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Case Report

A 4-Year-Old Child with a Giant Cerebral Hydatid Cyst: A Case Report

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Abstract

Echinococcosis is the most common cestode infection globally caused by the *Echinococcus* species. The most common organ involvement is the lungs and liver, but other organs can be rarely involved. Here, we present a case with a giant cerebral hydatid cyst. A 4-year-old boy presented with abnormal gait and walking at Marmara University School of Medicine Pendik Training and Research Hospital, Istanbul, Türkiye in September 2022. Cranial magnetic resonance imaging showed a cyst of 13 cm in diameter. The cyst was enucleated successfully with no rupture. Oral albendazole therapy was started. There was no eosinophilia, and the echinococcal indirect hemagglutination test was negative. Ultrasonography detected an anechoic cystic lesion in the liver. He was evaluated for deep-organ involvement; however, no cysts were detected in other organs. The histopathological examination was compatible with a hydatid cyst. Although intracranial hydatid disease in children is rare, it should be considered among the differential diagnoses in patients with neurological symptoms, especially in endemic regions.

Introduction

Echinococcosis is a zoonotic infection caused by *Echinococcus* species worldwide. *E. granulosus* (Hydatid Cyst Disease) and *E. multilocularis* (Alveolar Hydatid Disease) are the species that most frequently cause infection in humans (1, 2). The most common organ involvement is the lungs and liver, but it can rarely be involved in other organs such as the brain, heart, bone, and kidneys (1, 3). Intracranial region involvement constitutes 1-2% of all cases. More than half of the cases are children (3-5).

Due to its rarity and enucleation of a giant cyst with no rupture, we present a patient with a giant cerebral hydatid cyst.

Case Report

A 4-year-old male patient presented to another healthcare center complaining of instability in walking and weakness that started three months ago. No bone pathology was detected by X-ray. When he had a fever and vomiting, he was transferred to the emergency room of Marmara University School of Medicine Pendik Training and Research Hospital, Istanbul, Türkiye in September 2022. He had a contact history with cattle and dogs in the village. His physical examination yielded muscle weakness in the right lower and upper extremities. The magnetic resonance imaging (MRI) then revealed a 13 cm-in-diameter cystic lesion surrounded by vasogenic edema in the left parietooccipital region (Fig. 1). The cystic lesion was consistent with a 'hydatid cyst' because of the absence of a solid component. A 13-cm cyst was enucleated successfully with no rupture. Oral albendazole therapy was initiated.

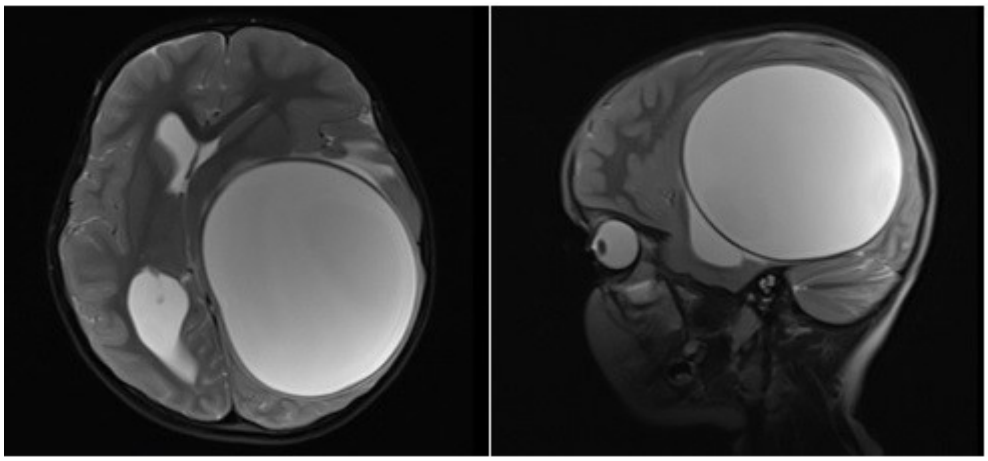

Fig. 1: T2- weighted MRI sections showed a cyst 13 cm in diameter localized under the cortex in the left parietooccipital region.

His laboratory investigation was as follows; eosinophil level [(0.19 X 10^3/μL) (0.0- 0.7 X 10^3/μL)] in complete blood count was found to be in a normal range. The echinococcal indirect hemagglutination (IHA) test was negative. Ultrasonography detected an anechoic cystic lesion (10 mm) in the liver. He was evaluated for other deep-organ involvement; however, no cysts were detected in echocardiography, bone, and chest radiographs, and thorax computed tomography (CT). Histopathological examination was reported as compatible with a hydatid cyst. He was discharged at the end of one month with oral albendazole therapy. He is still being followed

up on an outpatient basis without any neurological sequelae.

The informed consent of the patients was taken to report this case report.

Discussion

Hydatid cyst is a parasitic zoonosis and is endemic in some geographical regions (1, 2). Although cysts are located in the liver and lungs, they can rarely be seen in other organs (3-5).-Our patient had two cysts located in the brain and liver.

Clinical findings vary according to the involved site, cyst size, number, and host immune status (1, 3). In pediatric patients, cranial cysts may cause findings of increased intracranial pressure such as headache, seizure, nausea, vomiting, papilledema, and cranial nerve paralysis. Rarely, it also may cause focal neurologic findings, vertigo, ataxia, seizures, and lethargy (3, 4). Our patient had instability in walking and weakness, a headache, and vomiting at admission. After cyst excision, the vomiting and headache resolved rapidly, while gait imbalance and muscle weakness complaints recovered in a longer time.

Although the growth rate of cysts varies, they usually grow by 1-5 cm per year (2). The cyst detected in our patient was giant (13 cm in diameter) and covered almost the entire left cerebral hemisphere. Therefore, we can say that the size of the cyst in our patient was larger than expected. However, since the data on the expected growth rates of the cysts are mostly obtained from liver hydatid cysts, the size of the cyst in our patient may be due to its cerebral localization.

In echinococcal diseases, serological tests including enzyme-linked immune assay and echinococcal indirect hemagglutination test are helpful in the diagnosis and evaluation of response to treatment. However, it should be noted that serological tests have some limitations. Negative serological tests do not exclude the diagnosis of echinococcosis, and there is no correlation between the number and size of cysts and serological tests. Seropositivity is more common in liver and lung cysts when compared to intracranial involvement (2, 8). The echinococcal indirect hemagglutination test was negative in our patient. Eosinophilia is present in less than 15% of patients (8). In our case, eosinophilia was not detected.

Cranial imaging studies including CT and MRI can support the diagnosis, especially in cases with negative serological tests. On cranial CT imaging, it appears as a well-circumscribed spherical or oval, hypodense cystic lesion without characteristic pericystic edema. Hydatid cysts are seen as hypointense on T1-weighted MRI images and hyperintense with a hypointense halo around the cyst on T2-weighted MRI images (9). In our case, MRI showed a lesion in 13 cm diameter, surrounded by vasogenic edema without a solid component, which was consistent with a hydatid cyst.

Surgery is the mainstay of the treatment of cerebral hydatic cysts. Surgical methods as well as medical therapy are used in the treatment (3, 4). Albendazole is the primary antiparasitic choice for the treatment of echinococcosis. Additionally, mebendazole and praziquantel can be used for treatment (1). Our patient received albendazole therapy because it is easily accessible in Türkiye. Although the treatment duration is unclear, continuing for 1-3 months is recommended, without interruption. It can be extended up to 6 months on a case-by-case basis (5, 10). Medical treatment and surgery are preferred in central nervous system hydatid cyst cases (9). Care should be taken to prevent anaphylactic shock and postoperative recurrences in case of cyst rupture during surgery. To avoid recurrence and to sterilize the cyst wall, albendazole treatment should be initiated at least one month before surgical treatment and should be continued in the postoperative period (1, 10). In our case, the cyst was enucleated without rupture.

However, albendazole treatment could not be started beforehand because the operation was performed under emergency conditions.

Conclusion

Although intracranial hydatid disease in children is rare, it should be considered among the differential diagnoses in patients with neurological symptoms, especially in endemic regions. Early detection of cysts before they reach giant sizes positively affects the clinical course and treatment success.

Acknowledgments

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Conflict of Interest

The authors declare that there is no conflict of interests.

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