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Case Report

Giant thalamic hydatid cyst: a rare clinical presentation

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ABSTRACT

Hydatid disease is a parasitic infestation caused by tapeworm *Echinococcus*. Cystic hydatidosis commonly involves liver and lungs and rarely the brain. A young female patient presented with progressive weakness of left upper and lower limb of one and half year duration at the time of admission. On evaluation, computed tomography (CT) scan of the brain showed a giant thalamic cystic lesion in the right cerebral hemisphere. Patient underwent right frontal craniotomy and excision of the cyst immediately. Histopathology was suggestive of hydatid cyst. Patient's neurological condition improved and was subsequently treated with oral anti-helminthics. Surgical excision is the standard care of treatment.

Keywords: Brain, Excision, Surgery

INTRODUCTION

Hydatid disease (Echinococcosis) is a parasitic infection caused by the larval stage of the tapeworm Echinococcus. The definitive hosts are dogs and foxes that harbor adult tapeworms in their intestines, whereas intermediate hosts are sheep, cattle, and rodents. Humans are the intermediary blind hosts in the parasite cycle. The main form of the illness is most commonly caused by *Echinococcus granulosus* (E. granulosus) and, less frequently by *Echinococcus multilocularis* (*Echinococcus alveolaris*). Human adults acquire hydatid disease by ingestion of the scolex, or eggs, that are present in foodstuffs, whereas in children infection commonly takes place via accidental contamination by direct contact with feces of dogs. The hydatid cyst reaches the liver and the lungs in 60% and 30% of the cases respectively. Only 1-2% of the cysts reach the brain. The disorder caused by E. granulosus is most widespread in endemic areas such as the Mediterranean countries, South America, Australia, and New Zealand.[1]

Cerebral hydatid cyst is an uncommon complication of *Echinococcosis*. It constitutes less than 2% with predominantly involved organs include liver (50%-77%) and lungs (8.5%-43%).

CASE REPORT

A 28 year old female presented with slowly progressive weakness of left upper and lower limb of one and half years duration. Patient also developed difficulty in swallowing of one month duration along with nausea, vomiting and altered sensorium since one week and at the time of admission to our hospital she had decerebrate posture. Patient did not give history of any comorbidity in the past. On examination patient was moderately built and nourished, hemodynamically stable, with a GCS score of 7/15 (E2M2V3). Detailed neurological examination revealed sluggishly reactive pupils, bilateral papilledema (left more than right) and left spastic hemiparesis-2/5. Laboratory data showed normal counts without any significant rise in eosinophils, and liver enzymes were unremarkable. CT scan of the brain revealed an uncal herniation (Table 1, Figure 1-3).

Magnetic resonance imaging (MRI) of the brain showed T1 hypo T2 hyper contrast non-enhancing well defined cystic lesion without perilesional edema. Plain chest X-ray and ultrasound scan of the abdomen and pelvis were unremarkable.

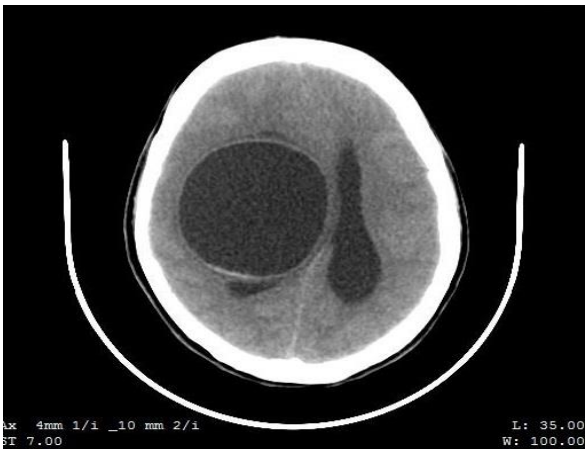

Figure 1: CT brain of the patient showing right thalamic cystic lesion with an inner density similar to that of cerebrospinal fluid (CSF) with lateral ventricle compression.

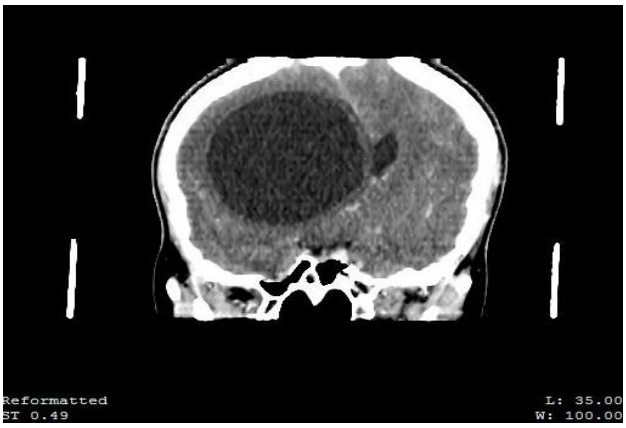

Figure 2: Coronal section of CT brain right large thalamic cystic lesion causing midline shift to the left.

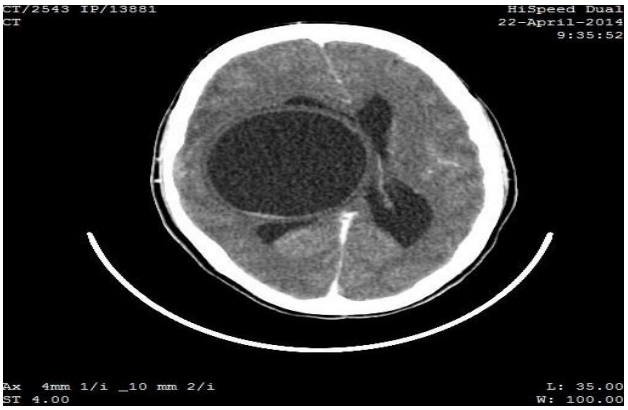

Figure 3: CT brain showing contrast non-enhancing well defined cystic lesion without peri-lesional edema.

After reviewing all the above investigations, a provisional diagnosis of cerebral hydatid cyst with mass effect was made and patient underwent right frontal craniotomy and excision of the cyst on the same day. A large cystic structure (12 cm×12 cm×6 cm) was delivered with utmost care to avoid rupture and spillage. Patient recovered well from surgery. Post-operative CT showed complete excision of the cyst with ventricular cavity communicating with the operative cavity. Histopathology reports confirmed our diagnosis of hydatid cyst. Post-operatively, albendazole 10 mg/kg was started orally and continued for three months. The patient showed marked improvement in her neurological deficits and was discharged after one week. A follow up CT scan after five months confirmed that there was no recurrence.

DISCUSSION

Cerebral hydatidosis is usually seen in children and young adults with increased male sex ratio. Cysts are usually slow growing with patient being asymptomatic until cyst attains a large size causing mass effect. The common presenting symptoms include headache and vomiting. Other manifestations reported include ataxia, diplopia, hemiparesis, abducens nerve palsy and even coma. Our patient presented with hemiparesis and signs of raised intracranial pressure. Brain hydatid cysts can be primary or secondary.[2] The secondary multiple cysts results from spontaneous, traumatic or surgical rupture of the primary intracranial hydatid cyst and they lack brood capsule and scolices. Intracranial HC are frequently located in parietal lobe, in supratentorial compartment. Other less common sites are skull, cavernous sinus, eye ball, pons, skull, extra dural, cerebellum and ventricles. Intracranial HC are slow growing and become symptomatic when very large. The rate of growth of the hydatid cyst has been reported between 1 to 10 cm/year.[3]

The Casoni and Weinberg tests, indirect haemagglutination, eosinophilia and ELISA are used in diagnosing hydatid cysts but are often false negative in cerebral hydatid cysts. MRI images and CT scans provide correct diagnosis and delineate the type of hydatid cyst. In CT, the cysts appear round, smooth and thin-walled lesions and do no show surrounding edema unless they get infected. For better delineation of cyst wall MRI is considered to be superior to CT. In MRI, cystic fluid has the same intensity as CSF in T1 and T2-weighted sequences and its wall appear as a low signal intensity rim in both sequences. In revealing the cyst's walls, T2-weighted images are better than T1-weighted ones.[1] Spontaneous cystic rupture can lead to different appearances depending on which layers have been obliterated and produce some specific signs. When only the endocyst ruptures, cyst contents are held by the outer pericyst giving a peculiar 'water lily sign', which is pathognomic.[2]

Treatment includes both medical and surgical. Medical management, though not fully effective, is useful in

patients who have inoperable cysts, deep seated cysts and those who are at risk for surgery. The anti-helminthic drugs used are albendazole and mebendazole. Albendazole can be used as a preventive drug to sterilize the cyst and decrease the tension in the cysts wall before surgery and to reduce the recurrence rate in the case of cyst rupture after surgery. Surgery is the treatment of choice for cerebral hydatid cyst (Table 1). Complete surgical removal of cyst without spillage into cranial cavity is employed. The most curative surgical method is to remove the cyst using Dowling's technique and washing the area with hypertonic sodium chloride. Cleaning the area with sodium chloride decreases the chance of recurrence.[4]

There are various complications associated with the surgical removal of hydatid cysts that depend on several factors including the localization, size and number of the cysts. Rupture of the cyst may be accidental or intentional and results in spillover of the contained fluid and scoleses. This complication must be avoided since it may result in severe anaphylaxis and soiling of the neighboring tissues with potentially infective scolex heads.[3] The thin cyst wall, periventricular location and micro-adhesions to the parenchyma are the main problems encountered during the surgical procedure. Recurrence remains a major concern, which is managed by both anti-helminthic chemotherapy and surgery.

Our patient underwent right frontal craniotomy with removal of cyst without any complications and was postoperatively treated with Albendazole to prevent recurrence.

Table 1: Comparison of clinical presentation, imaging and treatment given in recent cases of hydatid cysts reported in India.

Authors	Year of publication	Title	Age of Presentation	Clinical Presentation	CT/MRI Findings	Treatment Given
Gupta R et al[5]	2013	Multiple Intracranial Hydatid Cysts: A Rare Presentation	35 years male	Progressive weakness of right upper limb since two weeks	NCCT head revealed multiple large, oval, hypointense cystic lesions of CSF density in bilateral cerebral hemispheres without significant mass effect or midline shift. MRI brain revealed multiple cystic lesions. The cyst contents were slightly hyperintense to CSF on T1WI and hyperintense on T2WI.	Excision of the left parietal cyst along with medical therapy
Batra YK et al[6]	2014	A Giant Intracranial Hydatid Cyst in a Child: Intraoperative Anaesthetic Concerns	4 years male	Focal seizures of right upper limb since 2 months, swelling on left side of skull since 6 months	CT of the brain demonstrated a large, spherical, homogeneous cystic mass measuring 110mm × 96mm × 85mm in the left fronto-parietal region. MRI showed a well-defined lesion, hypo-intense on T1-weighted images and hyper-intense on T2-weighted images. There was a mural nodule (daughter cyst) in the posterior wall and midline shift of the brain (24mm) towards the right side.	Fronto-temporo-parietal craniotomy was done. Hypertonic saline (3%) irrigation was used to separate the cyst from the surrounding brain parenchyma.
Amit S et al[7]	2015	A Huge Silent Intracranial	18 years male	Headache and vomitting	MRI revealed a large lobulated well defined	A ruptured pearly white

		Hydatid Cyst in an Adult Male: a case report		since 1 week with right hemiparesis	complex cystic space occupying lesion having multiple internal well defined cystic areas or daughter cysts exerting pressure effect to the surrounding brain structures resulting in mild increase in intracranial pressure.	cyst wall was obtained measuring 8.0cm x5.0cm along with multiple small daughter cysts each measuring 1.0cm x1.0cm which were filled with clear fluid. Patient was administered broad-spectrum antibiotics, anticonvulsants, steroids, and albendazole.
Bhagya Lakshmi A et al[8]	2014	Hydatid Cyst of Brain- a Rare Case Report- A Clinician's Dilemma	22 years female	Postpartum lady with 9 month histry of intermittent headache and vomitting presented with seizures	MRI showed a well-defined cystic lesion of size 8.5cm x 7cm x 6cm in the right frontal lobe and similar areas in the left frontal lobe. The cyst was hypointense on TI weighted images and hyperintense on T2 weighted images with suppressed Flair images. The density of cyst fluid was similar to CSF. There was mass effect in the form of subfalcine herniation, mild tentorial tonsillar herniation and mid line shift towards left.	The whole cyst was delivered from the cranium with partial rupture. The dura was closed and osteoplastic flap was reposited and the wound was closed in layers. Patient was administered with broad spectrum antibiotics, anticonvulsants, steroids and albendazole.
Sarmast et al[9]	2015	Case of Cerebral Hydatid Cyst, Rare Parasitic Brain Infection Presenting as Refractory Epilepsy	10 year male	Seizure disorder	MRI demonstrated a single large, spherical, well-defined, thin-walled homogenous cyst in left posterior parietal area, with signal intensity similar to that of CSF	Right temporoparietal craniotomy was performed. A large cystic structure (10cm×10cm×8 cm) was delivered without rupture. Postoperatively, albendazole 15mg/kg/day was started in and continued for 8 weeks. The patient was put on oral phenytoin sodium

						(5mg/kg/day in divided doses) and was discharged after one week with close follow-up.
Vishal K et al[10]	2010	Neuroimage - hydatid cyst of brain	21 years male	Headache since 1 year	MRI revealed multiple coalescing thin walled cysts of varying sizes in the right frontoparietal region, no calcification/solid component was present., no perilesionaloedema seen. Mass effect on the right lateral ventricle with evidence of subfalcine herniation seen.	The patient was operated and operative findings showed multiple thin walled cysts containing clear fluid.

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