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Case Report

Microbiology Section

A Rare Case Report of Isolated Multiloculated Splenic Hydatid Cyst Presenting with an Incisional Hernia

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ABSTRACT

Cystic echinococcosis is a parasitic zoonosis caused by the larval stage of *Echinococcus granulosus*. The liver and lungs are the most frequently involved organs due to portal and pulmonary filtration, whereas primary splenic involvement is uncommon, accounts for only a small proportion of cases. Isolated splenic hydatid cysts often present with vague or non-specific symptoms and may mimic other benign or neoplastic cystic lesions, resulting in diagnostic uncertainty. A 47-year-old woman presented with a progressively enlarging supraumbilical swelling of one year's duration, accompanied by intermittent abdominal discomfort. Physical examination revealed a palpable mass in the left upper abdomen along with a reducible incisional hernia. Radiological evaluation demonstrated a large, well-defined multiloculated cystic lesion measuring 16.9×13.9×9.7 cm within the splenic parenchyma, with internal septations consistent with daughter cysts, with no evidence of involvement of other organs. Serological testing for *Echinococcus* infection was positive, supporting the suspected diagnosis. The patient underwent total splenectomy. Intraoperative findings confirmed extensive replacement of splenic parenchyma by multiple cystic cavities. Histopathological examination established the diagnosis by demonstrating the characteristic laminated cyst wall, germinal layer, brood capsules, and protoscolices. The postoperative course was uneventful. The patient received recommended post-splenectomy immunisations and adjunctive albendazole therapy to reduce the risk of recurrence. This case highlights the importance of considering hydatid disease in the differential diagnosis of splenic cystic lesions, even in patients without classical epidemiological risk factors. Radiological imaging and histopathological examination remain essential for diagnosis, while complete surgical excision combined with antiparasitic therapy offers excellent clinical outcomes.

Keywords: Abdominal hernia, *Echinococcus granulosus*, Splenectomy, Surgical postoperative care, Zoonoses

CASE REPORT

A 47-year-old woman presented to the Medical Oncology Department with a gradually progressive supraumbilical swelling for one year, associated with dull, intermittent abdominal pain. She denied fever, weight loss, jaundice, prior abdominal trauma, previous parasitic disease, or contact with domestic animals. The patient resided in an urban area and denied any history of travel to regions known to be endemic for hydatid disease. She reported no occupational exposure to livestock, sheep, or cattle, and no direct or indirect contact with dogs or other definitive host. She denied consumption of unprocessed animal products or untreated water. Her medical history was unremarkable for chronic illnesses, previous hydatid disease, or factors suggestive of immune compromise. She had no significant surgical history apart from the previous abdominal incision that resulted in the incisional hernia formation. On presentation, the patient was haemodynamically stable with recorded vital signs as follows: blood pressure 118/74 mmHg, pulse rate 78 beats/min, respiratory rate 16 breaths/min, temperature 36.8°C, and oxygen saturation 98% on room air. There were no features of sepsis or haemodynamic compromise. Abdominal examination revealed a tender, ballotable splenic mass palpable below the left costal margin and a reducible supraumbilical incisional hernia.

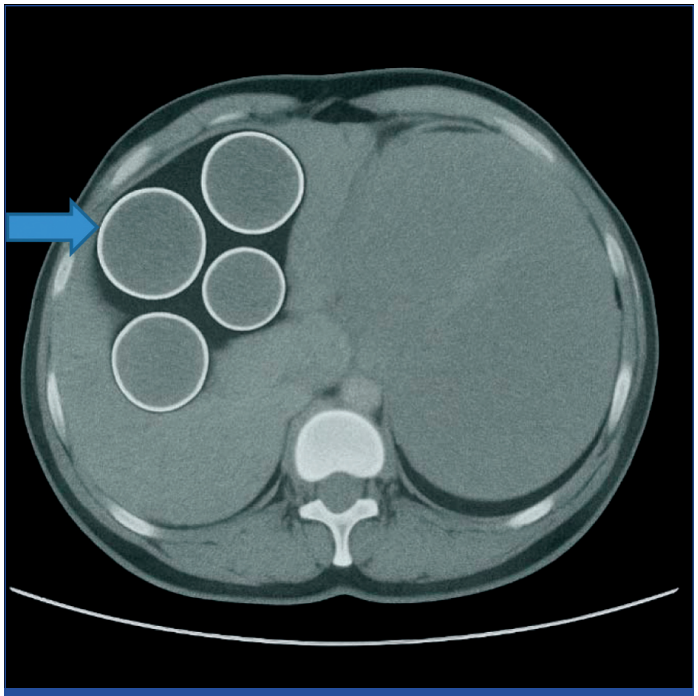
There was no hepatomegaly, lymphadenopathy, or signs of Systemic infection. Further systemic examination included cardiovascular, respiratory, and neurological assessments. Cardiovascular examination revealed normal heart sounds with no murmurs. Respiratory system examination showed normal vesicular breath sounds with no added sounds. Neurological examination was unremarkable. The patient was fully conscious and oriented, with no focal neurological deficits. No abnormalities were detected on general physical or other systemic examinations. Serological testing for *Echinococcus granulosus* IgG antibodies was performed using a commercially available enzyme-linked immunosorbent assay (ELISA) kit (RIDASCREEN® *Echinococcus* IgG ELISA, R-Biopharm AG, Darmstadt, Germany), according to the manufacturer's instructions. The test result was positive, with an index value of 2.0 and an optical density of 1.86, exceeding the manufacturer-defined positive cut-off value (>1.1), thereby supporting the diagnosis of cystic echinococcosis in correlation with radiological and histopathological findings. Ultrasonography (USG) of the abdomen demonstrated a large, well-defined multicystic lesion with internal septations in the left hypochondrium. Contrast-Enhanced Computed Tomography (CECT) confirmed a multicystic splenic mass measuring 16.9×13.9×9.7 cm compressing the pancreatic tail. No additional cystic lesions were detected in the liver, lungs, or elsewhere in the abdomen [Table/Fig-1].

Based on the clinical findings and imaging characteristics of a large multiloculated splenic cystic lesion, the differential diagnoses included splenic hydatid cyst, primary congenital splenic cyst, primary epidermoid cyst of the spleen, post-traumatic splenic pseudocyst or inflammatory splenic abscess, and cystic splenic neoplasms, including lymphangioma and hemangioma with cystic degeneration. In view of the patient's presentation despite the absence of typical epidemiological risk factors imaging findings demonstrating a large isolated multicystic splenic lesion without involvement of other organs, a provisional diagnosis of an isolated splenic hydatid cyst with associated incisional hernia was made.

The final diagnosis of isolated multicystic splenic hydatid disease was confirmed by histopathological examination of the splenectomy specimen, which demonstrated a laminated cyst wall, germinal layer,

protoscolices, and hydatid sand, consistent with *Echinococcus granulosus* infection. Serological testing further supported the diagnosis, with *Echinococcus* IgG detected by ELISA.

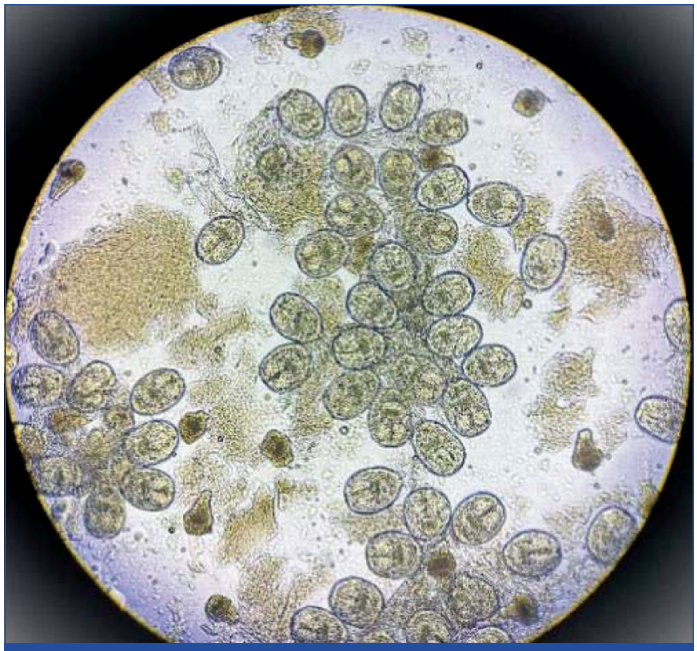
The patient underwent a total splenectomy, during which multiple cystic cavities were identified throughtout the splenic parenchyma and capsule [Table/Fig-2].



[Table/Fig-1]: Axial contrast-enhanced computed tomography (CECT) of the abdomen demonstrating a large multicystic lesion within the splenic parenchyma, showing internal septations (daughter cysts) characteristic of a splenic hydatid cyst. The blue arrow indicates the multiloculated cystic mass occupying the spleen.

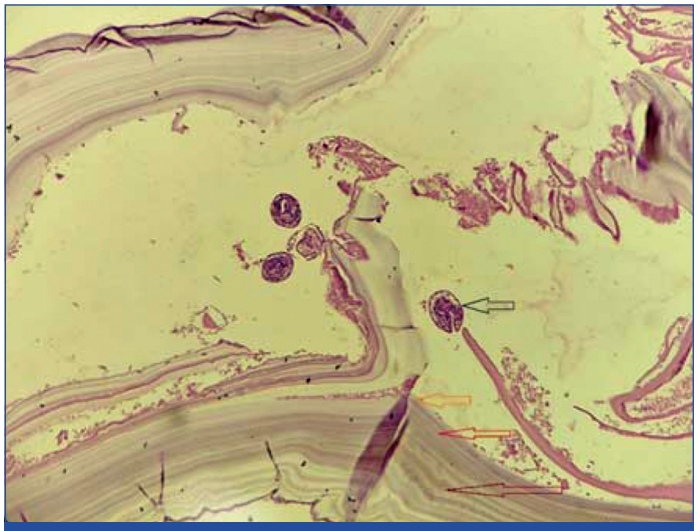
[Table/Fig-2]: Gross splenectomy specimen showing multiple well-circumscribed, multiloculated hydatid cysts replacing the splenic parenchyma, with tense cystic cavities, internal septations (daughter cysts), capsular thinning, and compression of the surrounding splenic tissue.

Histopathological examination of the splenectomy specimen revealed the characteristic features of hydatid disease, including a laminated acellular ectocyst, an inner germinal layer containing brood capsules and protoscolices, and an outer fibrous pericyst formed as a host tissue response [Table/Fig-3].



[Table/Fig-3]: Photomicrograph demonstrating the characteristic histopathological features of a hydatid cyst, including a laminated acellular ectocyst, an inner germinal layer containing brood capsules and protoscolices, and an outer fibrous pericyst (wet mount, 200x).

Hydatid sand containing numerous protoscolices and refractile hooklets further confirmed *Echinococcus granulosus* infection [Table/Fig-4].



[Table/Fig-4]: Photomicrograph of a splenic hydatid cyst (H&E stain) demonstrating the laminated cyst wall, germinal layer, protoscolices, and hydatid sand. The black arrow indicates a protoscolex with refractile hooklets, confirming *Echinococcus granulosus* infection. The orange arrow indicates the germinal layer. The light red arrow denotes the laminated membrane, while the dark red arrow marks the outer fibrous pericyst formed by the host tissue response (H&E, 40x).

Postoperatively, the patient received the recommended post-splenectomy vaccinations against *Streptococcus pneumoniae*, *Neisseria meningitidis*, and *Haemophilus influenzae* type b. She was started on adjunctive albendazole therapy (400 mg twice daily) for four weeks following splenectomy to reduce the risk of recurrence. Her postoperative recovery was uneventful, and follow-up imaging at seven months revealed no evidence of disease recurrence.

DISCUSSION

Cystic echinococcosis is a parasitic zoonosis caused by the larval stage of *Echinococcus granulosus* [1,2]. Humans acquire the infection accidentally through ingestion of eggs shed by infected definitive hosts, most commonly dogs, or by consuming food or water contaminated with these eggs [3]. Although the liver and lungs are the primary sites of involvement, isolated splenic involvement

No.	Author (Year) and Reference	Country/ region	Age/ sex	Cyst morphology	Diagnostic modality	Treatment	Follow-up/ outcome
1	Zhuoli Z et al., 2019 [12]	China	44 / F	Primary giant splenic hydatid	USG, CT	Laparoscopic excision	12 months, no recurrence
2	Milosavljevic V et al., 2019 [13]	Serbia	37 / M	Initially unrecognised splenic hydatid	USG, CT	Laparoscopic partial pericystectomy	6 months, no recurrence
3	Hoteit A et al., 2020 [14]	Lebanon	35 / F	Primary splenic hydatid (spleen-preserving surgery)	USG, CT	Laparoscopic spleen-preserving surgery	1 year, no recurrence
4	Jallali M et al., 2024 [15]	Tunisia	33 / F	Giant isolated splenic hydatid	USG, CT	Total splenectomy	6 months, uneventful
5	Dumitrascu T et al., 2025 [16]	Romania	25 / F	Isolated with high CA19-9	USG, CT	Splenectomy	6 and 12 months, normalised CA19-9, no recurrence
6	Hakimi T et al., (2025) [17]	Unknown	41 / F	Complicated giant	USG, CT	Splenectomy+antibiotics	3 months, uneventful
7	Bouhout T et al., (2024) [18]	Morocco	36 / M	Spleen-preserving surgery case	USG, CT	Partial pericystectomy	6 months, no recurrence
8	Bruijn SD et al., 2025 [19]	Unknown	42 / F	Spontaneously ruptured	USG, CT	Splenectomy+ lavage	3 months, recovered, monitored for adhesions
9	Elaadli H et al. 2022 [20]	Egypt	39 / M	Multiple primary hydatid cysts	USG, CT	Splenectomy	6 months, no recurrence
10	Wani BA et al., 2025 [21]	India	23 / F	Solitary	USG, CT	Splenectomy	6 months, no recurrence

[Table/Fig-5]: Published case reports of isolated splenic hydatid cysts [12-21].

is rare, accounting for only 0.5%-4% of cases worldwide [4]. In India, the regional prevalence varies, with seropositivity in central India reported to be as high as 11% [5]. Owing to its rarity, isolated splenic hydatid disease presents a diagnostic challenge, particularly in non-endemic settings [6].

The present case was unique because of the presence of multiple hydatid cysts confined to the spleen, an uncommon manifestation of cystic echinococcosis. Imaging plays a pivotal role in diagnosis and preoperative planning. Ultrasonography (USG) serves as the initial imaging modality, whereas computed tomography (CT) provides a detailed evaluation of cyst morphology, wall calcification, internal septations, and the relationship of the cyst to adjacent structures [7]. These imaging findings are essential for surgical planning and assessment of potential complications. Surgical management remains the treatment of choice. Total splenectomy is recommended for large, multiple, or complicated cysts to minimise the risk of rupture, secondary infection, or peritoneal dissemination [8]. In selected patients, laparoscopic or spleen-preserving procedures may be considered. Histopathological examination confirms the diagnosis by demonstrating the characteristic laminated cyst wall germinal layer, brood capsules, protoscolices, and hydatid sand [9]. Early diagnosis and timely intervention are crucial, particularly in endemic regions, to prevent potentially life-threatening complications such as cyst rupture, anaphylaxis, and secondary infection [10]. Clinicians should maintain a high index of suspicion for hydatid disease in patients presenting with cystic splenic lesions, especially in endemic areas. Awareness of atypical presentations, including multiple cysts, unusual cyst morphology, or coexisting abdominal wall hernias, may improve diagnostic accuracy and facilitate appropriate surgical management [11].

[Table/Fig-5] shows published case reports [12-21].

CONCLUSION(S)

The present case describes an uncommon presentation of isolated multicystic splenic hydatid disease associated with an incisional hernia. Isolated splenic involvement is a rare manifestation of cystic echinococcosis and may mimic other cystic lesions of the spleen, leading to diagnostic uncertainty. This case highlights the importance of considering hydatid disease in the differential diagnosis of splenic cystic lesions, particularly in endemic regions. Cross-sectional imaging, especially computed tomography (CT), plays a pivotal role in diagnosis and preoperative surgical planning. Total splenectomy remains the treatment of choice for large, multiple, or complicated cysts to minimise the risk of rupture and recurrence. Early diagnosis, prompt surgical intervention, and appropriate adjunctive antiparasitic therapy provide the most effective strategy for achieving favourable long-term clinical outcomes.

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