

Case Report

Upper Gastrointestinal Bleeding Revealing a Hepatic Hydatid Cyst Complicated by Portal Hypertension Syndrome: A Case Report

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Received: 14 April, 2025
Accepted: 25 April, 2025
Published: 26 April, 2025

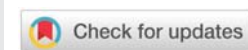
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Keywords: Hepatic hydatid cyst; Portal hypertension; Upper gastrointestinal bleeding; Esophageal varices; Albendazole therapy; Endoscopic band ligation; Liver cystic echinococcosis; Surgical dome resection; Non-cirrhotic portal hypertension; Case report

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Abstract

Liver or Hepatic Hydatid Cyst (LHC/HHC) is a benign parasitic disease common in endemic regions such as the Mediterranean basin and North Africa, caused by *Echinococcus granulosus*. While hepatic hydatid cysts are prevalent, complications such as Portal Hypertension (PH) associated with this pathology are rare. We present the case of a 39-year-old male from a rural area and a chronic smoker, admitted for upper gastrointestinal bleeding. Clinical examination revealed cholestatic jaundice, massive splenomegaly and abdominal collateral venous circulation. Upper gastrointestinal endoscopy showed grade III esophageal varices, and abdominal ultrasound and CT scans confirmed the presence of a large hydatid cyst near the porto-biliary bifurcation, compressing intrahepatic vascular structures and causing portal vein dilation. Surgical management, including resection of the cyst's protruding dome, was successfully performed, followed by Albendazole therapy to prevent parasitic dissemination. This multidisciplinary approach stabilized the patient's condition, and complete resolution of esophageal varices after two endoscopic sessions of endoscopic ligation. A one-year follow-up demonstrated sustained clinical remission without recurrence. This case underscores the importance of early diagnosis and multidisciplinary management to prevent severe complications associated with portal hypertension secondary to a hepatic hydatid cyst.

Introduction

Liver Hydatid Cyst (LHC) is a parasitic zoonosis that is relatively common in endemic regions such as the Mediterranean basin and North Africa. It is caused by the infection with *Echinococcus granulosus* and can present in various clinical forms, with presentations ranging from asymptomatic findings to life-threatening complications. Complications such as compression of vascular or biliary structures are rare, and the association with Portal Hypertension (PH) is even more exceptional. This atypical clinical presentation, where upper

gastrointestinal bleeding reveals a LHC complicated by portal hypertension, presents a major diagnostic and therapeutic challenge.

Case report

A 39-year-old male, from a rural background, having regular contact with dogs and sheep (professional shepherd) and a chronic smoker, presented with upper gastrointestinal bleeding. The patient experienced moderate-volume hematemesis and melena, associated with cholestatic jaundice,

in a clinically stable condition, afebrile and hemodynamically stable on admission.

Physical examination revealed pallor, scleral icterus, abdominal collateral venous circulation, and significant splenomegaly (Figure 1). Absence of hepatomegaly and stigmata of chronic liver disease suggested a non-cirrhotic etiology for the portal hypertension. Biological tests showed pancytopenia, with normal prothrombin time and albumin levels, as well as biological cholestasis.

An upper gastrointestinal endoscopy (OGD) revealed grade III esophageal varices with red signs. Six-band endoscopic ligation was successfully performed to control the bleeding. Abdominal ultrasound and CT scans confirmed the presence of a large hydatid cyst (103 × 92 mm) in the right lobe of the liver (Figure 2). The portal trunk was dilated to 16 mm, with massive splenomegaly and collateral venous circulation (peri-splenic and peri-hepatic), in addition to evidence of umbilical vein recanalization. The cyst was located near the porto-biliary bifurcation, explaining the compression of intrahepatic vascular structures and dilation of the portal vein.

Surgical exploration revealed a large hydatid cyst located in segments V and VII of the right liver lobe, accessible, and partially deforming the inferior hepatic border. The patient underwent surgical dome resection of the cyst, followed by saline lavage followed by surgical drainage. This intervention relieved the biliary-portal obstruction and reduced the pressure in the portal venous system. Albendazole therapy was initiated preoperatively and continued for 4 weeks postoperatively to prevent parasitic dissemination and cyst recurrence. Portal pressure measurement and intraoperative Doppler were not



Figure 1: Clinical photograph showing collateral venous circulation with abdominal distension related to splenomegaly.

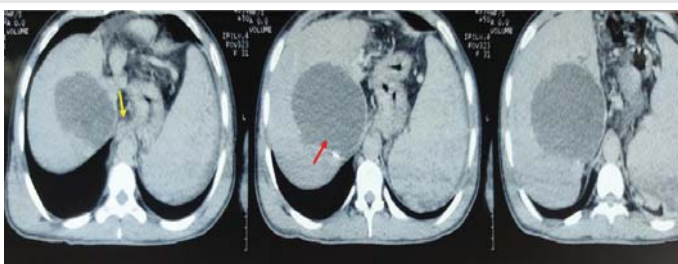


Figure 2: Abdominal CT scan showing a hydatid cyst of the liver with compression of the portal vein (The red arrow: the hydatid cyst in the right lobe of the liver, the yellow arrow: compression of the hepatic hilum structures) [Arrows annotated digitally post-scan].

performed in our setting due to the lack of local experience with these techniques.

After surgery, the clinical course was favorable, with no recurrent gastrointestinal bleeding was noted during follow-up. Secondary prevention strategies include regular deworming of domestic animals, improved hygiene practices, wearing gloves when handling animals. The esophageal varices disappeared after two sessions of endoscopic ligation, without recurrence. At one-year follow-up, clinical and radiological assessments confirmed disease remission with no new complications. Abdominal ultrasound imaging combined with portal Doppler control showed no recurrence of hydatid cysts, with no signs of morphological portal hypertension, and the portal vein having a normal caliber, flow, and velocity.

Discussion

Liver Hydatid Cyst (LHC) is a common hepatic disease in endemic regions, including North Africa, the Middle East, Central Asia, and South America. This parasitic disease is caused by infestation with *Echinococcus granulosus* [1]. Although LHC is common in endemic areas, secondary portal hypertension remains a rare but serious complication but clinically significant complication.

Mechanism of portal vein compression

Portal hypertension is defined as a pathological increase in pressure within the portal vein, often associated with chronic liver diseases such as cirrhosis [2]. However, in non-cirrhotic cases, rare causes, such as hydatid cysts, may be implicated. Mechanical compression of the portal vein by a large hydatid cyst represents a rare but plausible pathophysiological mechanism. The insidious nature of this phenomenon can lead to an absence of clinical symptoms until severe complications, such as gastrointestinal bleeding caused by esophageal varices rupture, occur [3].

Imaging-based diagnosis

Abdominal ultrasound, combined with Doppler ultrasound, is the cornerstone of diagnosis. Ultrasonography provides detailed visualization of cyst size, echotexture, and anatomical relations, location, and content, while Doppler ultrasonography evaluates vascular compression and hemodynamic changes, notably the portal vein and bile ducts [4].

The most widely accepted radiological classification for hepatic hydatid cysts is that of the World Health Organization Informal Working Group on Echinococcosis (WHO-IWGE). It categorizes cysts based on their ultrasound appearance and evolutionary stage: [5]

1. CE1 – Active unilocular cyst

- o **Description:** Unilocular cysts, anechoic (without echoes), with a clear wall.
- o Ultrasound features include a double-contour sign (internal and external walls) and sometimes hydatid sand inside the cyst.

- o **Parasitic stage:** Active.
- 2. **CE2 – Active multivesicular cyst**
 - o **Description:** Cyst containing several daughter cysts.
 - o **Ultrasound feature:** Honeycomb appearance with distinct internal structures.
 - o **Parasitic stage:** Active.
- 3. **CE3a – Transitional cyst (water lily sign)**
 - o **Description:** Cyst begins to degrade with partially detached internal membranes.
 - o **Ultrasound feature:** Water lily sign – partial detachment of the endocyst membrane, creating a flower-like appearance.
 - o **Parasitic stage:** Transitional.
- 4. **CE3b – Transitional cyst with daughter cysts**
 - o **Description:** Cyst containing visible daughter cysts within a solid matrix.
 - o **Ultrasound feature:** Presence of daughter cysts within the solid matrix.
 - o **Parasitic stage:** Transitional.
- 5. **CE4 – Inactive cyst**
 - o **Description:** Degraded cyst without visible daughter cysts, with heterogeneous content.
 - o **Ultrasound feature:** Heterogeneous mass, without daughter cysts, often hypoechoic.
 - o **Parasitic stage:** Inactive.
- 6. **CE5 – Calcified cyst**
 - o **Description:** Completely inactive cyst, often calcified.
 - o **Ultrasound feature:** Thick, well-defined wall with solid content, possibly entirely calcified.
 - o **Parasitic stage:** Inactive.

CT and MRI may be required to assess complex cyst morphology or involvement of critical vascular structures including the portal vein [6]. These techniques offer greater precision in treatment planning, particularly for surgery.

Therapeutic management

The treatment of liver hydatid cysts involves a combined approach with both medical and surgical interventions:

- **Medical treatment:** Albendazole is administered pre- and post-operatively to reduce cyst viability and prevent recurrence to reduce cyst viability, limit parasitic dissemination, and decrease the risk of postoperative recurrence [7].

- **Surgery:** Surgical resection, such as dome resection or pericystectomy, remains the standard curative approach to completely eliminate the cyst and relieve compression of adjacent structures. In some cases, minimally invasive approaches such as PAIR (Puncture, Aspiration, Injection, Respiration) may be considered for select cases, may be considered for simple cysts [8].
- **Management of complications:** When complications such as variceal bleeding occur, endoscopic interventions (ligation or sclerotherapy) are necessary to stabilize the patient [9].

Prognosis and prevention

The prognosis of liver hydatid cyst is generally favorable when diagnosed and treated early. However, complicated forms, such as those leading to portal hypertension, require multidisciplinary management to minimize the risk of severe complications. Prevention relies on strict control of human-animal interactions and public education in high-risk endemic areas [10].

Conclusion

This case highlights the importance of early diagnosis and multidisciplinary management to prevent severe complications associated with portal hypertension secondary to a hepatic hydatid cyst. Although this association is rare, future studies involving larger case series are warranted to understand the clinical, radiological, and therapeutic aspects of this particular clinical entity and to establish well-defined management protocols, particularly in endemic regions where public health efforts should focus on early detection and prevention.

Consent to publication

Written informed consent was obtained from the patient for publication of this case report in order to allow the production and publication of this manuscript.

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