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A rare case of splenic hydatid cyst managed by surgical removal

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Abstract

Primary isolated splenic hydatid cyst is an uncommon manifestation of echinococcal disease, even in endemic regions reported in only 0.5-4 % of cases. Due to non-specific clinical features and radiological resemblance to other splenic cystic lesions, diagnosis is frequently delayed, increasing the risk of complications such as rupture, secondary infection, and anaphylaxis. This report describes a rare case of a 35-year-old female who presented with chronic left upper abdominal pain accompanied by nausea, reduced appetite, and intermittent low-grade fever. Clinical examination revealed mild splenomegaly. Ultrasonography identified a large calcified cyst located in the upper pole of the spleen, with no evidence of hepatic or pulmonary involvement. Serological testing for echinococcosis supported the diagnosis. Given the cyst's size and potential for rupture, surgical intervention was planned. Laparoscopic splenectomy was initially attempted; however, dense adhesions between the cyst and the diaphragm with a high risk of intraoperative spillage necessitated conversion to open splenectomy. The spleen was removed intact, and the postoperative course was uneventful. Histopathological examination confirmed the diagnosis of splenic hydatid disease. This case emphasizes the importance of including hydatid disease in the differential diagnosis of isolated splenic cysts, particularly in endemic regions. It also highlights the value of timely surgical decision-making and demonstrates that open splenectomy remains a safe and definitive treatment option for large, adherent splenic hydatid cysts when minimally invasive approaches are unsuitable.

Keywords: splenic hydatid cyst, hydatid cyst, Echinococcal, Splenectomy

Introduction

Hydatid disease is a parasitic infection caused by the larval stage of Echinococcus granulosus. Humans are infected by oral ingestion of excrement from animals. (most commonly canines)[1] The disease continues to be a significant public health problem in

endemic areas such as the Mediterranean countries, the Middle East, the far East, South America , Australia, and New Zealand, East Africa[2]. In India, higher prevalence has been reported in states like Andhra Pradesh, Tamil Nadu, and Kashmir [4]

Involvement of the spleen is rare, reported in only 0.5–4% of cases[5]. Isolated primary splenic hydatid cysts are even more uncommon, representing less than 2% of all hydatid disease cases, even in endemic regions [6]. This rarity is mainly due to the filtering action of the liver and lungs, which trap most parasitic embryos before they reach systemic circulation [3]. Additionally, the immunological role of the spleen may contribute to limiting parasite implantation, although the exact mechanisms remain unclear.[8]

Diagnosis of splenic hydatid disease is often delayed because symptoms are non-specific and imaging findings may resemble other benign splenic cysts. While ultrasonography and computed tomography are commonly used diagnostic tools, they may lack specificity, especially in cases without daughter cysts or calcification [9]. Serological tests such as ELISA can support the diagnosis but may be negative in extrahepatic disease [6]. If left untreated, hydatid cysts can lead to serious complications including rupture, infection, fistula formation, and life-threatening anaphylaxis.[3]

Management of splenic hydatid cysts is challenging due to the absence of standardized treatment guidelines. Surgical options include total splenectomy, spleen-preserving procedures, laparoscopic surgery, and percutaneous techniques. Each approach carries its own risks and benefits [6]. This report presents a rare case of primary splenic hydatid cyst and highlights the diagnostic and surgical management strategies.

Case Report

A 35-year-old female homemaker presented with complaints of dull abdominal pain in the left upper quadrant for one year, which had worsened over the past month. The pain was sharp at times and associated with nausea, vomiting, and reduced appetite. She also reported intermittent low-grade fever (99–100°F) without chills or rigors, which subsided with over-the-counter medication. There was no history of jaundice, bowel or urinary disturbances, or gastrointestinal bleeding.

She had no significant past medical or surgical history and no known comorbidities. The patient consumed a non-vegetarian diet and had a history of exposure to domestic animals. She resided in a rural area and had no recent travel history.

On examination, the patient was conscious and oriented. Her vital signs were stable. Abdominal examination revealed mild splenomegaly with a cystic mass palpable in the left upper quadrant. Other systemic examinations were unremarkable.

Routine laboratory investigations, including complete blood count, liver and renal function tests, blood glucose levels, viral markers, and ECG, were within normal limits except for a mildly elevated neutrophil count.

Investigations

Ultrasonography of the abdomen revealed a well-defined cystic lesion measuring approximately 68 × 67 mm in the upper pole of the spleen, with rim calcification. The lower part of the spleen appeared normal (Figure No. 1). No cysts were detected in the liver or other abdominal organs. Chest X-ray showed no pulmonary involvement.

Further evaluation with Echinococcosis serology using enzyme immunoassay revealed an elevated immunoglobulin G (IgG) level of 2.06 (ref. range :< 9 negative; 9-11 Equivocal; >11 Positive). (Figure No. 2)

MRI was not performed due to financial considerations, as adequate diagnostic information had already been obtained.

Management

Considering the large size of the cyst and the risk of rupture, a laparoscopic splenectomy was planned as to drain the cyst collection and then removal. The patient was counselled regarding the lifelong risk of overwhelming post-splenectomy infection (OPSI) and the importance of vaccination and early antibiotic therapy. Preoperatively, she received albendazole 400 mg twice daily for one weeks, with regular monitoring of liver function tests, which remained normal. Pneumococcal and Haemophilus influenza type b vaccines were administered prior to surgery.

During surgery, following the pre-operative preparations patients posted for laparoscopic splenectomy .Under General anaesthesia pneumoperitonium is created from infra umbilical region and with 10 mm scope left hypochondriac fossa examined. Intraoperative findings revealed an enlarged spleen with a large cyst extending at the base of spleen. Gastro splenic ligaments cut and small gastric vessels are cut. Spleen observed to be adherent to diaphragm at cyst site hence due to dense adhesions and the high risk of cyst rupture, the procedure was converted to open surgery. A left subcostal incision was made, and the lienorenal and splenophrenic ligaments were divided. The splenic vessels were ligated at the hilum, and close adhesion of cyst observed and the spleen was removed intact (Figure No.4). No sporicidal agents (Cetramide) were used intraoperatively. Adequate haemostasis was achieved and the peritoneal cavity was washed thoroughly with hypertonic saline. The abdominal incision was then closed using sutures. The postoperative period was smooth, and no complications were noted.

The postoperative period was uneventful. Albendazole was advised for 2 weeks post op, and the patient recovered well. On follow-up, she remained asymptomatic with a healthy surgical wound.

Histopathology

Gross examination showed a splenic specimen measuring 7.5 × 6.0 × 5 cm with a calcified cyst wall. Microscopic examination revealed characteristic features of hydatid cyst, including a germinal layer, an acellular laminated membrane, and surrounding fibrous tissue with granulation. Adjacent splenic tissue showed red pulp expansion with dilated sinusoids, confirming the diagnosis of splenic hydatid disease. (Figure No. 3.)

Discussion

Splenic hydatid cysts often remain asymptomatic for many years and are frequently detected incidentally during imaging studies. Although the patient complaints are not so great as to interrupt their daily activities, hydatid disease is generally identified incidentally (up to 30%) during radiological investigations for some other reasons[10]. Around 75 % of cases are asymptomatic when symptoms occur, patients commonly present with dull abdominal pain, early or discomfort due to splenic enlargement. Diagnosis is challenging because splenic hydatid cysts can mimic other cystic splenic lesions such as pseudo cysts, abscesses, or neoplasms [6.]

Surgical treatment remains the mainstay of management. Total splenectomy is recommended for large cysts, cysts involving the hilum, multiple cysts, or those with dense adhesions, as in the present case. Total splenectomy was selected because of the cyst's large size, friability, and the presence of infection as after cut opening creamy fluid oozes out (Figure no.5). Although laparoscopic splenectomy was planned but due to close adherence of cyst with diaphragm and chances of rupture of cyst open surgical intervention done. Given the patient's young age, surveillance is essential to identify potential complications such as cyst recurrence or the development of extra splenic cysts, which could significantly impact her quality of life. While total splenectomy is recommended for large or symptomatic cysts, alternative approaches, including spleen-preserving

surgery and adjunctive medical therapy, have also been described. However, recent evidence indicates that spleen-preserving techniques for large or multiple cysts carry higher risks of haemorrhage, residual cavity infection, and prolonged recovery, which frequently reduces their benefits[5]. Similar to recent cases, swift diagnosis and surgical intervention proved critical for such patient, reinforcing the necessity of maintaining high suspicion for isolated splenic hydatid cysts even in atypical settings, as diagnostic delays significantly worsen outcomes[12]. Laparoscopic approaches offer faster recovery but are technically demanding and carry a higher risk of cyst rupture in giant or adherent cysts. However, it offers certain benefits, including reduced postoperative pain, shorter hospital stays, and a decreased risk of surgical site infections and complications associated with prolonged bed rest [7].

Preoperative albendazole therapy plays an important role by sterilizing the cyst, reducing intra-cystic pressure, and minimizing the risk of anaphylaxis during surgery. It also lowers intra-cystic pressure and decreases the risk of anaphylaxis during surgical manipulation[11]

Conclusion

Primary isolated splenic hydatid cyst is an extremely rare manifestation of hydatid disease and often presents a diagnostic challenge due to its non-specific symptoms and resemblance to other splenic cystic lesions. In endemic regions, clinicians should maintain a high index of suspicion for hydatid disease when evaluating splenic cysts, even in the absence of liver or lung involvement. Early and accurate diagnosis using a combination of imaging modalities and serological tests is essential to prevent potentially life-threatening complications such as cyst rupture, secondary infection, and anaphylactic reactions.

Surgical intervention remains the definitive treatment for splenic hydatid cysts. The choice of surgical approach should be individualized based on cyst size, location, extent of splenic involvement, and intraoperative findings. While spleen-preserving procedures may be considered in selected cases, total splenectomy is often the safest and most effective option for large, calcified, or adherent cysts, as it minimizes the risk of recurrence and intraoperative spillage. Preoperative albendazole therapy plays a crucial role in reducing cyst viability and operative complications and should be incorporated into the management protocol whenever feasible.

This case highlights the importance of timely surgical decision-making and careful intraoperative assessment, particularly when minimally invasive approaches need to be converted to open surgery to ensure patient safety. Long-term follow-up and appropriate vaccination are mandatory in post-splenectomy patients to reduce the risk of overwhelming post-splenectomy infection. Reporting such rare cases contributes to the existing literature, improves clinical awareness, and helps guide evidence-based management strategies for this uncommon but clinically significant condition.

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Figures

USG ABDOMEN AND PELVIS

Many thanks for the reference.

Liver is normal in size and echotexture. No focal lesion is seen. No dilatation of intra-hepatic biliary radicals.

Gall bladder is partially distended and shows clear contents. CBD and portal vein are normal.
Pancreas appears normal in size and echotexture.

Spleen - Large rounded iso to hypoechoic lesion with rim calcification seen in left sub diaphragmatic region in upper portion of spleen. Lesion measures 68 x 67 mm. lower portion of spleen appears normal in echotexture.

Kidneys - Right kidney : 10.2 x 4.2 cm. Left kidney :10 x 4.4 cm.
Both kidneys are normal in size, shape and echotexture. CMD is maintained.
Both kidneys show normal cortical thickness & smooth cortical outline.
No hydronephrosis / hydroureter / calculus on either side.

Urinary bladder is partially distended and shows smooth outline. No vesical calculus.

Uterus appears normal in size (8.5 x 4.4 x 3.4 cm), shape and echotexture.
Endometrial thickness is 6 mm.
Anechoic cyst (50 x 48 mm) is seen in right ovary.
Left ovary appears normal in size and echotexture.

Aorta and IVC are normal. No ascites or lymphadenopathy.
No obvious bowel mass or bowel wall thickening seen.

FIGURE NO. 1 –USG ABDOMEN PELVIS

TEST NAME	TECHNOLOGY	VALUE	UNITS
ECHINOCOCCUS - IGG	E.L.I.S.A	2.06	NTU

Bio. Ref. Interval. :-

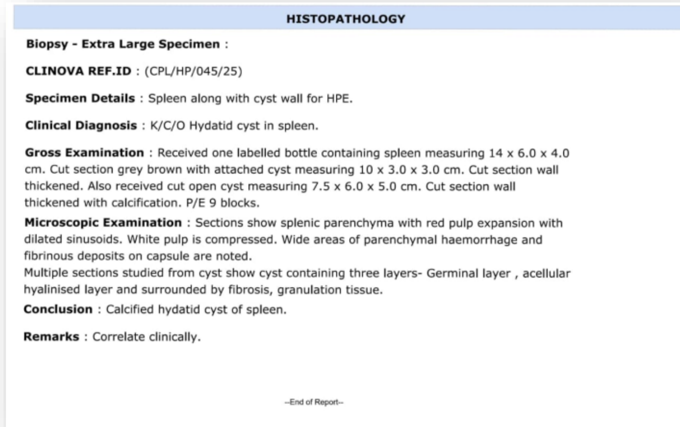
Negative : < 9
Equivocal : 9 - 11
Positive : > 11

Clinical Significance:
Echinococci are microscopic cestodes. Echinococcus infection cause symptoms in the affected organ. Infection in humans can cause parasitic tumors in liver, lungs, brain, Positive results imply immunity or previous exposure to Echinococcus.

Specification:
Sensitivity: 98.82 %, Specificity: 97.22%, Intra Assay Precision: 8.00% (%CV), Inter Assay Precision: 6.61% (%CV)

Kit Validation Reference:
Gottsein, Bruno (1985): Molecular and immunological diagnosis of Echinococcus , Clin. Microbial, Rev 5(3), pp. 248-261, DOI: 10.11281 CMR 5:3.248

FIGURE NO. 2 ECHINOCOCCUS – IGG SENSITIVITY



HISTOPATHOLOGY

Biopsy - Extra Large Specimen :

CLINOVA REF.ID : (CPL/HP/045/25)

Specimen Details : Spleen along with cyst wall for HPE.

Clinical Diagnosis : K/C/O Hydatid cyst in spleen.

Gross Examination : Received one labelled bottle containing spleen measuring 14 x 6.0 x 4.0 cm. Cut section grey brown with attached cyst measuring 10 x 3.0 x 3.0 cm. Cut section wall thickened. Also received cut open cyst measuring 7.5 x 6.0 x 5.0 cm. Cut section wall thickened with calcification. P/E 9 blocks.

Microscopic Examination : Sections show splenic parenchyma with red pulp expansion with dilated sinusoids. White pulp is compressed. Wide areas of parenchymal haemorrhage and fibrinous deposits on capsule are noted.
Multiple sections studied from cyst show cyst containing three layers- Germinal layer , acellular hyalinised layer and surrounded by fibrosis, granulation tissue.

Conclusion : Calcified hydatid cyst of spleen.

Remarks : Correlate clinically.

--End of Report--

FIGURE NO.3 –HISTOPATHOLOGY REPORT

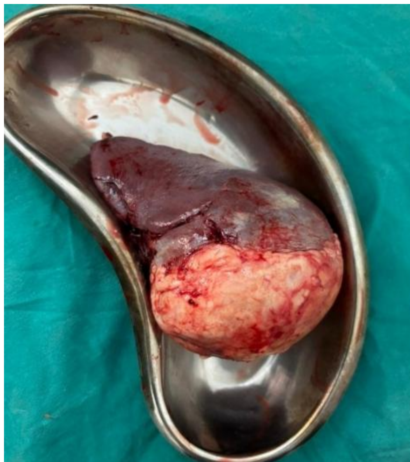


FIGURE NO.4 –HYDATID CYST TOTALLY ADHERENT TO SPLEEN

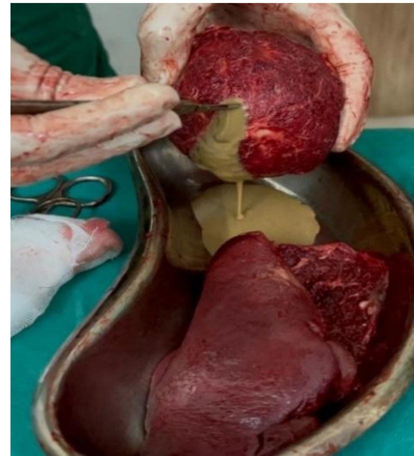


FIGURE NO. 5 CUT SECTION OF CYST SHOWS INFECTED INDICATING INFECTION SECONDARY INFECTION

Conflict of Interest: *Non* Source of funding: *Nil*

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