

CASE REPORT

Primary extraperitoneal hydatid cyst, a rare differential diagnosis of subdiaphragmatic mass: A case report

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Key Clinical Message

Hydatid cyst is a sly disease that can manifest with a spectrum of symptoms in almost every part of the human body, so it is crucial to be familiar with different scenarios that a patient may present.

Abstract

The echinococcus granulosus parasite causes hydatid disease and is common in areas with animal husbandry and agriculture. Here, we report a middle age woman who presented with abdominal pain that further investigation revealed a cyst in subdiaphragmatic area.

KEYWORDS

abdominal mass, echinococcosis, extraperitoneal, hydatid cyst, subdiaphragmatic

1 | INTRODUCTION

The Echinococcus granulosus parasite causes hydatid disease and is common in areas with animal husbandry and agriculture, where prevention is lacking.¹ Cystic echinococcosis(CE)² is most commonly found in the liver (>65%) and lungs (25%). CE can go undiagnosed as it is often asymptomatic due to its silent nature.³ Echinococcus granulosus is a prevalent occurrence in

Iran, a country located in the Middle East.⁴ Each year, this parasite causes extensive damage to the body's organs, resulting in significant costs to the healthcare system. The estimated cost of human CE in Iran is \$93.39 million.⁵ Furthermore, echinococcosis causes 19,300 deaths and around 871,000 disability-adjusted life-years (DALYs) worldwide annually.⁶ This report presents a 41-year-old patient with abdominal pain diagnosed with an abdominal wall hydatid cyst.

Amirhossein Mehri is cofirst author.

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2 | CASE HISTORY/ EXAMINATION

A 41-year-old woman presented to our surgery clinic with sudden and frequent left upper quadrant pain radiating to the interscapular area. She rated her pain intensity as 6/10 and mentioned increased discomfort in the supine position. Notably, her pain intensity was not linked to her feeding or activity levels. She did not mention experiencing any recent fever, nausea, or vomiting, and had no medical history of hospitalization or surgery. During the physical examination, her vital signs were normal. The abdominal examination revealed no signs of distension, scarring, or herniation. Palpation did not reveal any tenderness, and there was no evidence of organomegaly during percussion. The rest of the examination was normal.

3 | METHODS (DIFFERENTIAL DIAGNOSIS, INVESTIGATIONS, AND TREATMENT)

Her complete blood count and blood chemistry were within normal range, and her electrocardiography showed no abnormalities.

An abdominal ultrasound revealed a 55×30 mm cyst with a septum, located 14 mm from the skin. Further investigations through an abdominal CT scan indicated a cystic lesion measuring 5*4*3 cm near the gastric fundus, adhering to the anteroinferior border of the left diaphragm (Figure 1). Although preoperative echinococcal antibody tests were not performed, the patient was diagnosed with a hydatid cyst based on imaging findings and symptoms of pain, and signs of tenderness. Subsequently, the patient underwent surgery.



FIGURE 1 The cursor shows the hydatid cyst in an axial section of the abdominal CT scan with IV contrast.

During surgery under general anesthesia, the patient was in the supine position and laparotomy was performed due to suspicion of a hydatid cyst. A surgical incision was made along the midline of the abdominal wall, and the mass was exposed in the left upper quadrant (LUQ) just beneath the left diaphragm, being attached to the innermost layer of the abdominal and only covered by a thin layer of the peritoneum. The peritoneum was carefully dissected, exposing a cystic lesion with a shell white membrane. A hypertonic saline long gauze was placed around the mass, and the cystic lesion was opened. The daughter cysts were then removed, and the cyst membrane was excised. Pathological samples were collected and sent for further examination, which confirmed the diagnosis of a hydatid cyst (Figure 2). The patient was discharged in good general condition and prescribed Albendazole.

4 | CONCLUSION AND RESULTS (OUTCOME AND FOLLOW-UP)

CE is a sly disease that can manifest with a spectrum of symptoms in almost every part of the human body, so it is crucial to be familiar with different scenarios that a patient may present. The CE's most common sites are the liver and lungs; however, it can also be found in rarer sites like the abdominal walls, as we reported. There may also be no obvious signs and symptoms so it is necessary to consider the CE as one of the differential diagnoses especially in the endemic areas and evaluate the suspected patients with proper diagnosis techniques. Diagnosing CE based on clinical presentations can be difficult. Ultrasonography(USG) is the preferred initial imaging method due to its accessibility, affordability, and ability to provide crucial details about cysts such as location, size, and viability.⁷

5 | DISCUSSION

Echinococcosis is an infectious disease that affects humans during the larval stages of taeniid cestodes. This disease is widespread in various regions, including Mediterranean countries, southern America, Australia, eastern and northern Africa, and the Tibetan terrain of Asia. cystic echinococcosis² can be challenging to diagnose, as it often remains asymptomatic for a long period.³ The symptoms of CE vary depending on the cyst's location and size.⁸

Symptomatic patients with hydatid cysts typically experience symptoms such as abdominal mass, pain, and nonspecific symptoms like nausea and vomiting. In this case, the patient only reported experiencing abdominal pain without mentioning any other symptoms. Imaging techniques such as ultrasound, CT scanning, and MRI are utilized by physicians to diagnose hydatid cysts.⁹

In this case, the CE was fixed to the anteroinferior border of the left diaphragm, covered by the peritoneum, causing left upper quadrant pain. This patient underwent surgical resection through a midline abdominal incision after being diagnosed with this rare form of hydatid disease and prescribed Albendazole. The diagnosis of abdominal wall hydatid cysts can often be challenging. However, Surgeons should consider a hydatid cyst in any abdominal cyst, particularly in endemic regions.

According to a Pictorial Essay by Yuksel et al., Hydatid disease, although rare, can be found in any organ or tissue, with the liver being the most common site (59%–75%), followed by the lungs (27%), kidneys, bones, and brain. It is very uncommon for other organs such as the heart, spleen, pancreas, and muscles to be affected. When the disease manifests in atypical locations, it can pose challenges in diagnosis.¹⁰

Free spaces in the abdominal and thoracic cavities are among the rarest locations where hydatid cysts can be found, either as singular or in combination with other sites, mostly the liver and lungs.² Several studies reported uncommon presentation sites in the abdominal and thoracic

cavities.^{2,9,11,12} In the thoracic cavity, the mediastinal space is an extremely rare site of presentation.¹¹ Mehri et al reported a 53-year-old woman who had presented with ongoing chest pain for 5 days and was finally diagnosed with CE, with a hydatid cyst being located in the middle mediastinum fistulizing to the ascending aorta.¹³ Regarding the abdominal cavity, the retroperitoneum in back and forth and the peritoneum in the middle are among the rarest sites, as a study reported that peritoneal and pelvic cavity hydatid cysts account for only about 2%–5% of the total cases diagnosed with CE.¹² As several studies reported, the CE in these sites is mainly presented with abdominal pain due to the mass effect caused by hydatid cysts.^{4,9,12}

Previous studies have indicated that hydatid cysts can also be found in the abdominal wall (Table 1). According to a review by Salih et al., primary hydatid cysts in the abdominal wall are a rare disease with only six reported cases up to date. The study described a patient with a fixed mass in the right abdomen with no prior medical or surgical history. In their case, all laboratory tests appeared normal except for a high white blood cell count (WBC =12,000), in contrast to

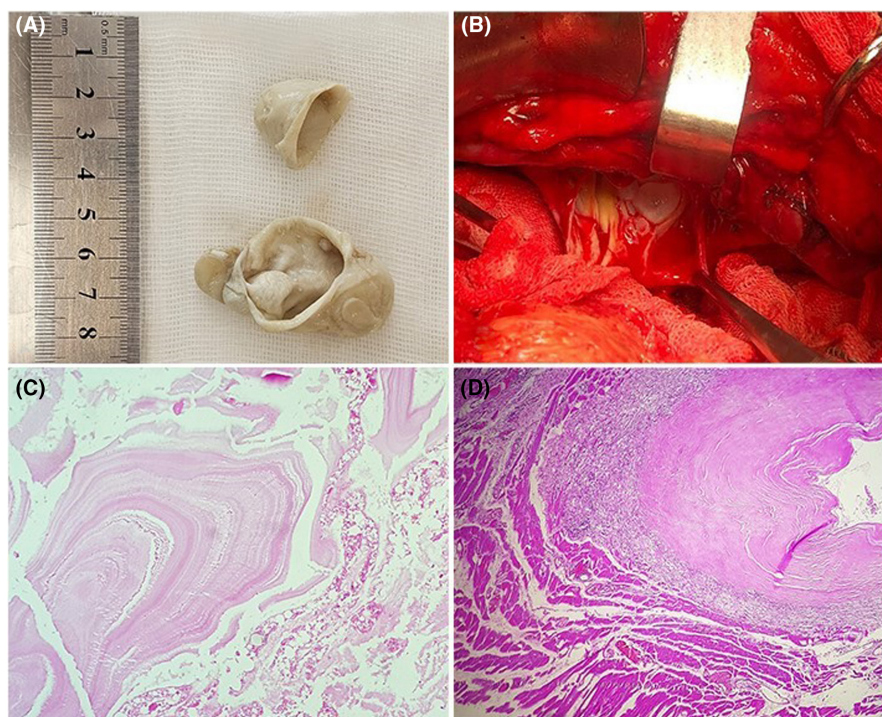


FIGURE 2 Hydatid cyst. (A) Macroscopic view of the hydatid cyst and daughter cyst. (B) The surgical site where the hydatid cyst was attached to. (C) Laminated chitinous wall of hydatid cyst and protoscolex (D) Fibroinflammatory pericyst of hydatid cyst attached to the striated muscle fibers of the diaphragm.

TABLE 1 Reported cases of Hydatid cysts in the abdominal wall.

Reference	Authors/year of report	Age (year)/sex	Site	Type of hydatid cyst	Management
¹⁴	Salih et al/2017	39/Male	Right loin	Infected	Surgery
¹⁵	Ousadden et al/2011	70/woman	Right paraumbilical	Not mentioned	Surgery
¹⁶	Jabra et al/2023	46/Male	Right flank	Cystic lesions with daughter lesions	Surgery
-	Current report	41/woman	Left upper abdomen	Cystic lesions with daughter lesions	Surgery

our patient, who had a normal white blood cell count. (WBC =8400). Further Abdominal CT scan showed a large mass with multiple cysts on the right abdominal wall.¹⁴

Additionally, there was a reported case of a 70-year-old woman by Ousadden et al., who presented with a painless subcutaneous mass located in the paraumbilical area. During surgery, the mass was found connected to adipose tissue, not muscle or skin.¹⁵

In another case, Jabra et al. documented a case of abdominal wall hydatidosis. The patient presented with right flank pain and fever, and a CT scan revealed multi-cystic lesions on the right flank, displaying a daughter cyst sign, which was suggestive of a hydatid cyst.¹⁶

In the end, surgical treatment is essential for hydatid cysts. The preferred procedure is total cystectomy, which should be done carefully to avoid contamination of the surrounding area.¹⁷

AUTHOR CONTRIBUTIONS

Maryam Ghandhari: Writing – original draft. **Amirhossein Mehri:** Project administration; supervision; writing – original draft; writing – review and editing. **Armin Doostparast:** Writing – original draft. **Masoumeh Gharib:** Project administration; resources; validation. **Reza Rezaei:** Resources; supervision; writing – review and editing.

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CONFLICT OF INTEREST STATEMENT

All authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

Data sharing not applicable to this article as no datasets were generated or analyzed during the current study.

CONSENT

Written informed consent was obtained from the patient to publish this report in accordance with the journal's patient consent policy.

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