Pediatric Giant-Sized Intracerebral Hydatid Cyst: Reports Of Two Cases

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Summary

Hydatid cyst disease is a parasitic disease caused by the larval forms of echinococci. Although the liver and lungs are the most common organs affected by the disease, it may appear rarely in central nervous system. It has two main forms as the cystic form and alveolar form. Cerebral hydatid cyst is more common in pediatric population and 75% of patients in the present series were children. Especially in children, the cysts may cause no symptoms until they become large size. Radiologic investigations including Computed Tomography and Magnetic Resonance Imaging are important and used in the preoperative diagnosis of hydatid cyst. The essential treatment of hydatid cyst is surgical and the aim of surgery is to remove the cyst without rupture. The Dowling's technique is the most effective surgical procedure for the excision of cysts. Giant-sized intracerebral hydatid cysts in childhood are rarely reported in the literature. In this study, we report two cases of giant intracerebral hydatid cysts which were removed without rupture by Dowling's technique.

Key words: Giant size, hydatid cyst, intracerebral involvement, pediatric

Özet


Anahtar Kelimeler: Dev boyut, hidatik kist, intraserebral tutulum, pediatric
INTRODUCTION

Hydatid cyst disease is a parasitic disease caused by the larval forms of echinococci\(^{(20,21)}\). It has two main forms as the cystic form which is more frequently seen Echinococcus granulosus and the alveolar form which is rarely seen and caused by Echinococcus multilocularis. The definitive hosts of echinococcus are dogs. Sheep, cattle and swine are common intermediate hosts. Humans are infected with the parasite egg by contact with dogs or from contaminated food\(^{(10,20,21)}\).

Although the liver and lung are the most common organs affected by the disease, it may appear rarely in central nervous system 1.6-5.2%\(^{(17)}\). Intracerebral hydatid cyst is more common in pediatric population and nearly 75% of patients in the present series were children\(^{(4,10)}\). The cerebral cyst usually has a single, spherical and unilocular pattern. Multipl intracranial cysts are rarely seen\(^{(15)}\).

The cysts may cause no serious symptoms until their size become huge. The clinical findings are related to site and size of the cyst. Symptoms may occur slowly. The patients with intracerebral hydatid cyst usually present with progressive neurological deficit related to increased intracranial pressure\(^{(3,5,19)}\). Radiologic investigations including Computed Tomography (CT) and Magnetic Resonance Imaging (MRI) are important and used in the preoperative diagnosis of hydatid cyst.

Pediatric giant intracerebral hydatid cysts are rarely reported in the literature\(^{(10,13,14,19)}\). In this study, we report two cases of pediatric giant intracerebral hydatid cysts which were removed without rupture by Dowling's technique.

CASE PRESENTATION

Case 1: A nine-year-old boy was admitted to our clinic with one year history of generalized seizure and tremor on the left hand. The physical examination of the patient was normal. Neurological examination revealed mild dysarthria, moderate ataxia and tremor of both upper extremities. The patient reported a specific history of direct contact with the dog. MRI showed a giant spherical cystic lesion (90x90x85mm) in the right temporo-parietal region with midline shift (Figure 1). No other focus was found in abdominal ultrasonography (USG) and posteroanterior (PA) chest radiography and no abnormality was seen in laboratory studies.

Case 2: A seven-year-old boy was admitted to our emergency unit because of somnolence and mental confusion. Patient was describing intermittent headache for six months in his medical history. Similarly, this case had a history of direct contact with the dog. The physical examination of the patient was normal. On neurological examination, he was somnolent and there was right hemiparesis. He had right sided weakness with power 3/5 in right upper and lower extremities. Fundoscopik examination revealed papilledema on the left side. MRI showed the existence of a giant spherical cystic lesion (90x80x80mm) in the left fronto-parietal region with midline shift (Figure 3).

Both cases were operated on. After craniotomy and cortical incision, we performed Dowling's technique in our cases with success and the cysts were removed without rupture (Figure 5). Postoperative CT and MRI scans showed a large space without any residual matter (Figure 2,4). The patients showed significant neurological improvement and they were discharged a week after the operation. The latest neurological examination of the patients were normal. Albendazol (30 mg/kg/day) and Phenytoin (5mg/kg/day) therapy were started and continued for three months.
Figure 1: Case 1 Preoperative Axial, coronal and sagittal T1-weighted MRI.

Figure 2: Case 1 Postoperative Axial CT section

Figure 3: Case 2 Preoperative Axial, T1 and T2-weighted MRI.
DISCUSSION

Hydatid cyst is still a common and serious parasitic disease and more frequently seen in developing countries where animal breeding conditions exist\(^{(12,21)}\). Domestic and some wild animals play an important role in the disease transmission. It can be commonly seen as an endemic disease in regions where prevalent cattle breeding conditions exist\(^{(7)}\). There was a history of direct contact with animals in our cases. This disease may affect different organs and occasionally can be fatal. Hydatid cysts usually grow slowly. So these cysts can grow to considerable size at diagnosis. The symptoms related by intracranial involvement cannot be observed in the early period. The clinical findings of disease usually related to increased intracranial pressure and appear in the late period. Intracranial hydatid cysts are usually single and located in the brain parenchyma. Cysts are rarely seen within the lateral ventricle\(^{(6,7)}\). Both of our patients were observed with a solitary giant intracranial hydatid cyst which is associated with the neurological findings that were the signs of increased intracranial pressure in the late period.

Cranial CT and MRI have been extremely useful in the preoperative diagnosis of intracranial hydatid cysts and in the planning of appropriate surgical management. Hydatid cysts are usually well-defined, thin-walled, spherical, solitary, homogeneous lesions\(^{(8,9,15,16)}\). The cyst fluid density is generally equal to that of cerebrospinal fluid on MRI images and cyst wall is observed hypointense on T1 and T2-weighted MRI images\(^{(8)}\). The cyst

\[\text{Figure 4: Case 2 Postoperative sagittal and axial T1-weighted MRI.}\]

\[\text{Figure 5: Dowling technique}\]
does not enhance after intravenous administration of contrast agent, and calcification can be rarely seen on the cyst wall\(^3,14\). CT and MRI scan revealed a giant cystic lesion in the right temporoparietal region in our first case, and in the left frontotemporal region in the second case. In our cases, CT and MRI showed the well-defined, thin-walled, spherical, solitary giant cystic lesion which is typically isodense and isointense respectively to cerebrospinal fluid with no rim enhancement, raising the suspicion of hydatid cyst.

The differential diagnosis of intracerebral hydatid cysts includes cystic lesions such as arachnoid cyst, porencephalic cyst, cystic tumors of the brain and pyogenic abscess\(^4\).

Surgery is essential for the treatment of intracranial hydatid cyst\(^3\). Surgical excision of the cyst without rupturing by Dowling's technique is very important\(^2\). These techniques commonly used for remove intracranial cyst, also can be used in removing cysts that were located into the lateral ventricle\(^6,7\). If the cyst does rupture, agents such as hypertonic saline solution, silver nitrate, iodin can be used to kill the scoleces\(^2,11,18\). Both cases were operated on. After craniotomy, we performed Dowling's technique in our cases with success and we removed surgically a giant cyst without rupture. Recurrence risk of the disease was reduced by cyst removal without rupture. Thus, no surgical complication was observed in our patients at the early and late period. The diagnosis was intracranial hydatid cyst and was confirmed with radiological and histopathological evaluations.

Medical treatment is used the cases performed surgery to reduce recurrence both pre-and postoperatively. Medical treatment with albendazol seems to be safe and beneficial for patient with recurrent intracranial hydatid cysts\(^1,18\).

Therefore parasitic disease such as hydatid cyst should be considered in the differential diagnosis of patients having symptoms occurred slowly in a long time who have a history of contact with animal and who live in endemic regions.

Headaches and convulsion in children should not be considered unimportant especially in endemic regions\(^5\). Children get severe headache must be carefully examined and investigated, especially history of contact with animal should be investigated very well.

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