Unusual appearance of a cerebral hydatid cyst as a hemorrhagic infarct

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ABSTRACT

نستعرض في هذا المقال حالة مريضة لبنانية تبلغ من العمر 32 عاماً تعاني من أكياس مائية في القلب، وصاحب ذلك الشعور بالصداع، وعدم التركيز، إضافة إلى اضطراب قي الذراع اليمنى. أظهرت الأشعة الطبقية وجود احتشاء نزفي في الفصّ الجداري الأمامي الأيسر من الدماغ. وبعد إحدى عشر شهراً ظهرت أكياس مائية داخل المنطقة النخريّة في الدماغ بسبب انسداد الشرايين التي تنقل الدم من القلب إلى الدماغ. يجب أن يؤخذ الانسداد الشرياني الذي تسببه الأكياس المائية بعين الاعتبار عند تشخيص السكتة الدماغية وذلك عند المرضى الشباب وخصوصاً إذا كان لديهم تاريخ بمرض الأكياس المائية.

We herein present a 32-year-old Lebanese woman with a history of cardiac hydatid cyst presenting with headache, confusion, and right arm clumsiness. A CT of the head showed hemorrhagic infarct of the left fronto-parietal lobe. Eleven months later, the subsequent development of hydatid cysts within the necrotic area of the infracted hemisphere suggested a cerebral hydatid embolism of cardiac origin. In patients with a positive history of hydatid disease, hydatid embolism should be considered in the differential diagnosis of stroke in young patients.

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The CNS is rarely affected hydatid disease, and when it occurs, the cerebral parenchyma is most commonly affected.[1-5] The usual CT scan or MRI semiology of cerebral hydatid is that of a well-defined oval or rounded cyst with signal or density similar to CSF.[4,5] A thick peripheral high signal intensity halo on T2 representing the pericyst can be visualized. The cyst normally does not enhance after Gadolinium. When this cyst is complicated by rupture, hemorrhage, or super-infection, the MR imaging appearance may differ and become more unusual. We present this case to highlight the rare occurrence of a cardiac hydatid cyst causing a hydatid cyst embolism in the brain as a hemorrhagic infarct.

Case Report. A 32-year-old woman presented with intense headache, of one week's duration. The headache was accompanied by nausea and vomiting. She had no history of trauma or seizures. A clinical examination revealed confusion and right arm paresthesia. A CT scan of the brain revealed an ill-defined 2 cm left fronto-parietal hematoma with mild surrounding mass effect. She was treated conservatively and was discharged one week later. The CT scan of the brain revealed a left fronto-parietal hemorrhagic infarct (**Figure 1**). Several CT scan controls carried out a few weeks later revealed focal residual gliosis. A CT scan and MRI film repeated at 11 months later revealed 2 well-defined contiguous cysts involving the fronto-parietal area just proximal to the site of previous bleeding, highly suggestive of hydatid cysts (**Figures 2 & 3**). Craniotomy was performed, and cystic lesions were found. There was no evidence of hemorrhage or calcification. The entire intact cyst contained thick, whitish material, predominantly in its inferior aspect. The postoperative course was uneventful. Histologic findings finally provided the diagnosis, showing a typical hydatid cyst.

Discussion. Hydatid disease is a worldwide zoonosis produced by the larval stage of the Echinococcus tapeworm. The 2 main types of hydatid disease are caused by *Echinococcus granulosus* and *Echinococcus multilocularis*. The former is commonly seen in the great grazing regions of the world, particularly the Mediterranean region, Africa, South America, the Middle East, Australia, and New Zealand, and is the most frequently encountered type of hydatid disease in humans. The classical findings in hydatid disease are well known however, findings

Figure 1 - The CT scan of the brain reveals left fronto-parietal hemorrhagic infarct.

Figure 2 - Axial CT scan of the brain reveals a bilobed left fronto-parietal cyst.

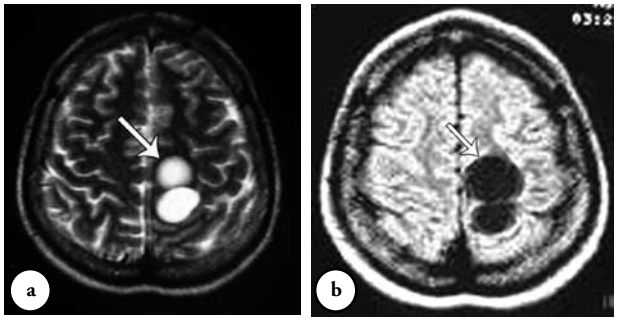

Figure 3 - MRI showing **a)** axial T2 and **b)** FLAIR weighted sequences of the brain show that the cyst is well defined with signal intensity similar to that of CSF. Thick cystic capsule could also be noted.

related to disease complications and unusual anatomic locations are less frequently described in the literature.[3-6] The hydatid cyst consists of 3 layers: (a) the outer layer or pericyst (b) the middle layer or laminated membrane, and it is acellular, and (c) the inner layer or germinal layer, where scolices exist. The middle laminated membrane and the germinal layer form the true wall of the cyst, usually called the endocyst, although the acellular laminated membrane is occasionally called the ectocyst.[1,3,5] Vesicles are small and sphere-shaped, and contain the protoscolices, and originate from rests of the germinal layer. Prior to becoming daughter cysts, these daughter vesicles are attached to the germinal layer of the mother cyst. Once it passes the intestinal wall to reach the portal venous system or lymphatic system, the liver acts as the first target organ and is therefore, the most frequently involved organ. In humans, the liver is involved by hydatid disease in approximately 75% of cases, the lung in 15%, and other anatomic locations in 10%. The CNS is involved in 1% of cases and is usually diagnosed during childhood.[6] Cerebral hydatid disease is not uncommon in CNS involvement and the cerebral hemisphere represents the most frequent site, mainly the territory of the middle cerebral artery. Both CT and MRI demonstrate a well-defined oval shaped cystic mass with attenuation or signal intensity similar to CSF. Although the lesion may cause extrinsic compression of the ventricular system with subsequent hydrocephalus, there is no associated edema as is typically seen in abscesses and cystic tumors. The lesion does not enhance after intravenous administration of contrast material, and calcification is extremely rare. When a secondary process occurs in the cyst, such as infection, or rupture, the signal intensity on MRI tends to be slightly decreased on T2-weighted images and a little higher on T1-weighted images.[2,6] The lesion in our patient was of unusual presentation on CT scan and MRI of cerebral hydatid.

In conclusion, in patients with a positive medical history of hydatid disease or in endemic areas, hydatid cyst embolism should be considered in the differential diagnosis of stroke in young patients.

References

1. Kabatas S, Yilmaz C, Cansever T, Gulsen S, Sonmez E, Altinors MN. The management of a complicated brain hydatid cyst: case report. ***Neurol Neurochir Pol*** 2009; 43: 575-578.
2. Kayaoqlu CR. Giant hydatid cyst in the posterior fossa of a child: case report. ***J Int Med Res*** 2008; 36: 198-202.
3. Pedrosa I, Saíz A, Arrazola J, Ferreirós J, Pedrosa CS. Hydatid disease: radiologic and pathologic features and complications. ***Radiographics*** 2000; 20: 795-817.
4. Shahlaie K, Hawk MW, Hu BR, Theis JH, Kim KD. Parasitic central nervous system infections: echinococcus and schistosoma. ***Rev Neurol Dis*** 2005; 2: 176-185.
5. Tunaci M, Tunaci A, Engin G, Ozkorkmaz B, Ahishali B, Rozanes I. MRI of cerebral alveolar echinococcosis. ***Neuroradiology*** 1999; 41: 844-846.
6. Turgut M. Hydatidosis of central nervous system and its coverings in the pediatric and adolescent age groups in Turkey during the last century: a critical review of 137 cases. ***Childs Nerv Syst*** 2002; 18: 670-683.