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Case Report

Primary Intracranial Hydatid Cyst

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Abstract

Background: Hydatid disease is a parasitic disease caused by the larval stage of Echinococcus granulosus. It's commonly affects the liver and lungs but can rarely affect the brain.

Case Presentation: A 5-year-old boy from a rural area with no pathological history admitted to pediatric emergency for sudden decreased level of consciousness with right side hemiparesis and intermittent vomiting. On Physical examinations, he was confused with bilateral papilledema and right side motor weakness. Brain CT scan revealed a large cystic lesion in the left frontal region with mass effect. There was no contrast enhancement, suggestive of hydatid cyst. Radiological investigations of thorax and abdomen disclosed no evidence of hydatid disease. The patient underwent craniotomy and the lesion was entirely removed by irrigating saline between cyst wall and brain interface. Pathological examination confirmed hydatid cyst. Immediate improve- ment of the symptoms was observed and the patient was discharged on albendazole for 3 months.

Conclusion: The incidence of primary hydatid cyst of brain is very rare. The CT and MRI are the best diagnostic investigation and surgery extirpation of the intact cyst is the treatment of choice, resulting in complete recovery.

Keywords: Intracranial Hydatid Cyst; Echinococcus; Brain; Albendazole

Introduction

E. granulosus can be manifested in humans who act as intermediate host by the development of cysts in the liver, lungs, heart, and brain. Cerebral hydatid disease is very rare and occurs in about 2% of all echinococcal cases [1]. Primary cerebral hydatidosis generally occur as a single lesion. In the brain, it most frequently involves supratentorial region, mainly in the territory of the middle cerebral artery within the parietal lobe. Surgery remains the treatment of choice [2].

Here we report a case of primary intracranial hydatid cyst arising from the left frontal lobe, causing midline shift and compression of the controlateral ventricle without demonstrable involvement of other organs.

Case Description

History and Clinical Presentation

A 5-year-old boy from a rural area with no pathological history was admitted to pediatric emergency for sudden decreased level of consciousness with right-sided hemiparesis and intermittent vomiting. His parents denied any history of trauma or previous surgery related to the brain. His past medical history was unremarkable. On Physical examination, he was confused with bilateral papilledema and right side motor weakness (Medical Research Council (MRC) grading 4/5 in upper and lower extremities). His vital signs were normal.

Diagnosis Assessment

Brain Computed tomography (CT) scan revealed a single large spherical hypodense cystic lesion in the left frontal region with mass effect and peripheral calcifications (Figure 1). There was no surrounding edema or contrast enhancement. In thorax and abdominal CT scans, there was no cystic lesion.

Laboratory investigations showed elevated white blood cells (leucocytosis) with significant eosinophilia. Liver and renal function tests were normal. C -Reactive Protein level was less than 5 mg/l.

A intracranial hydatid cyst diagnosis was considered.

Surgical Management

The surgical indication was retained and the patient was admitted to the operating room for early cyst extirpation. After skin incision, a large craniotomy was performed. The bone was then carefully separated from the underlying dura mater, which can be very fragile. The pieces of cottonoid strips were gently inserted around the overlying cyst wall. Once the entire cyst wall had been exposed, silicone catheter is introduced between the cyst and the brain parenchyma. Saline solution was injected through this catheter to fascilitate the hydatid removal according to the technique of ARANA

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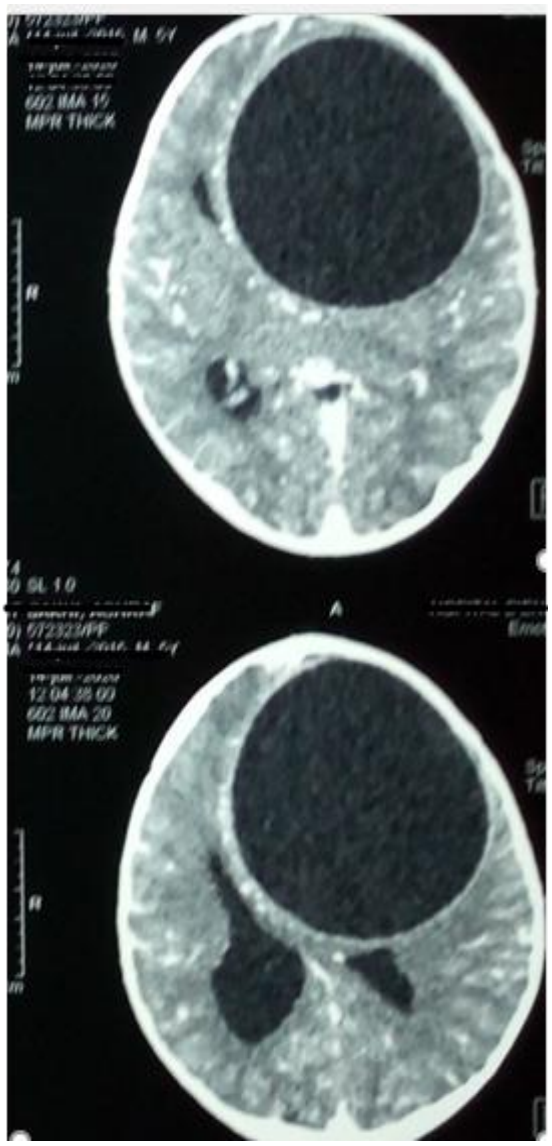

Figure 1: Computed tomography Image showing large single unilocular cystic lesion in left frontal region of brain.

Figure 2: Peroperative photograph of the patient showing normal saline being pushed via a catheter between the cyst wall and brain parenchyma in order to deliver the cyst unruptured.

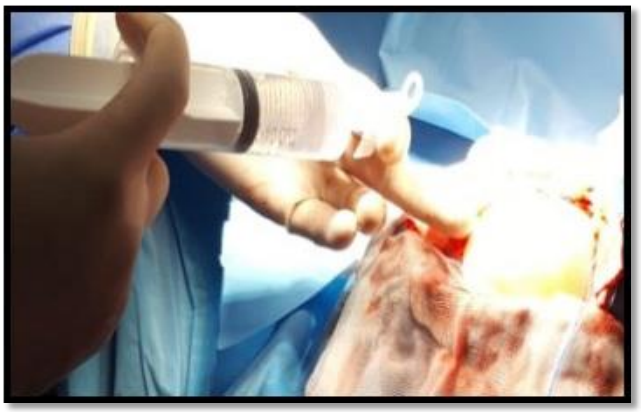

Figure 2: Peroperative photograph of the patient showing normal saline being pushed via a catheter between the cyst wall and brain parenchyma in order to deliver the cyst unruptured.

Outcomes and Follow-up

Postoperatively, he did not present an aggravation of his neurological deficit. Albendazole 10 mg/kg twice daily was started and continued for three months. Pathological examination of the specimen confirmed the diagnosis of hydatid cyst.The patient was discharged on fifth postoperative day with close follow-up. The outcome at 6 months was good without any neurological deficits.

Discussion

Hydatid disease is a parasitic disease caused by the larval stage of Echinococcus granulosus and it is endemic in the Middle-East, Mediterranean countries, South America, North Africa and Australia [3]. The liver is the most common organ involved (77%), followed by the lungs (43%). Intracranial hydatid cysts are rare and occur in only 0.5–3% of all the cases of hydatid disease and is usually diagnosed during childhood [2].

A primary cyst is the most common type and is always solitary. It is formed as a result of direct infestation of the brain without demonstrable involvement of other organs [4]. Our patient had a single intracranial cyst and radiological examinations of the thorax and abdomen revealed no other localization of a hydatid cyst. Secondary hydatid cysts occur as a result of rupture of primary cysts in others organs and then reaching by embolization to the brain; they are usually multiple and infertile [1,4].
The most common presenting symptoms are headache and vomiting due to elevated intracranial pressure. Other common presentations include focal deficits, papilledema, ataxia, hemiparesis, and disturbed conscious level [2-5].
Most of the cerebral cysts are located in supratentorial structures in the vascular territory of middle cerebral artery affecting parietal lobe [1,6].

Magnetic Resonnace Imaging (MRI) and Computed Tomography (CT) scan are the investigations of choice for radiological diagnosis. A CT scan characteristically shows hydatid cyst as a well circumscribed spherical or ovoid, hypodense, non-enhancing cystic lesion with no pericystic edema. On MRI it appears hypointense on T-1 weighted image and hyperintense with a hypointense halo around the cyst on T-2 weighted image [2,7].

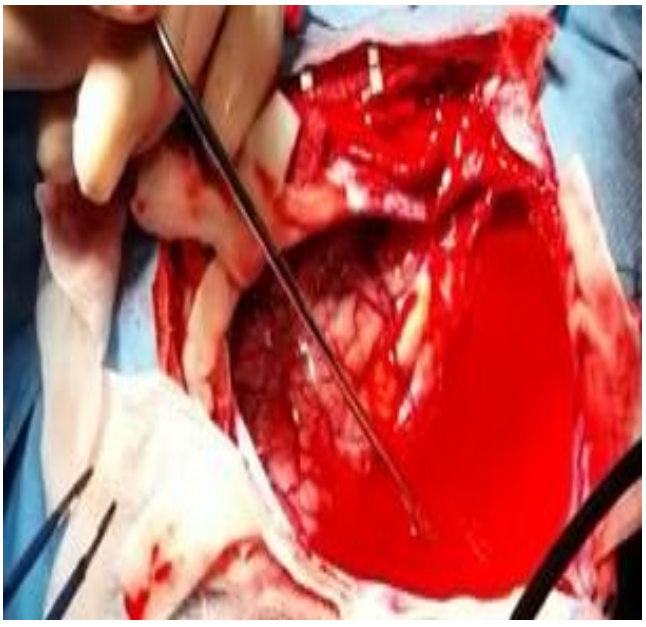

Figure 3: Intraoperative photograph of the patient showing the operative cavity after evacuation of the cyst.

The definitive management of a cerebral hydatid cyst is surgical removal of the entire cyst without rupture to prevent recurrence and anaphylactic reaction [8,9].
However,the timing of surgery was based on the neurological and neuroimaging findings in patients. Early cyst extirpation

(within 24 hours) was reserved for giant hydatid cysts that caused severe neurological deficits [8].

The most commonly utilised surgical procedure designed to remove the intact cyst completely without rupture is by irrigating saline into the interface between cyst wall and brain [10,11]. This technique was used in our patient.

Postoperative complications include seizure, subdural effusion, porencephalic cyst, hemorrhage, pneumocephlous, hydrocephalus and transient neurological deficits [2].

Additionnaly, preoperative and postoperative Albendazole may be administered to sterilize the cyst, decrease the risk of anaphylaxis, decrease the tension in cyst wall and reduce the rate of recurrence [4]. In our patient, Albendazole was started post-operatively and continued for three months

Conclusion

Incidence of primary intracranial hydatid cyst is very rare. The diagnosis should be specifically considered in endemic region. For the treatement, surgical removal with utmost care followed by medical treatment with Albendazole seems to be the most effective treatment.

Compliance with Ethical Standards

Conflict of interest statement

The authors did not receive any funding for the preparation of this case report.

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