

## Case Report

# Hydatid Cyst of the Posterior Cerebral Fossa: An Uncommon Location

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**Abstract:** The authors report a case of hydatid cyst of the posterior fossa in a 22-year-old patient. He lived in a poorly sanitary environment and remains in close contact with the dogs. This young patient clinically presented with a raise intracranial pressure and cerebellar syndrome. The diagnosis of hydatid cyst was made on brain CT scan, which revealed a large, septated cystic lesion with parietal lamellar calcifications without contrast enhancement.

**Keywords:** Hydatid Cyst, Hydatidosis, Posterior Cerebral Fossa, Brain

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## 1. Introduction

The hydatid cyst (HC) or hydatidosis is a parasitic disease due to *Echinococcus granulosus*. It is an asymptomatic parasite in the digestive tract of the dog. The brain location of hydatidosis is rare, not exceeding 2% of all somatic location [1-3]. The posterior fossa location is nearly rare [4].

Hydatidosis is still common in developing countries and is major public health problem. Brain scan provides very suggestive signs for diagnosis [1, 5]. We report a case of a 22-year-old patient with raise intracranial pressure and cerebellar syndrome whose brain scan revealed a HC in the posterior fossa.

## 2. Clinical Observation

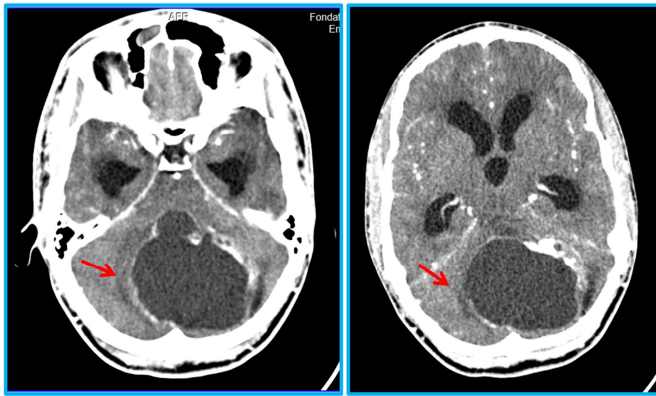
Patient S.L., 22 years old, with no past medical history, consulted for two months progressive onset headache. These frontal-occipital headaches were severe, radiating to the left eye, associated to nausea, vomiting, vertigo and blurred vision. There was no fever. The patient was treated

in several health centers without improvement. The interrogation also indicated that this patient was in close contact with the dogs and lived in an environment of poor hygiene.

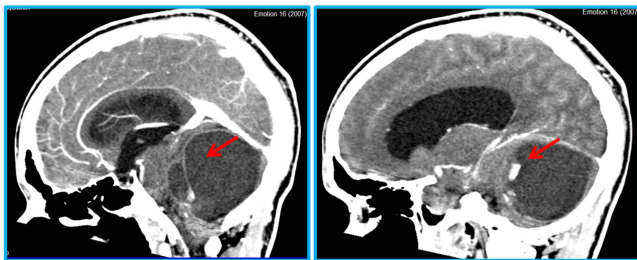
On neurological exam, the patient was conscious, well oriented in time and space without cognitive impairment. The deep tendon reflexes were normal. We did not find any sensory disorder or trophic disorder. We found third and fourth cranial nerves palsy and gait disturbances. The finger-nose test revealed dysmetria of the left hand. These signs suggested cerebellar syndrome and raise intracranial pressure.

Ophthalmologic examination showed left exophthalmia with limited abduction of the left eye-ball. Fundoscopy showed small peripapillary retinal hemorrhage. The biological assessment was normal.

Brain scan showed a large cystic and septated lesion of the posterior fossa, with parietal lamellar calcifications, without contrast (Figures 1 and 2).



**Figure 1.** Brain scan (axial view) showing a voluminous partially septated cystic mass in the posterior fossa with parietal lamellar calcifications.



**Figure 2.** Brain scan (sagittal view) showing a voluminous partially septated cystic mass in the posterior fossa with parietal lamellar calcifications.

The average density of the mass was 30 UH slightly higher than cerebrospinal fluid. The lesion compressed the 4<sup>th</sup> ventricle and the brainstem. The result was obstructive hydrocephalus with a Evans index of 0.41. With brain scan results, the diagnosis of a compressive hydatid cyst associated to obstructive hydrocephalus was retained.

The patient has been transferred in another country for surgery. The surgical procedure consisted in the cyst delivery by hydro dissection using hypertonic saline according to Arana Iniguez's technique with positive post-surgery outcome. Medical treatment of 15 mg/kg of albendazole daily for 2 weeks was initiated.

### 3. Discussion

Hydatidosis remains common in developing countries as a major public health problem. It occurs mainly in children and young adults with marked male predominance [3, 6, 7].

This parasitosis is caused by *Echinococcus granulosus*, whose definitive host is the dog. Human contamination occurs accidentally through direct contact with dogs or by ingestion of infested sheep or pigs (intermediate host). After ingestion, and under the effect of digestive enzymes, the hexacanth embryo is released from its protective membrane. This embryo then, begins its migration by entering the portal vein and lymphatic system. Its plasticity allows it to cross all the capillaries. This parasite passes through the hepatic and pulmonary barriers and reaches the brain through the systemic circulation [7, 8].

Frequent locations are of hepatic (48%) and pulmonary (36%), cerebral localization is rare and does not exceed 2% of

cases [3, 9, 10]. The infrequent cerebral location of echinococcosis could be explained by the passage of the parasite through two barriers (hepatic and pulmonary) before reaching the great circulation [3].

The cerebral hydatid cyst (CHC) is preferentially located on the supratentorial region, especially in the middle cerebral artery territory [11]. The location in the posterior fossa is unusual [4, 12, 13]. It could be located in the cerebellar vermis or hemisphere, pons, fourth ventricle, or even extradural [12-14].

When the CHC is located in the posterior fossa, the clinical picture includes cerebellar syndrome, neurological deficit and cranial nerve palsy by compression of the cortico-ponto-cerebellar pathways [5]. Unlike the supratentorial location, the raise intracranial pressure syndrome is late, secondary to the 4<sup>th</sup> ventricle compression and may also associate focal neurologic signs [3]. The clinical signs presented by our patient is secondary to an important cerebellar mass effect, compressing brainstem and 4<sup>th</sup> ventricle.

Brain scan provides suggestive signs of the diagnosis by visualizing a well-defined rounded or oval cystic mass, with variable fluid content, and density close to the cerebrospinal fluid (CSF) [9]. In this case, in addition to this description, we have noted calcifications of the cyst wall. In CHC, calcification of the wall is rare (less than 1%). Two types of calcification have been described, intra or extramural. Calcification of the hydatid cyst represents a sign of parasite inactivity [7, 15]. Pathophysiological mechanisms contributing to the calcifications are still unknown but they could be explained by an active gliosis around the cyst. This mechanism cut off the food supply of the cyst and causes parasite's death [7].

Hydrocephalus is possible due to the obstruction of CSF excretion pathways, responsible of a raised intracranial pressure. In these conditions, there is no perilesional edema or peripheral contrast enhancement [1].

Surgical excision of the cyst is the only possible treatment, consisting in rapid relief of the patient [1, 8]. In our opinion, medical treatment is indicated in the post-operative phase to reduce the risk of recurrence [8, 16]. Nevertheless, controversies remain on dose and duration of this treatment. Albendazole, mebendazole and praziquantel have demonstrated their efficacy in the medical treatment of hydatid cysts in liver and abdomen. However, limited data have been published on the medical treatment of intracranial hydatid cyst. Especially the penetration of the drug across the blood-brain barrier and the hydatid cyst membrane [8].

### 4. Conclusion

The CHC is uncommon, its location in the posterior fossa is rare. Poor, collective or personal hygiene and proximity to dogs are important elements in the diagnostic process. The diagnosis of the CHC must be kept in mind in the presence of any purely cystic lesion of the posterior cerebral fossa. It is suggested when facing a brain CT scan signs of hydatid cyst.

The only radical treatment of CHC is surgery which remains difficult to perform in our environment.

## Conflicts of Interest

The authors declare that they have no competing interests.

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