# Cerebral Hydatid Cysts in Childhood: Computed Tomography Findings: Case Reports

## *ÇOCUKLUK ÇAĞINDA SEREBRAL KİST HİDATİD: BİLGİSAYARLI TOMOGRAFİ BULGULARI: OLGU SUNUMLARI*

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**Abstract**

Cerebral hydatid disease is rare, and it is usually diagnosed during childhood. A round cystic lesion without perifocal edema and rim enhancement is the characteristic appearance on a computed tomography (CT) scan. In this case report, we review the CT findings of two children with pathohistochemically-confirmed cerebral hydatid cysts.

**Key Words:** Echinococcosis, brain, tomography, X-ray computed

**Özet**

Serebral hidatik hastalık nadir olup genellikle çocukluk çağında tanı alır. Tipik bilgisayarlı tomografik (BT) bulgusu, çevresel ödem ve kontrastlanma göstermeyen yuvarlak kistik lezyondur. Bu sunuda, histopatolojik olarak tanısı konulan serebral kist hidatidli 2 çocuk hastanın BT görüntüleme bulguları ortaya konulmuştur.

**Anahtar Kelimeler :** Kist hidatik, beyin, bilgisayarlı tomografi

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Hydatid disease (*Echinococcus granulosus*) is endemic in the Middle East as well as other parts of the World, including India, Africa, South America, New Zealand, Australia, Turkey and Southern Europe.[1] Infestation by hydatid disease in humans most commonly occurs in the liver (55-70%), followed by the lung (18-35%). Cerebral hydatid disease is rare, and occurs in 1-4% of patients infected with the parasite.[2-4] Signs and symptoms are related to the site and size of the cyst. Headache and vomiting due to increased intracranial pressure are the most common presenting symptoms. We present 2 cases with intracranial hydatid cyst and discuss the computed tomography (CT) features.

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## Case Reports

### Case 1

A 9 year-old boy presented with a 6-month history of progressive left temporoparietal headache and vomiting. Routine laboratory tests and neurologic examination were within normal limits. A CT scan of the brain showed a large cystic lesion in the left temporo-parietal region and midline shift to the right (Figure 1A). The center of the cystic mass had a mean density of + 9.3 HU. An echinococcus heamaglutination test was positive. The lesion was defined as a type-I hydatid cyst according to the Gharbi classification. Further radiological examination of the abdomen with CT and ultrasonography (US) revealed a hydatid cyst of the liver (Figure 1B). Exploration through a left parieto-temporal craniotomy revealed a hydatid cyst in the left parietal lobe which was then enuclated. Hydatidosis was confirmed histopathologically (Figure 1C). Medical treatment was commenced postoperatively.

### Case 2

A 15 year-old boy was admitted with a 3-month history of progressive headache and vomit-

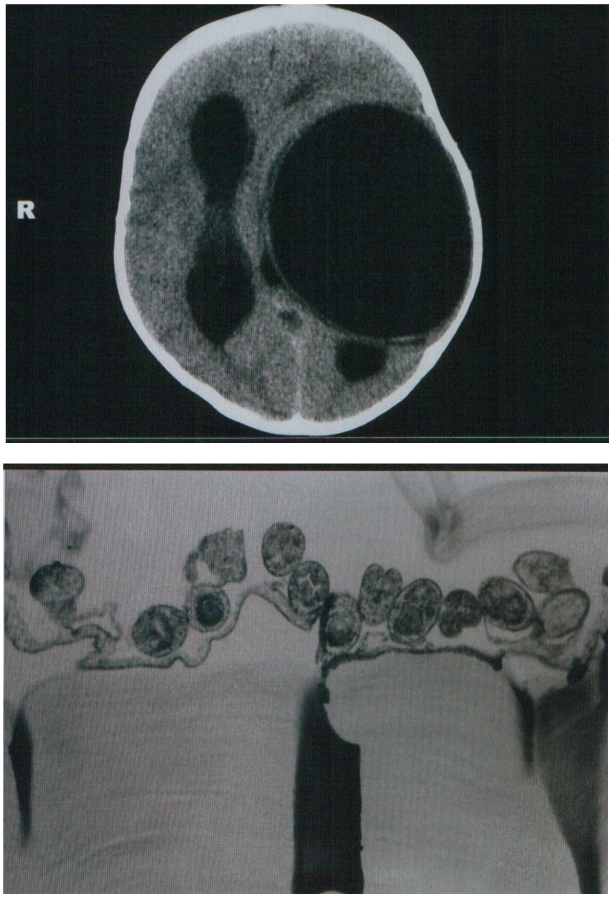


**Figure 1**. A simple hydatid cyst of the brain in a 9-year-old boy.
**A.** Axial CT scan shows a well-defined, smooth cyst in the left temporoparietal region with obvious mass effect.
**B.** Axial CT image demonstrates a uniloculated cyst involving the inferior of the liver.
**C.** Microscopic examination: Section through cyst wall shows the cuticula and the acellular germinative membranes with multiple protoscolex inside (Hematoxylin and eosin stain, X 175).

ing. Routine laboratory tests and neurologic examination were normal. A CT examination of the brain showed a well-defined, thin-walled, unilocular cystic lesion in the left parietooccipital region (Figure 2 A, B). An echinococcus hemagglutination test was positive. The lesion was defined as a type-I hydatid cyst according to the Gharbi classification. The patient underwent laparotomy 5 years previously for a hydatid cyst of the liver. The diagnosis of hydatid cyst due to *Echinococcus granulosus* was confirmed by surgery in case. Medical teratment was commenced postoperatively.

## Discussion

A parasitic tapeworm, called *Taneia Echinococcus,* is the causative agent of hydatid disease. Hydatid disease is endemic in sheep and cattle-raising areas in the World.[5] Echinococcosis may involve almost every organ or tissue in the body via the portal and the systemic circulation. In our cases, there were extracerebral organ involvement (liver). Hydatid disease of the central nervous system constitutes 1-4% of all reported cases of hydatid cysts. Cerebral cystic echinococcosis is most commonly seen children and young adults. Cerebral hydatid cysts may reach a considerable size before they become symptomatic. Clinical presentation is nonspecific and patients usually present with the signs and symptoms of increased intracranial pressure in the adolescent or adult life.[6] In our patients, the most common clinical findings were headache and vomiting. Both of our patients, the results of *Echinococcus* hemagglutination test were positive. Parietal region is reported to be the most common location of cerebral hydatid cysts, however hydatid disease may be located anywhere in the brain including infratentorial and even intraventricular locations, it is most frequently located in the territory of the middle cerebral artery.[7] In our cases, there were lesions in these regions.

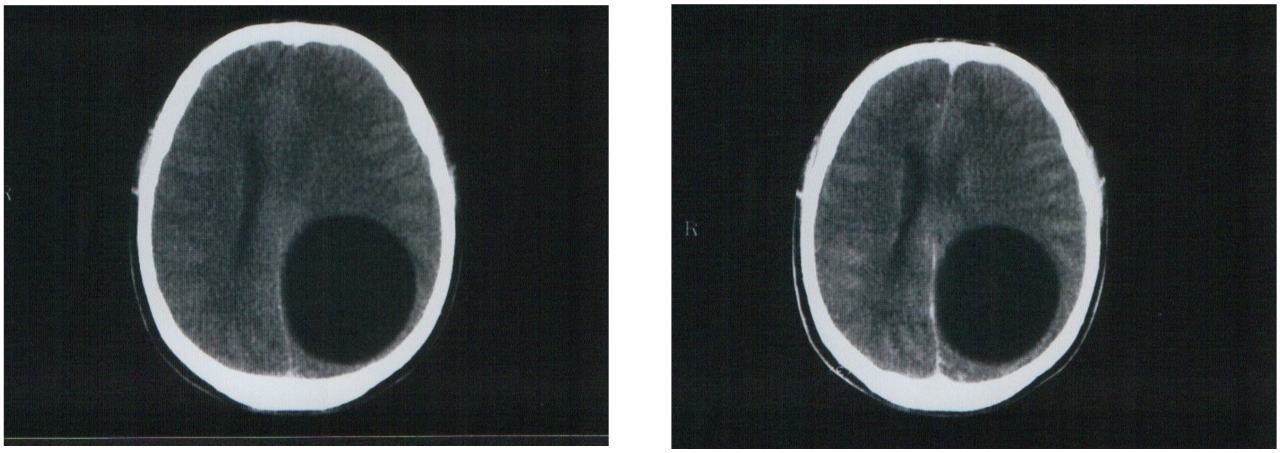

**Figure 2**. A simple hydatid cyst of the brain in a 17-year-old boy.
**A.** Unenhanced axial CT image shows solitary, a unilocular cyst in the left parieto-occipital region.
**B.** In same patient, contrast-enhanced axial CT scan: No contrast enhancement is seen.

Cerebral hydatid cysts are usually solitary and unilocular or multilocular, although multiple cysts have been reported.[6,8] In the first case, the lesion was located in the left temporoparietal region whereas in the other case, it was located in the left parietooccipital region.

Common CT findings of cerebral cystic echinococcosis include the presence of well-defined, smooth, thin-walled, spherical, homogeneous cystic lesions. The appearance of the cyst fluid is similar to that of cerebrospinal fluid. On unenhanced CT, the cyst wall is isodense or hyperdense to brain tissue. Usually no rim enhancement or surrounding edema is evident unless the hydatid cyst is superinfected. Calcification is extremely rare.[6,7] The observation of daughter cysts is considered pathognomonic but has been very rarely reported.[6] In our cases, CT showed a well-defined, smooth, thin-walled, spherical cystic mass with an attenuation similar to that of cerebrospinal fluid, without septation, calcification or surrounding edema. Compression and shifting of the midline structures and ventricles are seen in our cases.

The differential diagnosis of intracranial cystic echinococcosis includes cystic lesion such as porencephalic cyst, arachnoid cyst, cystic tumours and pyogenic brain abscess.[6,9] Cystic echinococcosis can be differentiated from brain abscess and cystis tumour by the absence of significant rim enhancement, surrounding edema and mural nodule.[9] In contrast to hydatid cysts, porencephalic cysts and arachnoid cysts are not spherical in shape and are not surrounded entirely by brain substance.[6,9]

In conclusion, a well-defined spherical cystic intracranial lesion with obvious mass effect, but no perilesional edema and no contrast enhancement following contrast administration strongly favours hydatid disease in endemic areas.

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