

CASE REPORT

A Giant Hydatid Cyst at Right Frontoparietal Region: A Rare Case Report

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Abstract:

Background: Hydatid cyst is a parasitic disease which can affect the central nervous system. **Objective:** The purpose of the study is to reveal the clinical findings and the effect of giant the intracranial hydatid cyst at frontoparietal region, which is a rare finding. **Results:** A patients with right frontoparietal hydatid cyst was admitted in our hospital with history of headache, seizure and left upper limb weakness. We operated the patient and postoperatively developed hydrocephalous and pseudocyst at the site of operation. Cystoperitoneal shunt was done. The patient was medically treated by albendazole. The patient cured postoperatively. **Conclusion:** Patients with intracranial hydatid cyst can be treated surgically and with albendazole.

Key words: Hydatid cyst, echinococcus granulosus, intracranial, craniotomy, magnetic resonance imaging.

Introduction:

Parasitic zoonoses, transmittable from animals to humans, remain a serious and significant public health problem in developing countries^{1,2}. Twenty five percent of the world's population could be suffering parasitic infestation. Among these parasitoses, neurocysticercosis, infection of the central nervous system by *Taenia solium* metacestodes, is the commonest encountered cerebral parasitic infection in the world. It is the first cause of epileptic seizures in developing countries. The other zoonosis with a world-wide distribution is the hydatid disease which will be the topic of this chapter^{1,2}.

Indeed, in Antiquity, according to Galen, Hippocrates (4th century AD) has evoke the disease as taught his students: when liver is distended with water, it breaks in the epiploon, so the abdomen is full of water and the sick dies". Arateus, Galen (first and 2nd century AD, respectively), Al Rhazes (860-932 AD) and Avicenna (980-1037) reported also on

human involvement by hydatidosis. John Hunter in 1773 described the morphological picture and Goeze in 1782 the microscopic picture of the cyst. The first description of vertebral echinococcosis was by Chaussier in 1807³. Reydellet is believed to have performed the first surgical intervention for spinal hydatidosis in 1819. Virchow, for the first time in 1855, established the helminthic nature of alveolar cysts. The life cycle of the parasite was first described in 1862. In 1890, Graham and Clubb were the first neurosurgeons to perform removal of a brain hydatid cyst. Since the last century, it is usual to associate the following names with improvement of the surgical procedures of brain hydatid cyst: Dowling⁴. More recently Arana-Iniguez⁵ perfected the procedure giving birth to an unbroken cyst by irrigating saline isotonic solution between cyst wall and brain.

The echinococcus granulosus cycle requires two hosts: one intermediate, usually sheep, camel or swine, and the other final hosts represented by dog

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or fox. Dogs are infected by ingesting faeces or butured infected animals containing cysts which develop into cestode, an adult tapeworm in their small intestine. Eggs included in some parts of the bowels pass out through faeces and contaminate pasture. When ingested by the sheep, the scolex or eggs be-immediately infective by releasing larvae which cross the intestine wall. Then they are carried through the portal system to liver, where they develop into hydatid cysts. Occasionally humans can take the place of sheep as accidental intermediate hosts through contact with infected dogs or by oral in-gestion of garden vegetables infected by the eggs of the parasite.

If the daughter cyst crosses the hepatic filter; then it is spread through the bloodstream to other organs, i.e. lungs, and less frequently to brain. Usually, the infestation goes up the systemic circulation to the parietal lobe via the middle cerebral artery as in all embolic diseases. Brain hydatid cysts (BHC) are spherical, or balloon-shaped, and are characterized by slow growth. At diagnosis, their size varies from few centimetres to huge volume of 15cm or more. Ventricles, brainstem and orbit are other exceptional localizations. The solitary aspect of the BHC is the most observed (85%), remaining cases are multilocular or multiple. Growth rate is slow and controversial, ranging between 1 and 10 cm per year. Rarely, BHC can be calcified, expression of their degeneration and death.

Case report:

A 14 years old boy was admitted at the Department of Neurosurgery, Bangabandhu Sheikh Mujib Medical University, Shahbag, Dhaka with the complaints of occasional headache for last two years. Headache was global in nature. Headache became worse at very early in the morning. There was history of occasional seizure for one year with temporary loss of consciousness. Seizure started at left upper limb and became generalized. There was history of tongue bite and history of micturation and defecation during seizure. On examination higher psychic function was normal. All cranial nerves were intact and weakness of left upper limb. Muscle power was grade four at left upper limb. There was no history of taking any burn meat.

Magnetic Resonance Imaging (MRI) of brain with contrast and computerized tomography (CT scan) of brain with contrast showed a giant hydatid cyst at right frontoparietal region. The patient underwent surgery by wide craniotomy at right frontoparietal region under general anaesthesia. Dura was opened widely. Total excision of cyst was done with cotton dissection, saline irrigation and through the arachnoid plane. Irrigation was done with 3% sodium

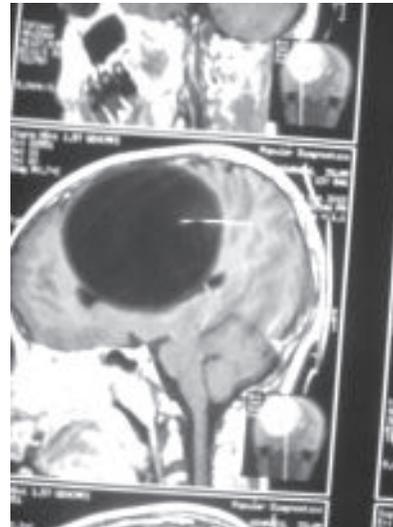


Fig.-1: MRI of brain with saggital section frontoparietal giant hydatid cyst

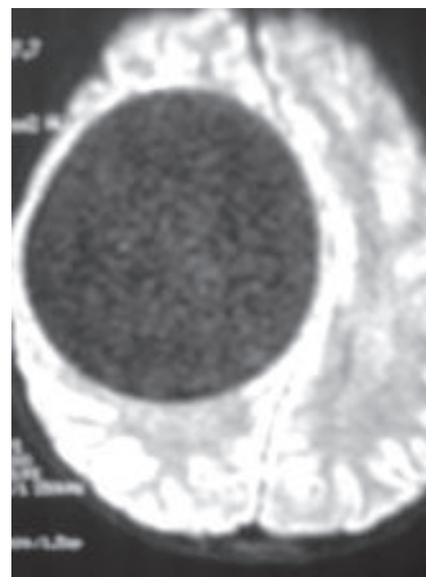


Fig.-2: Diffusion axial film showed giant right frontoparietal hydatid cyst

chloride, hydrogen peroxide and normal saline. Cyst size was 13x12 cm in diameter. Postoperatively patient developed right frontoparietal subdural hygroma which was treated conservatively. Diagnosis was confirmed by histopathological and microbiological examination. Post operatively patient



Fig.-3: Preoperative photograph of the patients

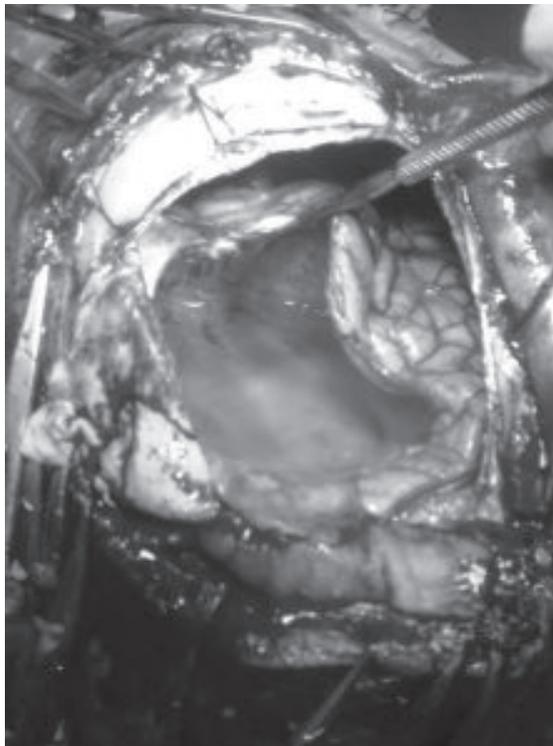


Fig.-4: Peroperative photograph showed space after excision of the hydatid cyst

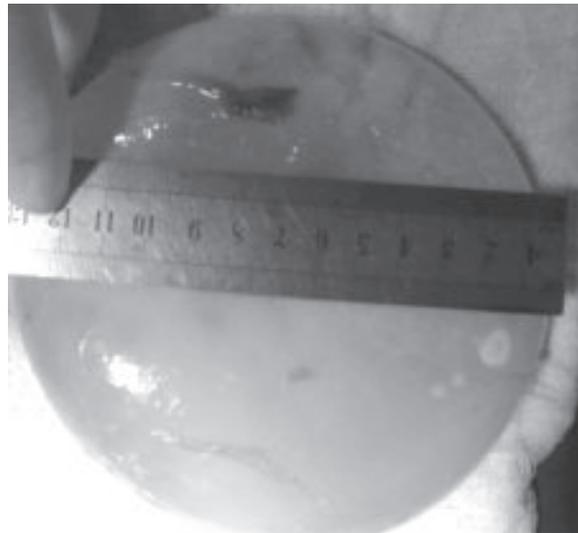


Fig.-5: Postoperative photograph after excision of the hydatid cyst

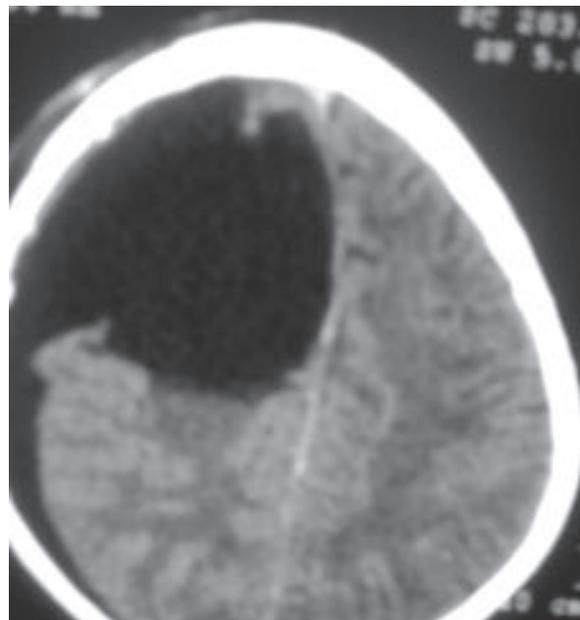


Fig.-6: Postoperative CT scan of brain after excision of the hydatid cyst with subdural hygroma

developed hydrocephalus, subdural hygroma with pseudocyst. Cysto peritoneal shunt was done. Postoperative period was uneventful. Albendazole 400 mg was given 12 hourly for 4 weeks. Patient was totally improved clinically.



Fig.-7: Postoperative photography of the patients without neurological deficit

Discussion:

Hydatid is a word derived from the Greek “ydatos” which means water. Hydatid disease is a parasitic infestation caused by a dog tapeworm larvae of *Echinococcus granulosus*, a helminth belonging to the cestode group.

It is common in sheep farming in underdeveloped countries such as those in Asia, Africa, South and Central America or in the Mediterranean area. “It follows the sheep as his shadow”. On the opposite, it is unusual in developed countries. Nevertheless, this notion should be attenuated by the movements of humans, especially migratory flows. Liver and lung as big filter of the portal system, are the most infested organs, whereas involvement of brain, 2-3% of all body localizations, and spine, less than 1%, are rare. However, these spinal hydatid cysts (SHC) represent around 50% of the bone localizations.

BHC occurs more frequently in children than in adults. This data was confirmed in our 99 patients operated on between 2000 and 2007 in 4 departments of neurosurgery: 2 in Algiers (Ait Idir and Salim Zemirli), one in Annaba and one in Constantine. Among them, 59 (59.5%) were less than 15 years old. The probable reason may be ductus arteriosus, or their close contact with infected dogs. There is no appreciable difference between males and females affected: sex-ratio 46/53. In children, loss of balance and rapid growth of head circumference are suspicious for the parents. Headaches, blurred or decreased vision and vomiting are usual reasons for consultation. Signs of increased intracranial pressure are of paramount importance in the diagnosis of this space occupying lesion. Focal neurological deficit depends on the involved area and the size of the hydatid cyst. Nevertheless, some infants present with ataxia and or dysmetria when imaging features show huge parieto occipital hydatid cyst. This can be explained by the hypothesis of a pressure cone on cerebellum through the tentorium. Untreated, patient become lethargic, stuporous, eventually comatose. In their series, location of hydatid cyst in the supratentorial compartment was present in 92 cases, 4 cases were in the brainstem one case was in the cerebellar hemisphere and two cases were in the orbit.

Children treated for head injury may sometimes show split sutures indicative of increased intracranial pressure, leading to the incidental discovery of intracranial mass lesion. Skull X-rays can be useful, showing signs of raised intracranial pressure as suture diastasis, unilateral enlargement or erosion of the inner table of the skull, or decalcification of the posterior clinoid process in older patients. CT scan demonstrates non contrast enhancing circular hypodense lesion^{6,7} ipsilateral ventricles can be compressed, effaced with midline shift to the controlateral hemisphere. Sometimes one large cystic lesion with internal septations evocative of daughter cysts can be seen. Absence of surrounding oedema is usual. In previous series, a diameter of 5-10cm was the most frequent and was encountered in 56% of cases. In 51 cases (5 1%), BHC was single and multiple in 49 patients. Due to increased

intracranial pressure and worsening of the patient's condition, MRI was not performed on many patients and the decision was to operate as soon as possible. MRI, axial, sagittal and coronal views, reveal spherical or egg-shaped lesions with CSF-like signal intensity both in T1 and T2 sequences: hypointense in T1 and hyperintense in T2. On T1 weighted images, the thin capsule is iso- or slightly more hypointense than the fluid content; enhancing ring lesion is observed in case of infected cyst. T2W images show a low intensity rim which correlates to the external layer composed of fibrosis of surrounding brain tissue. On the whole, image of BHC is a well recognized entity on CT scan, which is superior to, MRI in depicting rare calcifications. On the other hand, MR imaging is more accurate in demonstrating the pen-cyst layer, which appears as a ring⁵.

In our case the patient had been admitted with history of headache, upper limb weakness and seizure which was treated with excision of the tumor and medical treatment by albendazole for 4 weeks.

Conclusion:

Patients with hydatid cyst can be treated by surgical excision and with antimicrobial agent, like albendazole. The disease can be prevented by discouraging people by taking of burn meat and food

hygiene by hand wash and uncooked vegetable washing properly.

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