

Cytology of Hepatic Hydatid Cyst: A Case Report

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ABSTRACT

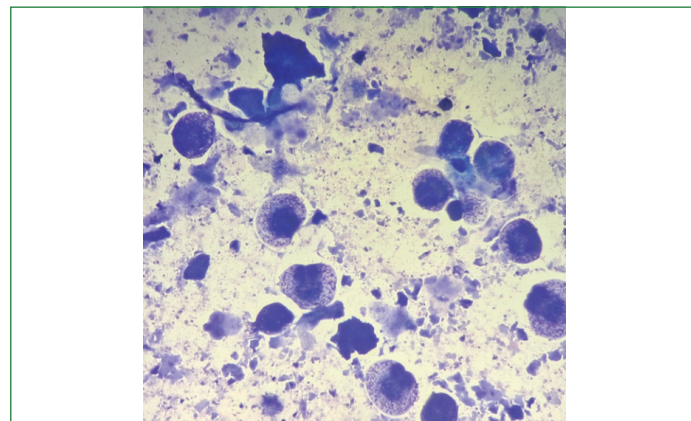
Hydatid disease represents a major global health and economic challenge, especially in low-income, highly endemic areas with limited healthcare resources. The larval stage of *Echinococcus* tapeworms causes hydatid cysts, with *E. granulosus* being the most frequent cause. The life cycle of *E. granulosus* requires definitive hosts, primarily domestic dogs and occasionally cats, and intermediate hosts such as sheep, cattle, and humans. Humans acquire infection by ingesting parasite eggs, through contact with infected dogs, or by consuming contaminated food and water. The liver and lungs are the most frequent sites of cyst development, accounting for 50-70% and 20-30% of cases, respectively. A 35-year-old female presented with complaints of right upper quadrant pain for the past 15 days. There was a history of a hepatic hydatid cyst six years ago, for which cystectomy was done. Contrast-Enhanced Computed Tomography (CECT) scan revealed multiple hepatic cystic lesions. The patient underwent cystectomy, and the cyst fluid and cyst were sent for cytological and histopathological examination. Cytology revealed daughter cysts containing protoscolices, suckers, and refractile hooklets, confirming the diagnosis of a hydatid cyst. The diagnosis was further confirmed by histopathology. Cytology is a valuable diagnostic tool for identifying such cysts, though it is controversial due to the risk of anaphylaxis and dissemination. The present case highlights the importance of considering hydatid cysts in the differential diagnosis of cystic liver lesions and the utility of cytology in making an accurate diagnosis, thereby supporting timely and appropriate management.

Keywords: *Echinococcus granulosus*, Hooklets, Liver, Protoscolices

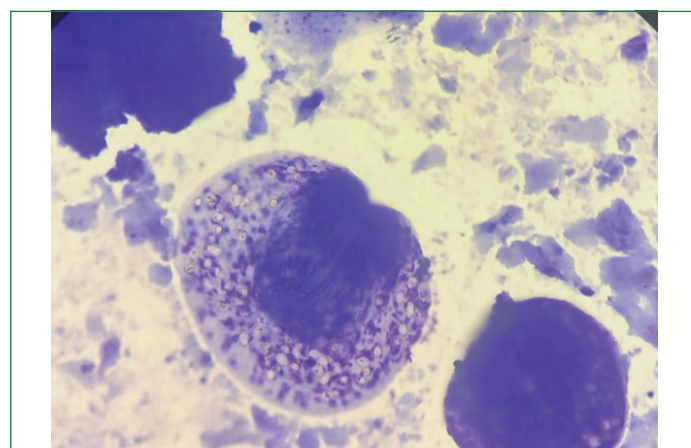
CASE REPORT

A 35-year-old female was admitted with complaints of pain in the right upper quadrant for the past 15 days, which was dull aching and not alleviated by medication. The patient was a non vegetarian by diet and was of a low socioeconomic status. There was no history of fever, vomiting, weight loss, or loss of appetite. However, a history of hepatic hydatid cyst was revealed six years ago, for which cystectomy was done. The patient was advised regular follow-up, but no further follow-up records could be obtained due to non compliance. On physical examination of the abdomen, no mass was palpable. A CECT showed several cystic lesions in the right lobe of the liver, with enhancing internal septations. Haematological investigations showed mild eosinophilia, and biochemical investigations were within normal levels. Serum echinococcal antibody was positive. The patient underwent cystectomy, and the cyst fluid along with the cyst was sent to the cytology and histopathology departments for evaluation. The aspirated fluid was white and hazy. Smears made from centrifuged fluid were stained using Papanicolaou and Giemsa stains. Microscopic examination of the smears revealed numerous protoscolices with hooklets, and amorphous necrotic material was seen in the background. Fragments of laminated membranes were also seen [Table/Fig-1,2]. The diagnosis of hydatid cyst was made. Gross evaluation of the cystectomy specimen showed multiple white, hazy, fluid-filled cysts varying in size from 6.5×6.5 cm to 1.0×1.0 cm. The outer surface was greyish-white and shiny. On the cut section, multiple septations were visible. On histopathologic examination, the specimen displayed the characteristic outer acellular protective laminated membrane and inner nucleated germinal layer responsible for producing daughter cysts, as well as hooklets and brood capsules, which are pathognomonic of *Echinococcus granulosus* infection [Table/Fig-3]. The patient was given postoperative albendazole for two months to eliminate any residual microscopic scolices and reduce the risk of recurrence following possible intraoperative spillage, and the patient remained

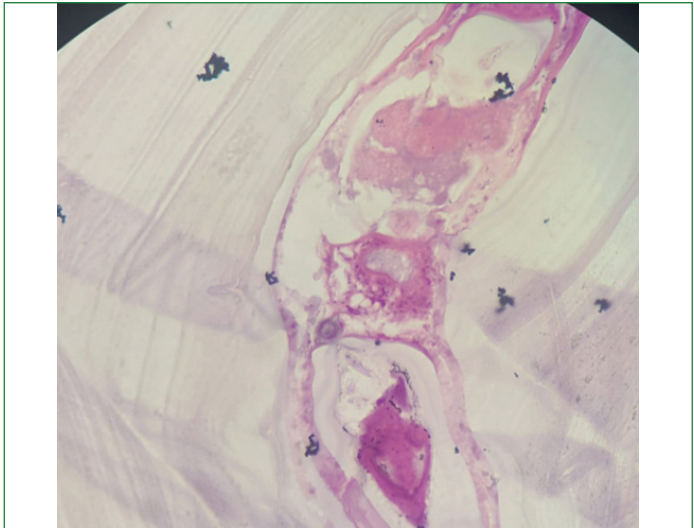
asymptomatic for 12 months of follow-up, indicating a good short-term outcome with no evidence of recurrence.



[Table/Fig-1]: Smears showing many protoscolices with hooklets along with amorphous necrotic debris present in the background (Giemsa-stained, 10×).



[Table/Fig-2]: Smears showing protoscolices with hooklets (Giemsa-stained, 40×).



[Table/Fig-3]: Sections showing laminated membrane and protoscolices (Haematoxylin and eosin-stained, 10x).

Author and Year	Age/ Gender	Chief complaints	Site of liver
Makwana AR, et al., 2025 [3]	45 y/F	Abdominal pain for the past 3 years	Right lobe and caudate lobe and pelvic hydatid cyst.
Sarohi M et al., 2021 [7]	60 y/F	Chest pain and difficulty in breathing	Segment VI and VII of the liver with rupture into the right lung
Akhtar K et al., 2021 [8]	30 y/F	Non radiating pain in right abdomen for 8 months, mild fever and vomiting	Segments VII and VIII of the liver
Agarwal A et al., 2020	69 y/F	Right upper quadrant pain	20 cm liver cyst and multiple pelvic cysts

[Table/Fig-4]: Clinical features of recent studies based on cytology of hepatic hydatid cyst [3,7-9].

cyst continues because of anaphylaxis and dissemination [7], although it can be a safe and useful method [3]. Recent studies on cytology findings of hepatic hydatid cyst are shown in [Table/ Fig-4] [3,7-9].

Imaging studies help to determine the cystic and vascular nature of the lesion, daughter cysts, vesicles, and internal septa. Latex agglutination, immunoelectrophoresis, indirect haemagglutination test, and enzyme-linked immunosorbent assay are the serological tests used for screening, diagnosis, and postoperative follow-up for hydatid cyst, but the confirmation is made on histopathological examination and cytology findings [10]. Management includes options like medical therapy, wait and watch, percutaneous therapy Puncture, Aspiration, Injection, Re-aspiration (PAIR), standard catheterisation, and Modified Catheterisation Technique (MoCat), and surgical treatment. There is no set recommendation on the dose and schedule of medication, with different authors making different recommendations [11]. Laparoscopic surgery offers advantages of reduced morbidity and better recovery; however, for complex or recurrent cases, open surgery is recommended [12].

CONCLUSION(S)

The cytological features of a hepatic hydatid cyst are described in the present case report. The diagnosis was subsequently confirmed by histopathological examination. The present case emphasises the need to consider hydatid cyst in the differential diagnosis of cystic liver lesions. It also demonstrates the value of cytology in establishing an accurate diagnosis. Early cytological diagnosis can facilitate timely and appropriate patient management.

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