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Primary Intra-Orbital Hydatid Cyst in a Child: A Case Report

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Abstract **Case Report**

Hydatid disease is a tapeworm parasitic infection caused by Echinococcus Granulosus that commonly affects the liver and the lungs, during its life cycle in the human body. Orbital involvement is a very rare occurrence and isolated orbital Echinococcosis is extremely rare. We report the case of an 8-year-old moroccan girl diagnosed with an orbital hydatid cyst, which was surgically treated, the diagnosis was initially done and CT and MRI, and it was confirmed with a post-op biopsy.

Keywords: Hydatid Cyst, Hydatid Disease, Orbit, Echinococcosis, Morocco.

INTRODUCTION

The orbital location of the hydatid cyst is rare. It is endemic in some parts of the world, affecting mainly young adult and children. Clinical presentation is marked by progressive, non-pulsatile and unilateral proptosis. Imaging investigation visualizes the lesion, locates it and guides therapeutic management. However, it is sometimes difficult to difference between hydatid cyst and other intraorbital cystic lesions. The treatment is essentially surgical. The major risk of surgery is the perioperative rupture with its consequences [1-3].

CASE PRESENTATION

A 8-year-old girl with rural origins and a history of contact with dogs, presented to the emergency room at the University hospital center Mohammed VI at Marrakech, with a 3-month history of painless right eye protrusion associated with progressive decreased vision of the right eye. Visual acuity in the right eye was 5/10 and vascular tortuosities at the fundoscopic exam. The rest of the clinical examination was normal.

Figure 1: Images of our patient showing a proptosis of hers right eye

Laboratory investigation revealed a normal complete blood count and normal CRP dosage.

Computerized tomography (CT) of the brain and orbit showed a well-defined thin-walled non-enhancing fluid density cystic lesion in the right orbital cavity. Measuring 23mm by 20mm by 19mm with compression and displacement of the globe, as well as compression and stretching of the optic nerve and the inferior and lateral right rectus muscles, and a grade II

proptosis of the right globe. MRI findings showed a right intra conical formation, roughly oval, well defined, described in hyposignal T1 and FLAIR, hypersignal T2 and not modified after contrast. This formation presents a thin wall, slightly enhanced after contrast and presents the same relations with ocular motor muscles and the optic nerve as on the CT-scan.

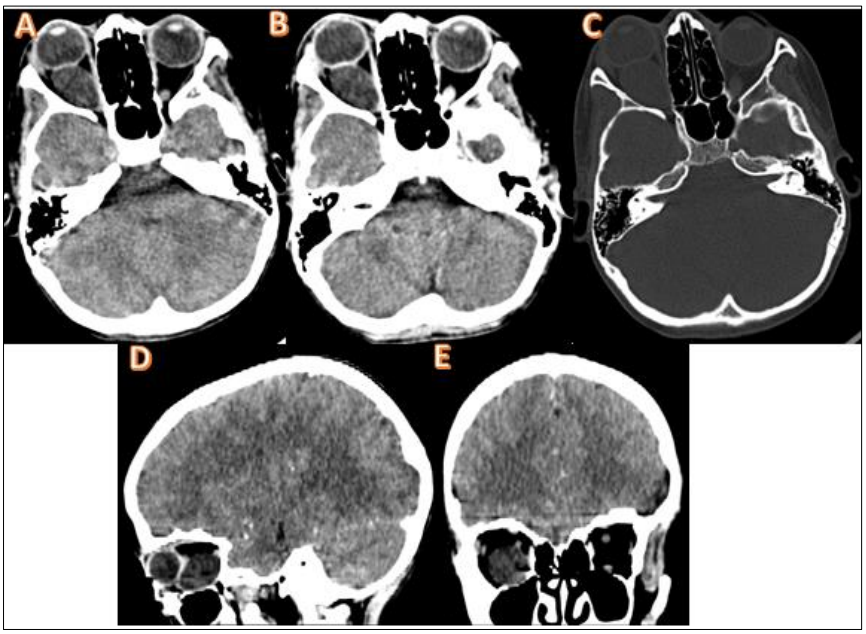

Figure 2: Cerebral CT scans in axial, sagittal, and coronal sections before contrast agent injection (A) and after contrast agent injection (B, D, E), showing an itnra-orbital cystic formation

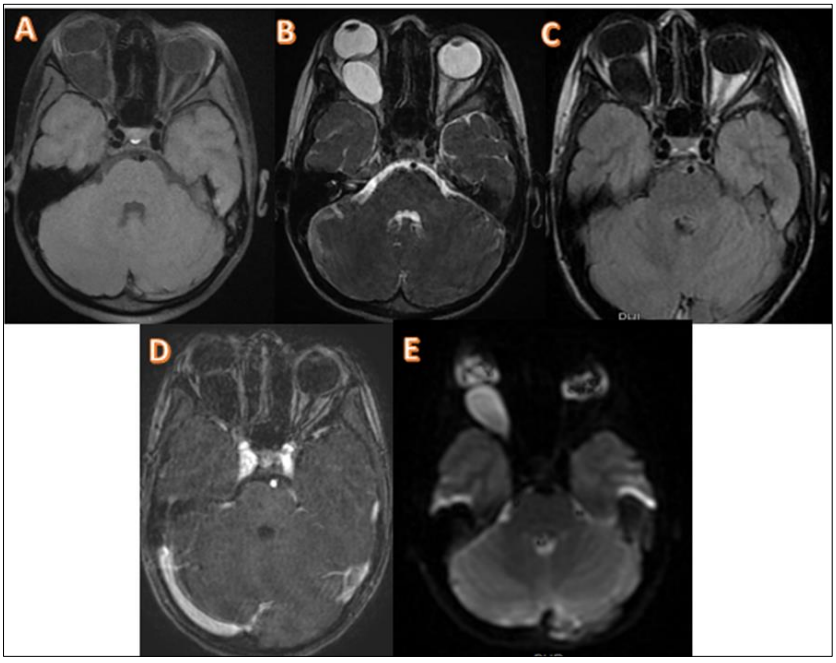

Figure 3: MRI findings in axial, sections in T1 weighted sequence (A), T2 (B), T2 FLAIR (C), after injection of gadolinium (D) and diffusion (E) showing an intra-orbital inta-conical formation in hyposignal T1 and FLAIR, hypersignal T2, hypersignal en diffusion, with a thin wall slightly enhanced after injection of gadolinium

A diagnostic hypothesis of hydatid cyst was based on the neuroradiological findings. Hydatid serology came back atypical.

The patient was scheduled for surgery by the neurosurgery team for surgical removal of the cyst. A fronto-pterional craniotomy was done and the cyst was removed safely without any sign of rupture.

Figure 4: Actual images during our patient's surgery

The diagnosis of hydatid cyst was confirmed after a microscopic study of the surgical specimen.

An abdominal ultra-sound and a thoracic radiography were requested to look for other localisations, they both came back normal.

Clinical evolution of the patient was favorable, as shows the reduction of the proptosis and the improvement of the visual acuity.

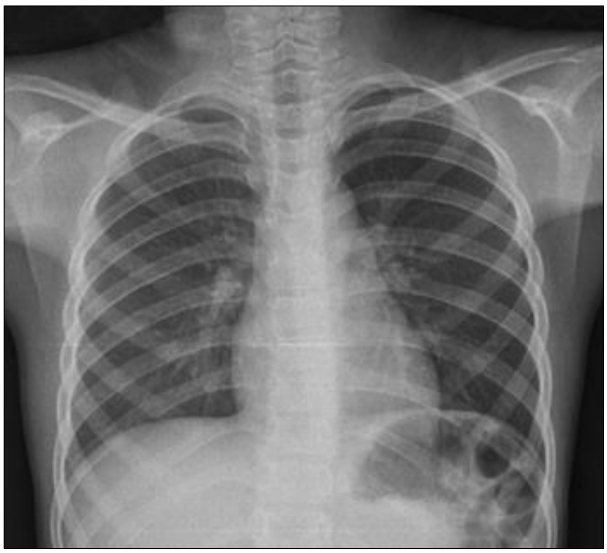

Figure 5: A normal thoracic radiography of our patient

DISCUSSION

Hydatid cyst is a zoonotic infection caused by the tapeworm Echinococcus granulosus [4]. It is endemic in Africa, Asia, Australia, and Mediterranean countries. Dogs are the definitive hosts for the parasite while sheep and cattle serve as intermediate hosts. Humans are accidental intermediate hosts affected by the tapeworm after ingesting viable eggs. During its life cycle in the human body, the tapeworm commonly affects the liver and lungs. Rarely, echinococcosis may involve the orbit and patients may present with proptosis, decreased vision, and ocular pain.

Orbital hydatid disease is a very rare parasitic infection caused by the tapeworm Echinococcus granulosus [5]. Similar to other zoonotic disease affecting humans, accidental ingestion of ova passed by the definitive hosts, canines, is the route of entry to the human body [6, 7].

Hydatid disease mainly affects the liver and the lung but it can rarely affect other organs including the orbit and the central nervous system [5-8]. Previous studies have shown that orbital hydatid disease accounts for only 1% of the hydatid disease burden [9]. Close contact with animals such as dogs, sheep, and cattle is a

risk factor for acquiring the infection which was also identified in our patient [10].

The clinical manifestation of hydatid disease is primarily related to the mass effect exerted by the cyst on adjacent structures [5]. The mass effect is more pronounced in structures with limited space like the orbit [4]. Patients with orbital hydatid cyst commonly present with a longstanding unilateral proptosis of the eye similar to our patient [9]. Other manifestations include decreased vision due to longstanding compression of the optic nerve, ocular pain, limitation of ocular motility, and chemosis [4-10].

Patients with suspected hydatid disease of the orbit should be thoroughly investigated. Complete blood count, serum antibody test, and imaging studies are crucial to exclude other potential differential diagnoses.

Mass lesions such as dermoid cyst, epidermoid cyst, hemangiomas, post-traumatic hematomas, and mucocele can be considered differentials based on the presenting symptoms [12]. CT scan and MRI are the preferred choices of imaging and can help the clinician narrow the differential prior to surgery [4-11]. However, histopathology remains the definitive diagnostic modality [4].

Management of orbital hydatid disease includes a 2 to 4 week course of anthelmintic drugs, preferably Albendazole, followed by surgical excision of the cyst [11, 12].

Preoperative anthelmintic treatment is vital to prevent parasite seeding and anaphylactic reactions in case the cyst ruptures during manipulation while performing surgery [6-12]. If intraoperative rupture of cyst occurs, irrigation with hypertonic saline and hydrogen peroxide would kill daughter cysts and prevent further spread [13].

The operating surgeon should aim for complete excision of the cyst with minimal ocular tissue damage.

CONCLUSION

Echinococcosis, although extremely rare, has the potential to affect the eye. It should be kept in the list of differential diagnoses for patients with pertinent history and risk factors. Early recognition and treatment of orbital Echinococcosis is crucial to prevent vision-related complications.

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