Subdural hygroma as a complication of cerebral hydatid cyst surgery

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Section: Paediatric radiology
Area of Interest: Neuroradiology brain
Procedure: Diagnostic procedure
Imaging Technique: MR
Imaging Technique: CT
Special Focus: Cysts Pathology Case Type: Clinical Cases
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Patient: 4 years, female

Clinical History:

A 4-year-old child presented to us with complaints of weakness for 3 months, headache for 1 month and vomiting for 2 months.
The physical examination showed an increase in head circumference and papilloedema on examination of the fundi.

Imaging Findings:

Cerebral MRI was performed and showed a large, right, thin-walled, cystic, fronto-temporo-parietal lesion, which was hypointense on T1WI and hyperintense on T2WI. No budding was seen. There was no enhancement following IV contrast administration. There was perilesional oedema and mass effect (Fig. 1).

A cerebral hydatid cyst was thought to be the most likely diagnosis.
The patient was treated surgically, and the cyst was excised intact. Pathological examination confirmed the diagnosis.

There were no immediate postoperative complications, however, 9 months later, the patient presented again with headache. Physical examination was normal. A cerebral CT was performed, which showed a low density subdural fluid collection and associated mass effect (Fig. 2).
The patient was managed conservatively. Long-term follow-up (currently two years) has not shown any deterioration in the patient's neurological status.

Discussion:

Echinococcosis is a zoonotic infection caused by the Echinococcus tapeworm/parasite. Geographically, the most affected regions are: Australia, New Zealand, South America, Russia, France, China, India, Middle East and the Mediterranean countries [1, 2].

Infection frequently involves the liver and lung. Cerebral hydatid cysts (CHC) are uncommon (2% of cases), and are generally solitary, spherical, and unilocular [3].

In the brain, echinococcal cysts are more typically found in the supratentorial region, principally in the middle cerebral artery's territory, within the parietal lobe [4].
Less common sites include the subarachnoid space, cerebellum and lateral ventricles.
The first reports of cerebral hydatid disease were made in 1807 by Guesnard and Chaussier [5].
Almost two-third of the cases affect the paediatric population [6]. A male predominance is reported only in adults [7,
There are two different histological types of CHS [9]: primary infection caused by embryos bypassing hepatic and pulmonary barriers; it is the most common type and the cysts are usually solitary. Secondary cysts are generally multiple and may be a consequence of embolisation of a ruptured cardiac cyst, traumatic or surgical rupture of a primary cyst in other organs. It is therefore important to carefully assess the heart and other organs at presentation [9].

With cerebral disease, the most common symptoms are: headache and vomiting. Other clinical symptoms and signs include: papilloedema, hemiparesis, ataxia, diplopia (especially due to VI nerve palsy) and other focal nerve deficits [10].

With imaging, CHC appear as well delineated, large, spherical, cystic masses, with cyst fluid isodense to cerebrospinal fluid (CSF) on CT and isointense to CSF on MRI; surrounding oedema may be present. The cyst wall may enhance partially or completely after injection of IV contrast media. The peripheral capsule of the cyst is generally recognized on MRI, whereas calcification of the wall is better identified on CT [3] even if it is rarely seen [11].

With respect to CHC, the contribution of the hydatid serology remains disappointing compared with the other locations. The diagnostic confirmation is histological [12]. Cases that impose a challenge for a surgeon include the diagnosis of a large cyst, one that has a thin wall, and a deep or periventricular location of the cyst [13].

The principal treatment is complete extirpation of the cyst without rupture. Mebendazole may be prescribed in cases of systemic disease, recurrence or when the cyst ruptures during surgery [14]. Postoperative complications of CHC surgery are subdural effusions, porencephalic cysts, haemorrhage in the residual cavity and hydrocephalus, which may be managed conservatively [15]. In some cases if those lesions have mass effect (as the case of our patient), the placement of a shunt can be imperative [14].

**Differential Diagnosis List:** Subdural effusion as a complication of cerebral hydatid cyst surgery, Post-traumatic chronic subdural haematoma, Subdural effusion as a complication of epidermoid cyst surgery

**Final Diagnosis:** Subdural effusion as a complication of cerebral hydatid cyst surgery

**References:**

Neuroradiology 41: 844–6. (PMID: 10602860)
Description: Sagittal view T1WI: voluminous right fronto-temporo-parietal lesional process, of cystic nature, hypointense on T1WI. Origin: Tizniti S, department of radiology, CHU Hassan II, FES, Morocco.
Description: Axial view FLAIR: voluminous right fronto-temporo-parietal lesional process, surrounded by a discreet perilesional oedema and producing an important mass effect on the midline structures.

Origin: Tizniti S, department of radiology, CHU Hassan II, FES, Morocco.
**Description:** Coronal view T2WI: voluminous right fronto-temporo-parietal lesional process, of cystic nature, producing an important mass effect on the midline structure. **Origin:** Tizniti S, department of radiology, CHU Hassan II, FES, Morocco.
Description: Diffusion: there is no restriction of diffusion in the cystic mass. Origin: Tizniti S, department of radiology, CHU Hassan II, FES, Morocco.

Description: Axial T1 after injection of gadolinium: the mass has a thin wall, without intracystic bud. It is unmodified after injection. Origin: Tizniti S, department of radiology, CHU Hassan II, FES, Morocco.
**Description:** Coronal T1 after injection of gadolinium: the mass has a thin wall, without intracystic bud. It is unmodified after injection. **Origin:** Tizniti S, department of radiology, CHU Hassan II, FES, Morocco.
Description: NECT axial view:
hemispheric subdural liquid accumulation with a discreet mass effect on the midline structures. 
Origin: Tizniti S, department of radiology, CHU Hassan II, FES, Morocco.
**Description:** CT after injection: hemispheric subdural liquid accumulation with a discreet mass effect on the midline structures. **Origin:** Tizniti S, department of radiology, CHU Hassan II, FES, Morocco.