AJNR

Pontine hydatid cyst in association with an acoustic neurinoma: MR appearance in an unusual case.

M Mascalchi, A Ragazzoni and G Dal Pozzo

AJNR Am J Neuroradiol 1991, 12 (1) 78-79
http://www.ajnr.org/content/12/1/78.citation

Pontine Hydatid Cyst in Association with an Acoustic Neurinoma: MR Appearance in an Unusual Case

Mario Mascalchi,[1] Aldo Ragazzoni,[2] and Giancarlo Dal Pozzo[1]

Cerebral localization of the larval form of *Echinococcus granulosus* is a rare occurrence (1–4% of cases of hydatidosis) [1], and usually produces solitary large unilocular (hydatid) cysts located in the supratentorial compartment [2–4]. We report the plain and contrast-enhanced MR appearance of a histologically proved pontine hydatid cyst that was adjacent to a multicystic acoustic neurinoma in the cerebellopontine angle (CPA).

Case Report

A 60-year-old man presented with recurrent right facial pain, right facial spasms, dizziness, nausea and vomiting, and a progressive numbness of the left leg. His medical history included complete hearing loss on the right side dating from a childhood episode of otitis media. Neurologic examination revealed an ataxic gait, hypereflexic weakness, and tactile and vibratory hypoesthesia of the left leg. Paresthesias in the distribution of the right trigeminal nerve were also present. Cranial MR (0.5 T) (Fig. 1) showed a slightly inhomogeneous mass in the right CPA and the internal auditory canal that was separated by a thin layer of tissue from a round cyst in the mid pons with mild pericystic changes. The pontine lesion had considerable mass effect and the lumen of the fourth ventricle was not appreciable (Figs. 1A and 1B). No abnormalities of the supratentorial compartment were observed except for a moderate enlargement of the third and lateral ventricles. After IV administration of gadopentetate dimeglumine (Shering AG, Berlin) (0.1 mmol/kg), a marked contrast enhancement of the CPA mass was evident (Fig. 1D). However, small areas within the mass failed to enhance, as did most of the pontine cyst walls. A faint ring enhancement within the pontine cyst was observed. One month after MR, the patient underwent surgery for removal of the CPA mass and of the unruptured central pontine cyst. Histologic examination revealed the former to be an acoustic neurinoma of the Antoni type A and the latter to be a hydatid cyst containing multiple vital scoleces. Subsequent hepatic sonographic examination revealed two clinically silent hydatid cysts. After specific inquiry, the patient revealed that 30 years earlier he had worked as a mason for a 4-month period in a sheep slaughter industry in Argentina.

Discussion

The hydatid nature of the pontine cyst in our case was unexpected at the time of surgery. In fact, the great dimensions of the concomitant CPA lesion originating in the internal auditory canal [5], its marked contrast enhancement [6], and its multicystic appearance, clearly outlined by the postcontrast MR scan, had led us to expect an acoustic neurinoma extending from the CPA into the pons. Acoustic neurinomas with a large extracanalicular component often present unilocular or multilocular cysts that fail to enhance after contrast administration [7]. Posterior fossa localization of a hydatid cyst is uncommon; in these cases the cyst usually locates in the cerebellum [8], and localization within subarachnoid spaces or the CSF ventricular system is exceptional [9, 10]. Moreover, to our knowledge, only one case of brainstem hydatid cyst has been reported in the literature [11].

The diagnostic efficacy of CT for cerebral echinococcosis is well established; it shows hydatid cysts as large, well-defined, spherical, nonenhanced unilocular cysts containing fluid close to the attenuation values of CSF. They usually have thin walls and are calcified only rarely [2–4]. Mass effect and obstructive hydrocephalus are also commonly observed [2–4].

The MR appearance of brain hydatid cyst is poorly known, and we are aware of only one case with multiple cerebral localizations [12]. In that case, as in our own, the cysts appeared as round collections of fluid hyperintense relative to CSF on proton-density images and isointense on T1- and T2-weighted images with mild pericystic changes. No data on the postcontrast MR appearance of hydatid cysts are available. We observed partial enhancement of the hydatid cyst wall and faint ring enhancement within the cyst. These unusual features could be attributable to pericystic inflammatory reaction and to the presence of vital scoleces found at the histologic examination, respectively. Similar features have been described in a case of cerebral echinococcosis studied by contrast-enhanced CT [2] and are commonly observed in vesicular cerebral cysticercosis [13].

When evaluating a large isolated cyst within the brain parenchyma one has to consider the possibility of cerebral hydatidosis, especially in patients who have been in geographic areas in which there is endemic infection, such as the

Received March 12, 1990; revision requested June 7, 1990; revision received July 17, 1990; accepted July 19, 1990.
[1] Department of Clinical Physiopathology, Radiodiagnostic Section, University of Florence, Viale Morgagni 85, 50134, Florence, Italy. Address reprint requests to M. Mascalchi.
[2] Department of Neurology, University of Florence, Florence, Italy.

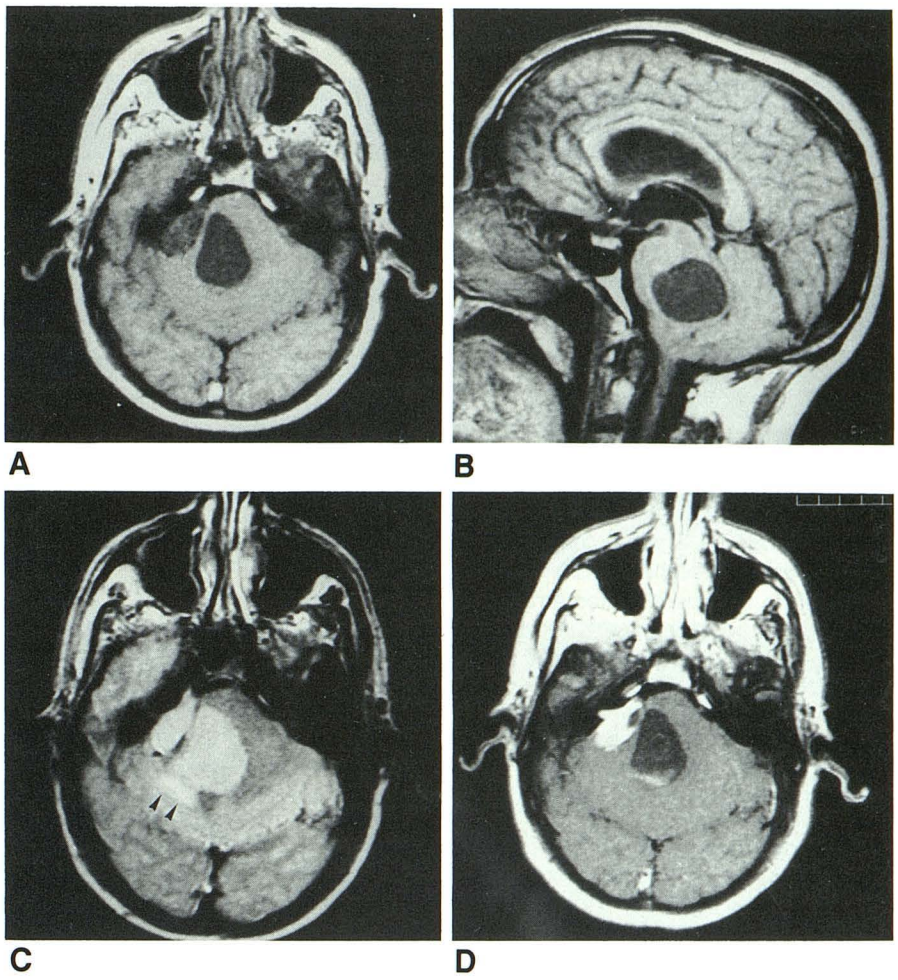

Fig. 1.—MR images of pontine hydatid cyst associated with right acoustic neurinoma.

***A* and *B*, Precontrast T1-weighted SE images, 360/30/4, show a mass slightly hypointense relative to normal brainstem with some areas of lower signal intensity occupying the right cerebellopontine angle (CPA) and internal auditory canal (*A*). The mass is separated by a thin layer of tissue from a cyst in the mid pons whose content is nearly isointense with CSF. The pontine cyst has considerable mass effect and the lumen of the fourth ventricle is collapsed (*A* and *B*).**

***C*, Precontrast T2-weighted SE image, 1840/50/2, shows signal within CPA mass and pontine cyst to be hyperintense compared with CSF and normal brainstem. A circumscribed hyperintense area, probably representing edematous or inflammatory changes, is seen posterior to the pontine cyst (*arrowheads*).**

***D*, Postcontrast T1-weighted SE image, 360/30/4, shows marked contrast enhancement of the CPA mass. A small oval area lacking contrast enhancement is present within the hyperintense CPA mass. Faint ring enhancement within the pontine cyst and enhancement of the posterior portion of the pontine cyst wall, possibly related to the presence of vital scoleces and to the inflammatory pericystic reaction, respectively, are observed.**

Middle East, the Mediterranean countries, South America, and Australia. In such cases the radiographic suspicion can be confirmed by the specific biological (Casoni skin test) or immunological tests [14], which unfortunately are frequently negative in cases of isolated brain localization [2]. The diagnosis is also aided by radiographic investigation of possible concomitant hydatid cysts in other organs, such as liver and lungs.

Preoperative diagnosis of cerebral hydatid disease is important, since surgical removal of the cyst carries the risk of intraoperative rupture with secondary seeding. In addition, recognition of the hydatid nature of the cyst on the basis of laboratory or radiographic findings may be crucial in instances of surgical contraindication, which includes multiple cerebral localizations of the cyst or localizations at nonresectable sites [15]. In these cases medical treatment should be attempted with Albendazole, which has proved to be safe and promising for both extracerebral and cerebral hydatidosis in that it reduces the size of the cysts and even causes them to disappear [12, 16].

REFERENCES

1. Hydatid disease (echinococcosis). In: Reeder MM, Palmer PES, eds. *The radiology of tropical disease*. Baltimore: Williams & Wilkins, **1981**: 157–222
2. Hamza R, Touibi S, Jamoussi M, Bardi-Bellagha I, Chitioui R. Intracranial and orbital hydatid cysts. *Neuroradiology* **1982**;22:211–214
3. McCorkell SJ, Lewall DB. Computed tomography of intracerebral echinococcal cysts in children. *J Comput Assist Tomogr* **1985**;9:514–518
4. Rudwan MA, Khaffaji S. CT of cerebral hydatid disease. *Neuroradiology* **1988**;30:496–499
5. Press GA, Hesselink JR. MR imaging of cerebellopontine angle and internal auditory canal lesions at 1.5 T. *AJNR* **1988**;9:241–251
6. Curati WL, Graif M, Kingsley DPE, Niedorf HP, Young IR. Acoustic neuromas: Gd-DTPA enhancement in MR imaging. *Radiology* **1986**;158: 447–451
7. Drapkin AJ, Rose WS. Multicystic acoustic neuroma. Case report and differential diagnosis. *Acta Radiol* **1989**;30:7–9
8. Villorejo F, Balzquez MG, Arcas J, Pascual-Castroviejo I, Esteban F. Hydatid cyst of the posterior fossa. Case report. *Neurosurgery* **1983**;12:228–229
9. Pero C, Malan E. Cisti hidatica del IV ventricolo operata con successo. *Acta Neurol* **1947**;2:137–143
10. Gokalp HZ, Erdogan A. Hydatid cyst of the aqueduct of Sylvius. Case report. *Clin Neurol Neurosurg* **1988**;90:83–85
11. Abbassioun K, Amirjamshidi A, Moinipoor MT. Hydatid cyst of the pons. *Surg Neurol* **1986**;26:297–300
12. Rotilio A, Padovan A, Pellone M, Fiore DL, Dalla Pieta' G, Rinaldi R. Echinococcosi cerebrale: aspetti radiologici e clinici. In: Pardatscher K, ed. *Neuroradiologia 1989*. Udine: Edizioni del Centauro, **1989**:459–462
13. Canapicchi R, Collavoli PV, Puglioli M, Padolecchia R, Maercella F. La cisticercosi cerebrale. In: Pardatscher K, ed. *Neuroradiologia 1989*. Udine: Edizioni del Centauro, **1989**:453–458
14. Matossion RM. The immunological diagnosis of human hydatid disease. *Trans R Soc Trop Med Hyg* **1977**;71:101–110
15. Schantz PM. Effective medical treatment for hydatid disease? *JAMA* **1985**;253:2095–2097
16. Morris DL, Dykes PW, Marriner S, et al. Albendazole: objective evidence of response in human hydatid disease. *JAMA* **1985**;253:2053–2057