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AJNR Am J Neuroradiol 1990, 11 (6) 1249-1250

<http://www.ajnr.org/content/11/6/1249.citation>

This information is current as
of April 9, 2024.

MR Imaging of an Intracerebral Hydatid Cyst

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Cerebral hydatid disease (echinococcosis) is rare. It is reported to occur in 1–4% of persons infected with *Echinococcus granulosus*. Several CT demonstrations of hydatid cysts have been published; however, we have not been able to locate any publications describing MR findings.

Case Report

We describe the CT and MR findings in a 10-year-old boy who presented with a 5-year history of headache, often relieved by vomiting. He had had a seizure approximately 1 year prior to admission and a second seizure 1 month before admission. The patient had performed poorly in school. On examination, there was a left-sided weakness and bilateral papilledema. The boy lived on a farm, where he played with dogs and other animals.

CT scans obtained upon admission demonstrated a large cystic lesion in the right parietal area extending to the inner table of the skull (Fig. 1A). There was marked compression of the right lateral ventricle and displacement of midline structures to the left. The density of the cyst's contents was similar to the CSF in the lateral ventricles. There was no enhancement of the lesion and no associated calcification. Ventricular dilatation was associated. Axial and coronal spin-echo MR images, 600/20/2, 2000/40/2, and 2000/80/2 (TR/TE/excitations), confirmed the sharply demarcated, spherical, cystic lesion. In both the 600/20 and 2000/80 images, the signal intensity of the cyst's contents was identical to the CSF of the lateral ventricles (Figs. 1B and 1C). On the 2000/40 images there was periventricular increased signal intensity consistent with transependymal permeation of CSF secondary to some compression of the foramina of Monro. On the 2000/80 images there was a thin rim of low signal intensity around the cyst.

Prior to surgery, antiparasitic therapy for hydatid disease was instituted. At surgery, the classic pearly white appearance of a hydatid cyst was seen projecting to the surface of the brain (Fig. 1D). Pathology confirmed the diagnosis of a hydatid cyst demonstrating viable scoleces.

After surgery, a repeat CT scan revealed ventricular dilatation, which responded to a ventriculoperitoneal shunt. Three months after discharge, the child appeared well.

Discussion

The primary host of the adult worm of *Echinococcus granulosus* is the dog. The intermediate hosts are usually sheep or cattle, the disease being endemic in many of the sheep- and cattle-raising countries of the world. Occasionally, humans become intermediate hosts owing to the ingestion of food contaminated by dog feces containing ova of the parasite or through close contact with infected dogs. The larval stage of the parasite penetrates the intestinal mucosa to reach the liver through the portal circulation. The larvae pass into the hepatic veins, cross the pulmonary circulation to the systemic circulation, and subsequently are transported to the brain, causing cerebral hydatid disease. This usually occurs in children, resulting in large, slowly growing lesions. They may present with few neurologic symptoms and signs apart from raised intracranial pressure, although seizures may occur occasionally.

There are several published reports of CT findings of cerebral hydatid disease [1–10]. The lesion is usually described as a large single cyst of CSF density located in the parietal area. Calcification of the margin of the cyst and, rarely, intracystic calcifications have been reported [5, 6, 8–10]. Multiple cysts have also been described, probably secondary to rupture of a single cyst [4, 9, 10]. In our case, the CT appearance was typical of a hydatid cyst.

At MR, the spherical shape of the lesion was demonstrated on axial and coronal images. The contents of the cyst had a signal intensity identical to CSF. The low signal intensity of the cyst wall was strong evidence for cerebral hydatid disease. This has been described in association with hydatid cysts in other areas of the body [11–13] but is not pathognomonic as it has also been evident on MR images of amoebic liver abscesses [14, 15].

On CT the differential diagnosis of a hydatid cyst would include an arachnoidal cyst, a porencephalic cyst, and a cystic tumor. MR should differentiate between these lesions. Arachnoid cysts are not spherical. Although porencephalic cysts usually communicate with the lateral ventricles, a closed

Received March 13, 1990; revision requested May 3, 1990; revision received June 11, 1990; accepted June 12, 1990.

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AJNR 11:1249–1250, November/December 1990 0195–6108/90/1106–1249 © American Society of Neuroradiology

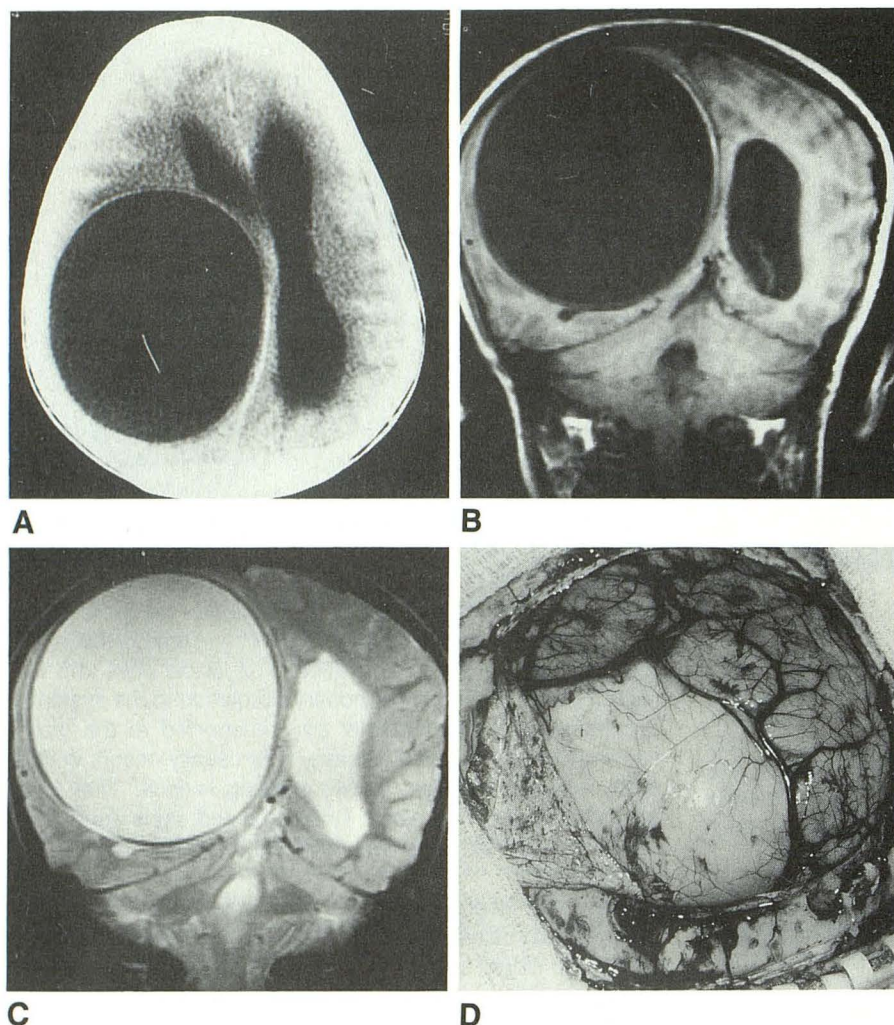


Fig. 1.—A, Axial CT scan of right parietal spherical hydatid cyst.

B, Coronal MR image (600/20) of spherical right parietal hydatid cyst; signal intensity of contents is identical to that of CSF.

C, Coronal MR image (2000/80) of right parietal hydatid cyst with peripheral rim of low signal intensity.

D, Intraoperative photograph of typical pearly white hydatid cyst.

porencephalic cyst may present a differential problem. However, these should not have a low-intensity wall. The signal intensity of the contents of cystic tumors differs from that of CSF. Also, a low-intensity cyst margin is unlikely to encompass a tumor.

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