



Extra Hepatic Hydatid Cyst In A Young Adult – A Case Report

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Introduction

Hydatid cysts are parasitic cysts caused by the larval stage of Echinococcus tapeworms [1]. These tapeworms primarily infect sheep and cattle, and humans become infected by ingesting contaminated food or water containing the parasite's eggs. Once ingested, the eggs hatch in the intestine and release larvae, which migrate through the bloodstream to various organs, including the liver, lungs, and brain [2].

Brain hydatid cysts are a rare but serious complication of hydatid cyst disease. The cysts can grow slowly over time, leading to increased intracranial pressure, seizures, and neurological deficits. Early diagnosis and treatment are crucial to prevent severe complications and improve patient outcomes. Histopathological features of hydatid cysts are distinctive and thus play an important role in arriving at the diagnosis.

Case

A 45 year old male presented to the medicine OPD with chief complaints of convulsions, 2 episodes over a week, associated with headache and multiple episodes of vomiting for 15 days. Thorough clinical, hematological and radiological evaluation was carried out. MRI Brain revealed a 3 * 2cm space occupying lesion in the right frontal lobe, with mostly cystic appearance. After consultation with neurosurgeon, craniotomy with cyst removal was planned. The specimen was sent for microscopic examination and histopathological assessment.

Multiple whitish brown soft tissue masses were received measuring 3*1.8*0.2 cm. On microscopy, the sections studied showed thick layer of cyst wall with a content of hydatid cyst comprising of protoscolices. At some places hooklet was also seen with occasional inflammatory infiltrate.

Overall features were suggestive of a hydatid cyst in frontal lobe.

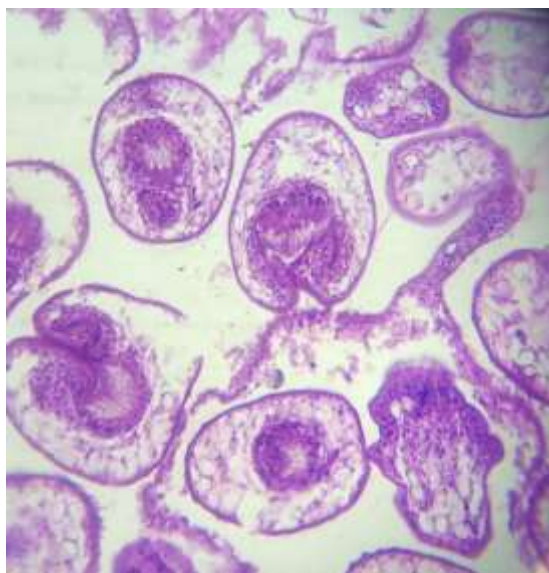


Figure 1 : Daughter cysts of hydatid on 40x magnification

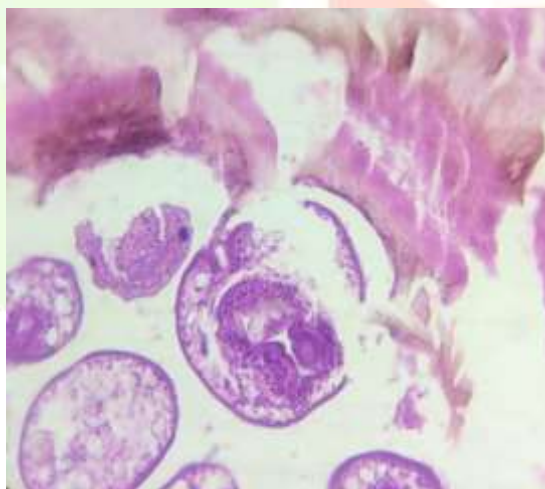


Figure 2 : Hooklet of hydatid cyst with thick multilayered cyst wall 40x magnification

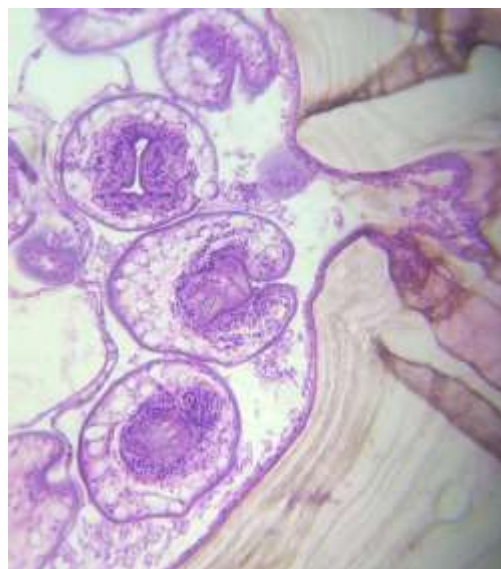


Figure 3 : Daughter cysts and protoscolices with a hooklet covered by thick layer of cyst wall on 40x magnification

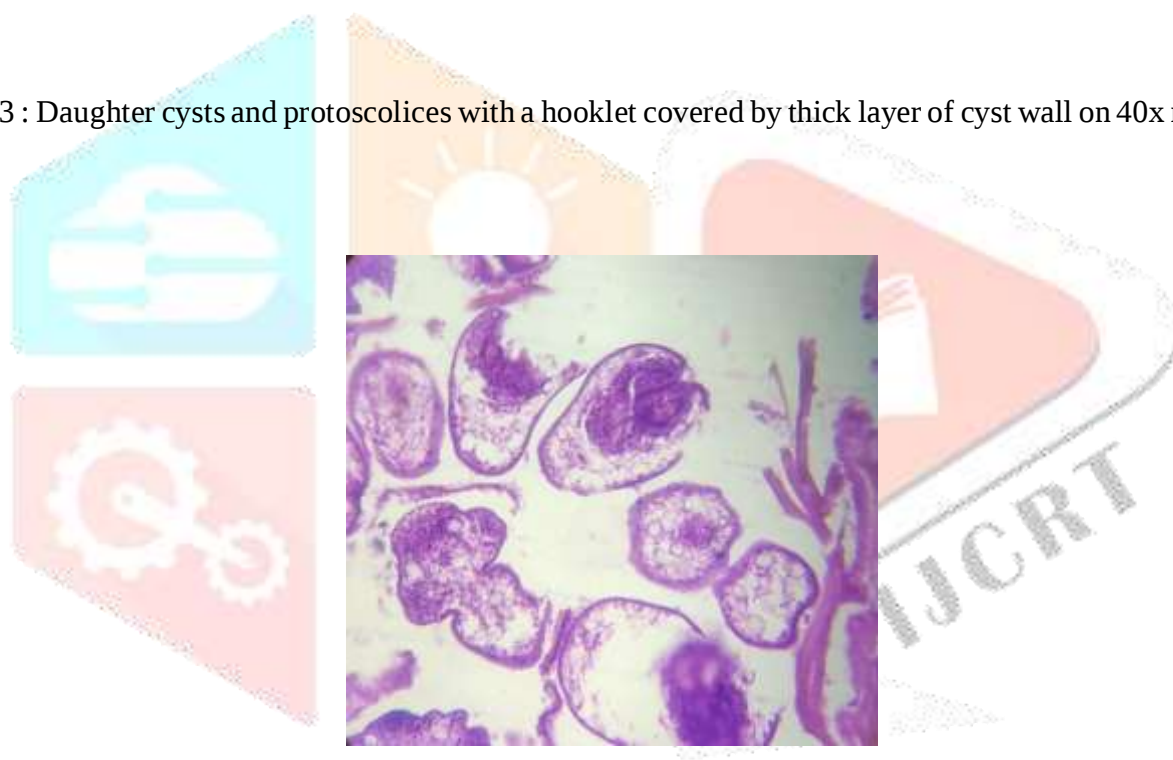


Figure 4 : Proctoscolices of hydatid on 40x magnification

Discussion

The pathogenesis of hydatid cysts involves several key steps: The life cycle begins when a human ingests eggs of the *Echinococcus granulosus* tapeworm, typically through contaminated food or water. The eggs hatch in the small intestine, releasing oncospheres (larval forms). The oncospheres penetrate the intestinal wall and migrate through the bloodstream to various organs, including the liver, lungs, and brain. In the target organ, the oncosphere develops into a hydatid cyst [3,4,5]. The cyst grows slowly and gradually expands, exerting pressure on surrounding tissues.

The most common parasitic infection of the brain is hydatid cyst, but primary cerebral hydatid cyst is rare (1–2 % of all cases) [6]. Cerebral hydatid cyst is usually diagnosed during childhood and is often solitary. The incidence of brain hydatid cysts varies significantly across different regions of the world. It is more prevalent in areas with close contact between humans and sheep or cattle, such as rural areas in the Middle East, Africa, and parts of South America [7]. In developed countries, brain hydatid cysts are relatively rare. They can be seen in any part of the brain but are usually supratentorial and located in the middle cerebral artery territory, most commonly the parietal lobe [8]

The histopathological features of brain hydatid cysts are distinctive: Outer Pericyst, a thick, fibrous layer that surrounds the cyst and is often calcified followed by an inner Germinal Layer which contains cells that produce the protoscoleces, the larval forms of the tapeworm. Daughter cysts that may develop within the main cyst.

The hydatid fluid is a clear, colorless fluid that fills the cyst and contains proteins, carbohydrates, and salts. Microscopic examination of the cyst wall and fluid can help confirm the diagnosis of hydatid cyst. The presence of protoscoleces and hooklets within the cyst is a strong indicator of echinococcosis.

Additional histopathological findings may include inflammation - the surrounding brain tissue showing signs of inflammation, such as infiltration of neutrophils and eosinophils, or calcification – with the cyst wall being heavily calcified, particularly in long-standing infections.

The differential diagnosis of an intracerebral hydatid cyst with mainly typical characteristics includes supratentorial cystic lesions like arachnoid cysts, cystic tumors, abscess, and porencephalic cysts [9].

Conclusion

A clinician should bear in mind brain hydatid cyst in the differential diagnosis of cystic cerebral lesions, especially in young adults from rural areas. Although imaging is useful, it may not always be conclusive, and hence an efficient pathological examination can help in achieving a confirmatory diagnosis, thus aiding in prompt diagnosis and management.

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