

CASE REPORT

INTRAVENTRICULAR NEUROCYSTICERCOSIS AT AN UNCOMMON SITE CAUSING UNILATERAL HYDROCEPHALUS: A RARE CONDITION

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ABSTRACT: OBJECTIVE: Ventricular neurocysticercosis of a lateral ventricle causing unilateral hydrocephalus is a rare condition. They can be misdiagnosed as hydatid cyst thus presenting as a diagnostic dilemma as happened in our case. **SETTINGS:** Gandhi Medical College/Gandhi Hospital, Secunderabad, Telangana State, India. **METHODS:** A 34 year old male brought to casualty in a drowsy condition complaining of sudden loss of consciousness with a history of headache, one episode of vomiting, irritability and diminution of vision of short duration. CT brain (image-1) was suggestive of left unilateral hydrocephalus. MRI scan (images 2-4B) showed a left lateral ventricular cyst causing unilateral hydrocephalus suggestive of a neurocysticercal cyst / arachnoid cyst. The patient was operated with complete removal of the cyst. Grossly (image-5), the cyst was looking like hydatid cyst. But microscopically the cyst showed histopathological features of a cysticercal parasite. **RESULTS:** The patient showed immediate neurological improvement with reduction in headache, irritability and improvement of the vision. He showed gradual recovery on regular follow-ups. **CONCLUSION:** Intraventricular neurocysticercosis of lateral ventricle is an uncommon presentation, causing unilateral hydrocephalus which is a rare condition. Complications are prevented by treating acute obstructive hydrocephalus immediately and patient will recover completely as was seen in our case.

KEYWORDS: Neurocysticercosis, Intraventricular neurocysticercosis (IVNCC), unilateral hydrocephalus (UH), Lateral ventricle, Foramen of Monro.

INTRODUCTION: Unilateral hydrocephalus is a rare condition, characterized by enlargement of just one lateral ventricle. Blockage of the CSF pathway will result in to obstructive hydrocephalus. If the site of obstruction is located in the third or fourth ventricle, enlargement of both lateral ventricles will occur. Otherwise, if the blockage is located around one of the Foramen of Monro, an enlargement of just one lateral ventricle will occur.^(1, 2, 3)

Cysticercosis is a parasitic infection caused by the larval form of the pork tape worm, *Taenia solium*. Humans are the definitive hosts and usually harbour the adult tape worms in small intestine, as an asymptomatic infestation.

Neurocysticercosis is the cysticercosis of brain which is seen in 60 to 90 percent of infected patients. 20 to 50 percent cases of neurocysticercosis present as intraventricular cysts, mostly affecting the 4th ventricle followed by 3rd ventricle and lateral ventricles which are relatively uncommon locations. Our case presented with left lateral ventricular cysticercal cyst causing unilateral hydrocephalus, a rare condition.

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CASE REPORT: A 34 year old male brought to casualty in a drowsy condition complaining of sudden loss of consciousness with a history of headache, one episode of vomiting, diminished vision and irritability since 2 days. On examination, patient had left frontal headache, diminished vision in the left eye. There was no history of diabetes, hypertension, tuberculosis, seizures and weakness of limbs. No focal neurological deficits noted. Fundoscopy showed left evolving papilloedema. CT brain (contrast) study revealed unilateral dilatation of left lateral ventricle (image-1). MRI brain non contrast and contrast enhanced images (images 2-4B) showed evidence of a well defined intraventricular cyst of size 1.1x1.2 cm is present in the frontal horn of the left lateral ventricle. There is unilateral dilatation of left lateral ventricle. Other ventricles were normal. Rest of the brain was normal. On contrast the cyst shows peripheral ring enhancement. Patient underwent left frontal craniotomy followed by corticectomy to gain exposure to left lateral ventricle. A grayish white cystic structure, obstructing Foramen of Monro was found and was carefully removed, thinking as hydatid cyst and sent for histopathological confirmation. Gross specimen (image-5) shows a grayish white translucent membranous cystic structure already cut opened, measuring 2x1 cm's. Microscopically (images 6 & 7), the cyst wall showed 3 layers; an outer layer of eosinophilic cuticular layer beneath which are bundles of muscle fibres; a middle or cellular layer with small, evenly distributed dark staining nuclei and an inner layer or reticular layer containing loosely arranged fibrils, excretory canaliculi and calcareous corpuscles. The histological features are consistent with cysticercal parasite. The patient showed immediate neurological improvement with reduction in headache, irritability and improvement in vision. The patient was treated post operatively with albendazole for 15 days along with steroids. Patient recovered completely.

DISCUSSION: Blockage of the CSF pathway will result in obstructive hydrocephalus. If the site of obstruction is located in the third or fourth ventricle, enlargement of both lateral ventricles will occur. Otherwise, if the blockage is located around one of the Foramen of Monro, an enlargement of just one lateral ventricle will occur.^(1, 2, 3) That is called an unilateral hydrocephalus, a rare condition as was seen in our case.

Cysticercosis is a parasitic infection caused by the larval form of the pork tape worm, *Taenia solium*. Humans are the definitive hosts and usually harbour the adult tape worms in small intestine, as an asymptomatic infestation.

Neurocysticercosis is the cysticercosis of brain which is seen in 60 to 90 percent of infected patients. 20 to 50 percent of neurocysticercosis are presented as intraventricular cysts, mostly affecting the 4th ventricle followed by 3rd ventricle and lateral ventricles which are relatively uncommon locations.⁽⁴⁾ Our case presented with left lateral ventricular cysticercal cyst causing unilateral hydrocephalus, a rare condition.

Active neurocysticercosis is classified according to the location as follows:⁽⁵⁾

1. Parenchymal cyst
2. Ventricular cyst
3. Subarachnoid cyst
4. *Cysticercus racemose*

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Patients with intraventricular cysticercosis generally present with symptoms related to obstructive hydrocephalus. Headache is the most common symptom. Intraventricular cysts can be found in any compartment but tend to migrate to the 4th ventricle because of gravity and CSF flow patterns.

By physically obstructing the CSF flow, intraventricular cyst may cause non communicating hydrocephalus as seen in our case. Alternatively, death of intraventricular cyst may lead to ependymitis resulting in a communicating hydrocephalus.

Acute intermittent hydrocephalus or sudden loss of consciousness may result, if a mobile intraventricular cyst is present, as was seen in our case. A case of sudden death, due to migration of a cyst from the wall of lateral ventricle to the Foramen of Monro has been reported.⁽⁶⁾

Differential diagnosis of an intraventricular cyst includes choroid plexus cyst, ependymal cyst, colloid cyst, cysticercal cyst.

Intraventricular cysticercal cysts are isodense to CSF on CT and hence not well imaged⁽⁷⁾ as was seen in our case.

MRI is the most important neuroimage study revealing intraventricular cyst, approximately in 80% of cases. MRI is sensitive in the diagnosis of active neurocysticercosis and may be useful in evaluating degenerative changes in the parasite.⁽⁵⁾ Intraventricular cysts are detected on MRI by mass effect, ventricular obstruction, detection of a cyst rim and or CSF flow void adjacent to the rim.

The diagnosis of IVNCC is based on clinical presentation, MR imaging evidence of cystic lesions containing scolex and isolating the parasite histologically from the brain lesions or the CSF.⁽⁸⁾ As the clinical presentation of IVNCC is non diagnostic, one must review a patients history, laboratory finding and neuroimaging studies to confirm the diagnosis. An important diagnostic criterion is histological demonstration of the parasite.

The treatment of IVNCC depends upon the patient's condition, location of the cyst and evolutionary stage of the cysts. The treatment strategies include approaches like: 1. Emergency ventriculostomy. 2. Placement of a VP shunt. 3. Endoscopic or open extirpation of obstructing cysts. 4. Anti helminthic medication. 5. Steroid therapy. 6. Antiepileptic medication.

Acute hydrocephalus usually requires ventriculostomy and subsequent resection of the cyst obstructing the CSF flow. Whether to choose endoscopic or open resection depends on the surgeon's expertise.

The indications for excision of the viable cyst(s) includes the following: 1. Significant mass effect. 2. Obstruction of CSF flow. 3. Shunt placement precluded by the cyst & 4. Uncertain diagnosis.

Standard neurosurgical approaches are performed depending on the cyst location include:

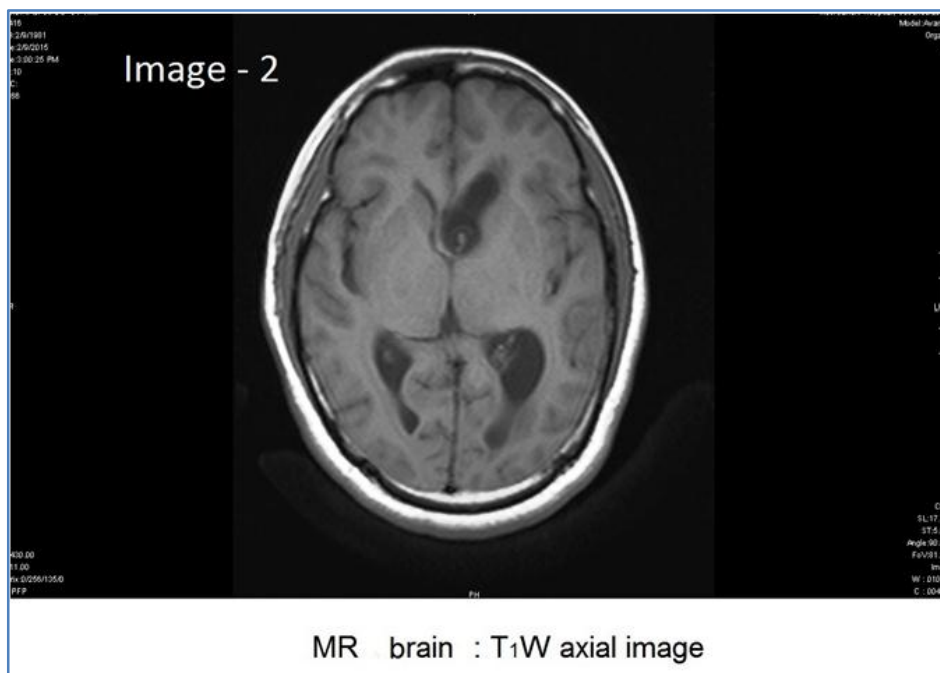
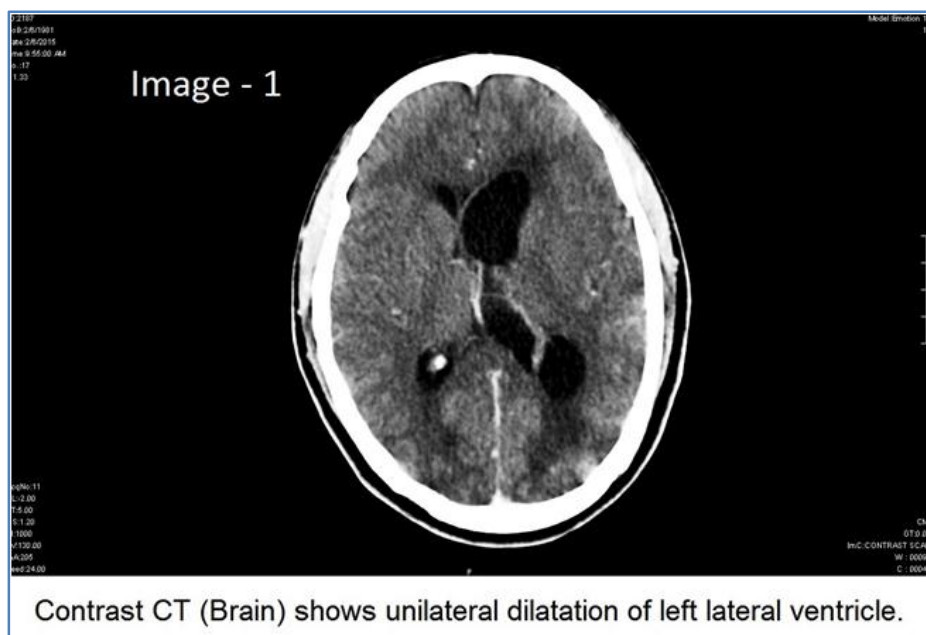
1. Transcortical for lateral ventricle cysts.
2. Transcallosal or transcortical for third ventricle cysts and
3. Midline sub occipital for fourth ventricle cysts.^(9, 10, 11, 12)

The need for early diagnosis of IVNCC of lateral ventricle by computed tomography scanning and magnetic imaging study in patients especially from endemic areas complaining of

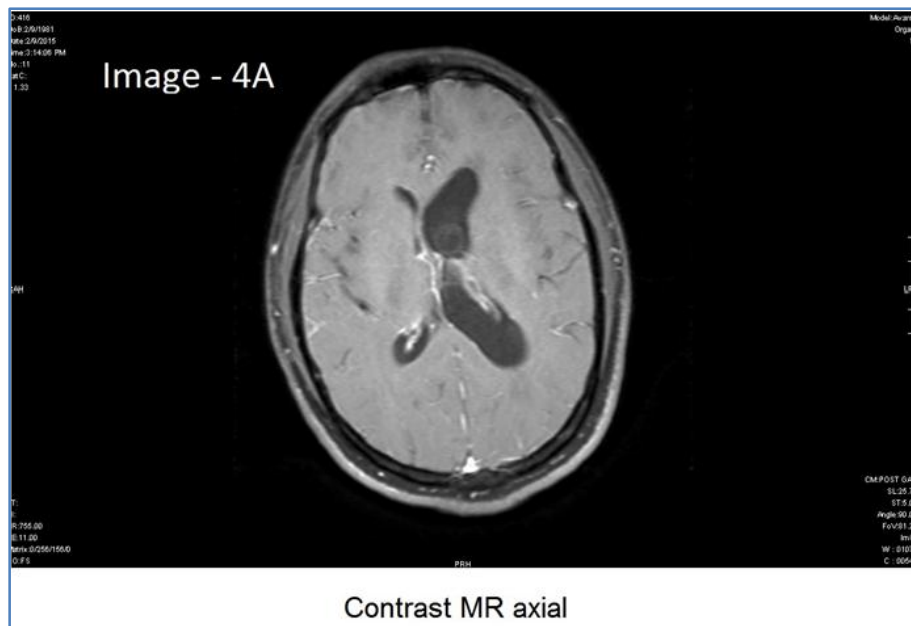
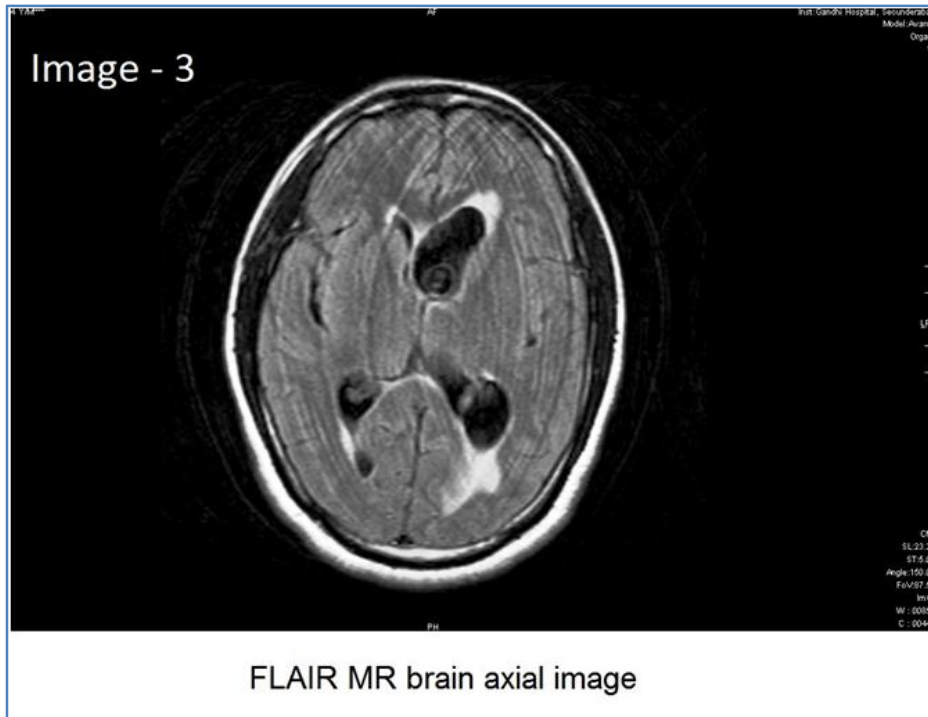
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headache is emphasized by this experience by which we can prevent migration of these cysts within ventricular system causing acute obstructing hydrocephalus, which may even cause death if not treated immediately.

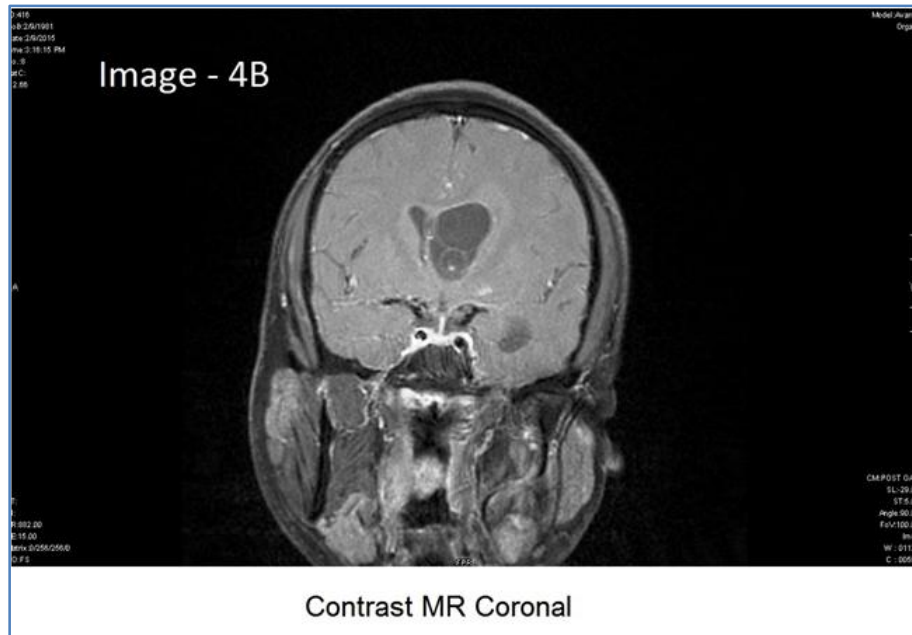
Lateral ventricular neurocysticercosis resulting in unilateral hydrocephalus is an extremely rare presentation, as was seen in our case.



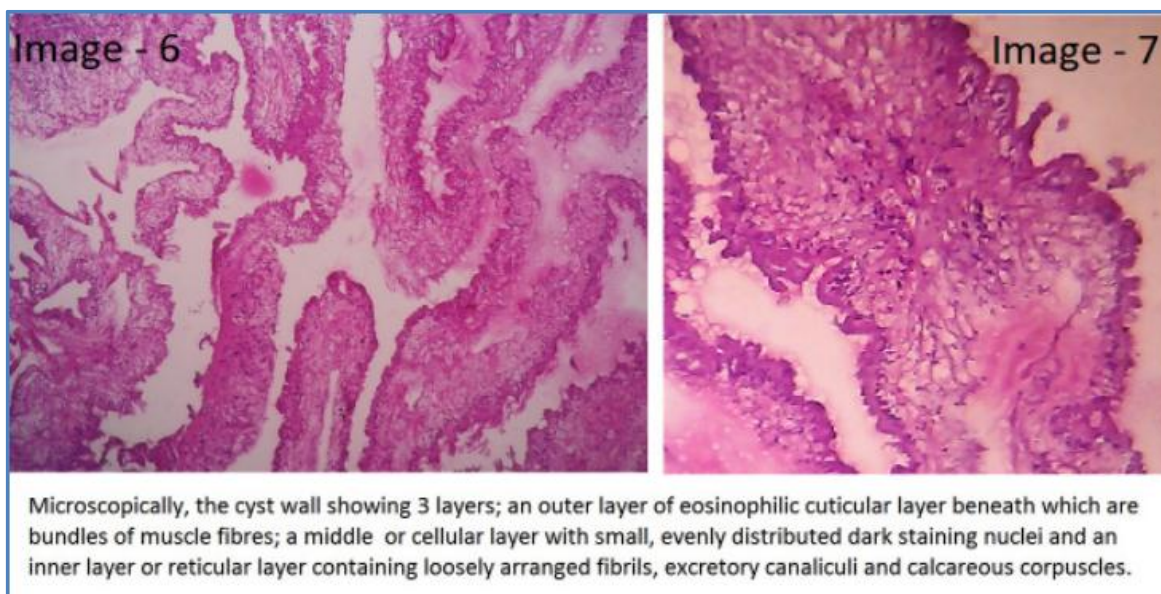
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