Case Report

Primary Cranial Epidural Hydatid Cyst: A Rare Location
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Summary

Background: Hydatid cyst is a parasitic disease caused by Echinococcus granulosus. Involvement of the central nervous system (CNS) is very rare in this parasitic infection.

Method: A 21-year-old male with the history of visual disturbances and headache for 1.5 years is reported. Computed tomography of the brain showed a large, 6 X 6.2 X 9 cm, cystic lesion with a density similar to the cerebrospinal fluid in the left epidural parieto-occipital region. No enhancement was seen with contrast. The patient underwent left parietooccipital craniotomy. The diagnosis of hydatid cyst was confirmed with pathological examination.

Conclusion: Hydatid cysts should be considered in the differential diagnosis of the epidural cystic lesions. The mainstay of treatment is surgical removal of the cyst. Medical therapy is also important to prevent recurrences during the postoperative period.

Key words: Echinococcus granulosus, hydatid cyst, computed tomography, magnetic resonance imaging

INTRODUCTION

Hydatid cyst disease is caused by the larval form of Echinococcus granulosus. Humans are infected incidentally by consuming contaminated water, vegetables or by contact with a definitive host like dogs¹⁴,¹⁹. Hydatid infestation is endemic in many parts of the world and Turkey is one of the endemic countries⁸.
Hydatid cyst is mostly located in liver (55-70%), and lungs (18-35%)\(^{(2,14)}\). Echinococcus constitutes CNS cysts about 1-3% of infested patients\(^{(10,20)}\). In the CNS the cysts are located commonly in the watershed regions of the middle cerebral artery\(^{(9)}\). Epidural occurrence of hydatid cysts is extremely rare.

**CASE PRESENTATION**

A 21 year-old male admitted to our clinic with complaints of visual disturbances and severe headaches for about 1,5 years. Headache was usually occurring in the morning and especially on the occipital region. There was no history of seizures. The ophthalmological and neurological examination were normal.

X-ray image in the left parieto-occipital are radiolucent (Fig 1). CT and magnetic resonance imaging (MRI) demonstrated a cystic lesion in the left epidural parieto-occipital region. The lesion was hypointense on T1-weighted images and hyperintense on T2-weighted images (Fig 2). There was no distinct rim enhancement after gadolinium administration and no edema in adjacent brain (Fig 3).

A left-sided parieto-occipital craniotomy was performed (Fig 4). It was seen that the inner part of the cranium overlying the cyst was thickened and the membrane of the cyst was adherent to the cranium so during the craniotomy cyst ruptured (Fig 5). The contents of the cyst aspirated without any contagion and the cavity was irrigated with warm hypertonic saline solution for several times. The extradural cyst membrane removed totally and dura underlying was normal. The aspiration cytology revealed scolices and the histopathology of the cyst wall confirmed the diagnosis of hydatid cyst. Chest X-ray, thorax and abdomen CT were normal were received to detect the involvement of lung or any abdominal organ, however, there were no involvement in these organs.

The postoperative course of the patient was uneventful. Following surgery the patient received oral albendazole, 400 mg twice a day for six months. Patient followed up for two years without any problem.

*Figure 1: X-ray image in the left parieto-occipital are radiolucent*

*Figure 2: The lesion was hypointense on T1-weighted images*
DISCUSSION

Echinococcosis granulosus, the agent for hydatid disease, causes the cyst formation in human\(^{(7)}\). Brain (1-3\%) is one of the rare involved organs by the hematogenous dissemination\(^{(12,13)}\). Khaldi et al\(^{(11)}\) reported a series of 115 cases of brain hydatid cyst, and notified the localization in the brain hemisphere as a rule. Despite this conception, although extra-axial locations like extradural and cisternal locations may be seen very rarely, the cysts may occur in the intracerebral, extracerebral or both regions\(^{(7)}\). In various series Ameli-Abbasium\(^{(4)}\) and Arana-Iniguez\(^{(5)}\) reported different locations including, the cerebral-cerebellar hemispheres, cerebellopontin angle, fourth ventricle, pons, foramen magnum, intrasellar, parasellar, thalamus, petroclivus Sylvian aqueduct\(^{(17)}\). Altunors et al\(^{(3)}\) reported intracranial and spinal cysts in their series of 458 cases.

Since 1957, 28 patients with epidural hydatid cysts were reported in the literature\(^{(9,18)}\). Although the middle cerebral artery territory is the usual localization for cerebral hydatid cysts, Cemil et al hypothesized that cranial

**Figure 3a-3b:** No distinct rim enhancement after gadolinium administration

**Figure 4:** A left-sided parieto-occipital craniotomy was performed.

**Figure 5:** Intraoperative appearance of the cyst membrane.
epidural hydatid cysts also have a tendency to occur around the midline, because of the rich venous vascularization(9). On the other hand, epidural hydatid cysts may also originate from skull bones or from the epidural vessels(9).

Although the brain blood supply is mainly from the internal carotid system, larvae may also travel through the external carotid system(16). In cranial epidural hydatid cysts embolization of scolices or embryos via vessels may infect the epidural spaces, also extrusion of intracerebral cysts through the healthy dura matter or erosion of osseous hydatid into the epidural area, can be the other mechanisms of epidural hydatid cyst formation(6).

The characteristic appearance of the cyst is a spherical, well-defined shaped, non-enhanced in CT and in MRI. The density of the cyst is similar to CSF, hypointense on T1-weighted images and hyperintense on T2-weighted images. Proton magnetic resonance spectroscopy (MRS) has also been used in some hydatid cases(1).

In the diagnosis of hydatid cysts various tests can be used; Casoni's test, immunologic tests, serologic tests (indirect hemagglutination, latex agglutination, indirect fluorescent antibody testing), immunoelectrophoresis test. Also peripheral blood and cerebrospinal fluid eosinophilia may help in the diagnosis(6).

In the differential diagnosis of the cranial epidural cystic lesions, arachnoid cyst, epidermoid cyst, cystic astrocytoma and neurocysticercosis should be considered. Radiologic appearance of arachnoid, leptomeningeal and porencephalic cysts are not spherical and the brain tissue does not surround the cysts totally. Cystic neoplasms and neurocysticercosis cysts often enhance but in cystic neoplasms cystic contents do not resemble CSF(15).

Cyts in neurocysticercosis may provoke inflammatory reaction which causes adjacent gyri surface adhesions and this may cause a wrong appearance as the cyst is intraparenchymal(15). Also “cyst with dot” is a characteristic appearance for neurocysticercosis that differs from the other cystic lesions.

Differential diagnosis is important for cranial cystic lesions for the decision to operate or not and in planning of surgical techniques.

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