aqueduct opening. Choroid plexus fulguration was done to reach the aqueduct.

Histopathology showed typical larvae of Taenia solium, collagenous cyst wall without surrounding reactive changes. After the procedure patient was symptom free, he was on a regular follow up; he was advised Tab. Albendazole 400 mg BD for a period of 1 month and Tab Carbamazipine 400 mg three times a day. Postoperatively the patient improved on neurological status significantly. His follow-up MRI showed no residual or recurrent cyst for 2 years.

In view of the previous operation, provisional diagnosis of recurrent intraventricular neurocysticercus cyst was considered. The endoscopic removal of cyst was done, following which he made significant improvement. Patient was once again repeated the antihelmionthic course for 21 days. There is no evidence of second recurrence in 16 months follow up after the second surgery [Figure 4].

Discussion

Human cysticercosis is caused by the ingestion of food contaminated with the ova of *Taenia Solium*. The occurrence of the encysted larva in the brain, spinal cord, meninges, and eyes is known as neurocysticercosis (NCC). Regarding parasite localization, four different patterns of infection have been described, that is, parenchymal, subarachnoid, intraventricular, and mixed.[5]

The most common presentation of intraventricular NCC is the increased intracranial pressure. Occlusions of the CSF pathways from an intraventricular cyst,

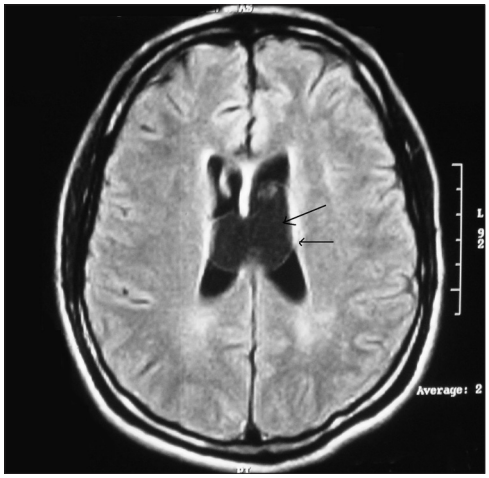

Figure 1: MRI axial view showing the hypointense cyst in the third ventricle extending into lateral ventricles. The eccentric scolex is clearly visible (arrow)

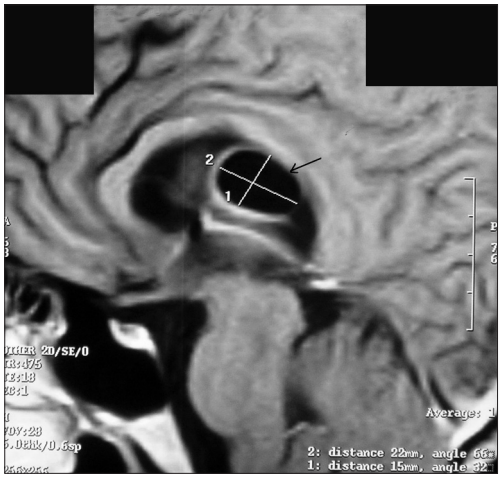

Figure 2: MRI sagital section shows well-defined hypointense lesion in lateral ventricle (arrow)

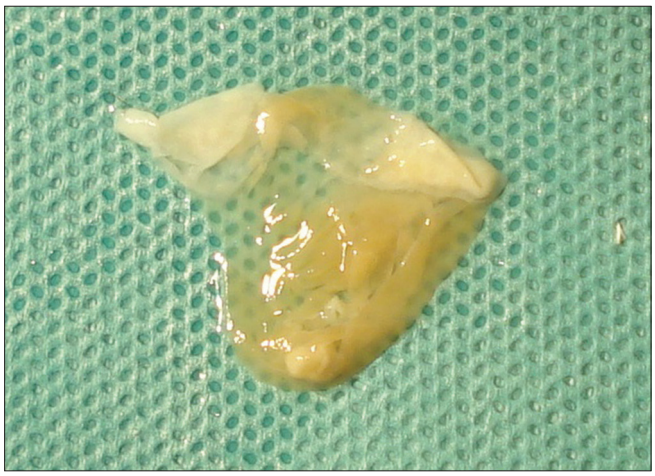

Figure 3: Biopsy specimen of the cyst removed after first surgery

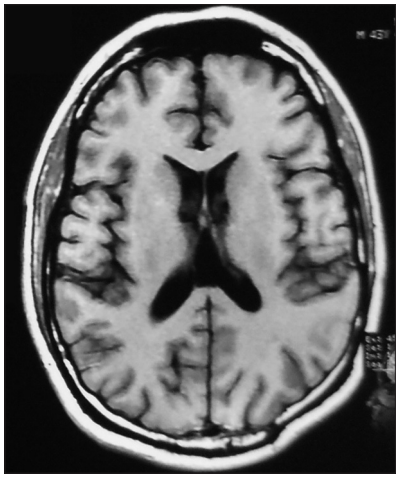

Figure 4: The follow up MRI after the second surgery with no evidence of cyst or hydrocephalus

ependymitis, or basilar arachnoiditis are responsible for elevation in intracranial pressure.[6]

Intraventricular cystic lesions are usually isodense with CSF on CT imaging and thus are generally not discernible without the administration of the ventricular contrast. However, MRI is the preferred imaging modality to visualize the lesions. MRI is superior to CT scanning for detecting IVNCC lesions.

The optimum treatment selected from the following therapeutic modalities depends on several factors, including the patient's condition, location of the cysts, the intensity of the inflammatory reaction and evolutional stage of the cysts: 1) emergency ventriculostomy; 2) placement of a VP shunt; 3) endoscopic or open extirpation of obstructing cysts; 4) antihelmintic medications (albendazole and praziquantel); 5) steroid therapy; and 6) antiepileptic medications. Acute hydrocephalus usually requires ventriculostomy and subsequent resection of the cysts obstructing CSF flow, particularly those in the fourth ventricle.[1,7-9]

The indications for excision of the viable cyst(s) include the following: 1) significant mass effect; 2) obstruction of CSF flow; 3) shunt placement precluded by the cyst; and 4) uncertain diagnosis.[9] Fourth ventricular viable cysts should typically undergo extirpation because they may cause brainstem compression even after insertion of a VP shunt.

The role of anthelmintic therapy in intraventricular NCC remains uncertain. The use of anthelmintic drugs in conjunction with shunts has been advocated to eradicate viable cysts and to decrease the rate of shunt failures.[10] There are some who do not advocate antihelminthic drugs after cyst removal with limited follow up[11,12]

The recurrence of isolated intraventricular NCC has not yet been reported in the published literature. It was surprising that the cyst had recurred within ventricular system without the evidence of any parenchyma cyst, forcing us to think whether there was any incomplete removal or an additional cyst that remained invisible during first surgery as well as in follow up radiology. At the same time, one cannot rule out re infection particularly in the endemic area.

Conclusion

The recurrence of intraventricular NCC can result in repeated hydrocephalus. Endoscopy can offer safe removal circumventing the need of VP shunt; however, one should be careful in ensuring that there is no residual cyst. It would be advisable that antihelimenthic should be given postoperatively, even in the absence of parenchymatous cyst. It is also recommended to follow these cases with MRI every 6 months till at least 21/2 years.

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