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Case Report

Liver hydatidosis disease with portal vein invasion: Report of a rare case and review of literature ☆,☆☆

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ABSTRACT

Hydatid disease is a zoonosis caused by Echinococcus granulosus. Humans are aberrant intermediate hosts and following the infection, the parasite may infest any organ of the body, with the liver and lungs being the most involved organs. Portal vein involvement by hydatid cyst disease is extremely rare with only seven cases published to our knowledge. We present a 62-year-old Persian male with an incidental liver cyst. His laboratory tests were in normal ranges. The ultrasonography (US), computed tomography (CT) and magnetic resonance imaging (MRI) findings show hydatid disease of the liver with distal portal vein involvement and collateral venous formations. The patient is being followed and has not gone under surgery yet. It possesses a propensity to invade multiple organ systems, notably the liver and lungs. Hydatid disease is imposing a significant burden on healthcare systems specifically in developing countries. Manifestations of the disease are often non-specific, while a subset of the infected population remains asymptomatic. Portal vein invasion and obstruction is a rare complication, and it is important to distinguish it from vein thrombosis, as the management of these entities requires different approaches.

Introduction

Hydatid cyst, a zoonotic infection caused by *Echinococcus granulosus* (cystic hydatidosis) or *Echinococcus multilocularis* (alveolar hydatidosis), poses a significant burden on healthcare systems in many countries, despite advancements in healthcare and hygiene The most common involved organs include the liver followed by the lungs [1]. The predominance of liver involvement, accounting for 65%-75% of cases, can be ascribed

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to its function as the initial effective barrier against the majority of larvae. Should larvae traverse the liver, they typically advance to the lungs— the second most commonly affected anatomical site, constituting 10%-25% of cases. In instances where larvae neither become ensnared within the liver nor the lungs or circumvent the liver via lymphatic pathways, they may potentially embed within various bodily locales. Though less commonly observed, this includes the spleen, kidneys, peritoneum, retroperitoneum, pancreas, gallbladder, inguinal region, cerebral hemispheres, spinal cord, mediastinum, and seminal vesicles [2–6]. We present a case of hydatidosis with an atypical site, including the diagnostic evaluation and surgical treatment.

Case presentation

A 62-year-old Persian male was referred to us with an accidental liver cyst found during a routine checkup ultrasonography (US). Following this, a computed tomography (CT) scan and Magnetic resonance imaging (MRI) was recommended and performed for further evaluation. There was no history of pain, fever, jaundice, nausea, or vomiting. Physical examination was unremarkable. Routine blood investigation, liver function, and renal function tests were normal. His medical history was non-significant. Computed tomography and MRI of the abdomen showed severe atrophy of the right liver lobe. Other findings include a cystic lesion with the typical appearance of stage IIIB hydatic cyst in the right portal vein with extension to all anterior and posterior branches and main portal vein, all of which indicate a very rare case of intraportal hydatidosis (Figs. 1–3). A small part of the lesion is extended toward the left portal vein and it appears to have penetrated the inferoposterior wall of the proximal left portal vein, intruding inside the vein's lumen. The main portal vein's lumen before its bifurcation, the confluence of the splenic and superior mesenteric vein (SMV), and SMV itself seem to be intact. Few venous collaterals are formed at porta hepatis adjacent to the head of the pancreas and the common bile duct. Intrahepatic bile ducts have a normal appearance and there is no evidence of hydatidosis involvement. There is a similar lesion in the IVB segment's portal vein branch with a branching appearance which could be in favor of hydatic emboli toward the mentioned segment.

This case was brought up in a multidisciplinary committee with hepatobiliary surgeons proposing the patient Albendazole therapy for 3 months followed by operative exploration for evacuation of the cyst with or without right hepatectomy and portal repair. However, the patient was discharged due to not having consent to undergo surgery and is being followed up for a 6-month-long period and Albendazole therapy in this period.

Discussion

Hydatid cyst disease, a zoonotic condition, originates from the parasite Echinococcus granulosus. While it has the potential to afflict multiple organ systems, it predominantly targets the liver and lungs. The infestation begins in the gastrointestinal tract, notably the duodenum. Thereafter, it progresses either through the portal venous system or the lymphatic channels, culminating in the liver where the majority of the larvae are ensnared and form cysts [7]. Although every Echinococcus parasite traverses the portal vein, actual invasion and obstruction of this vein are infrequent events. This rarity is potentially attributed to the consistently elevated pressure within the portal system [8]. The manifestation of hydatid cyst disease in the portal vein is exceedingly uncommon, and to our knowledge, a mere 7 instances of this specific involvement have been documented in English-language literature [1,8–15]. A similar instance was reported in Spanish literature, though the full text was inaccessible [16].

Liver hydatidosis can lead to serious complications such as cyst rupture, widespread infections, and perforations to the biliary tree, so a proper and accurate diagnosis is

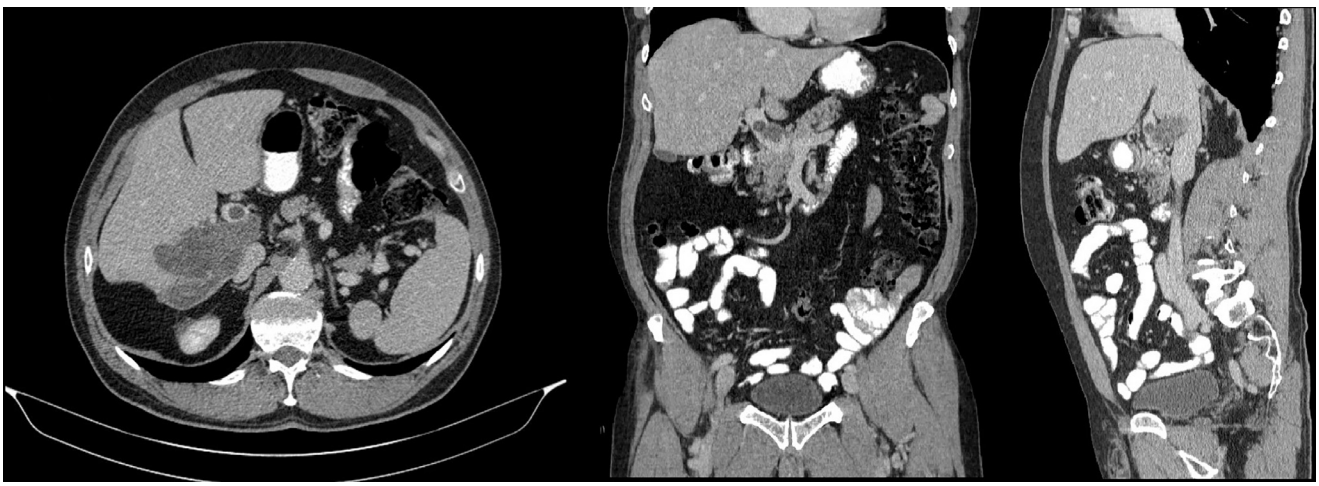

Fig. 1 – Axial, coronal, and sagittal views showing portal vein involvement.

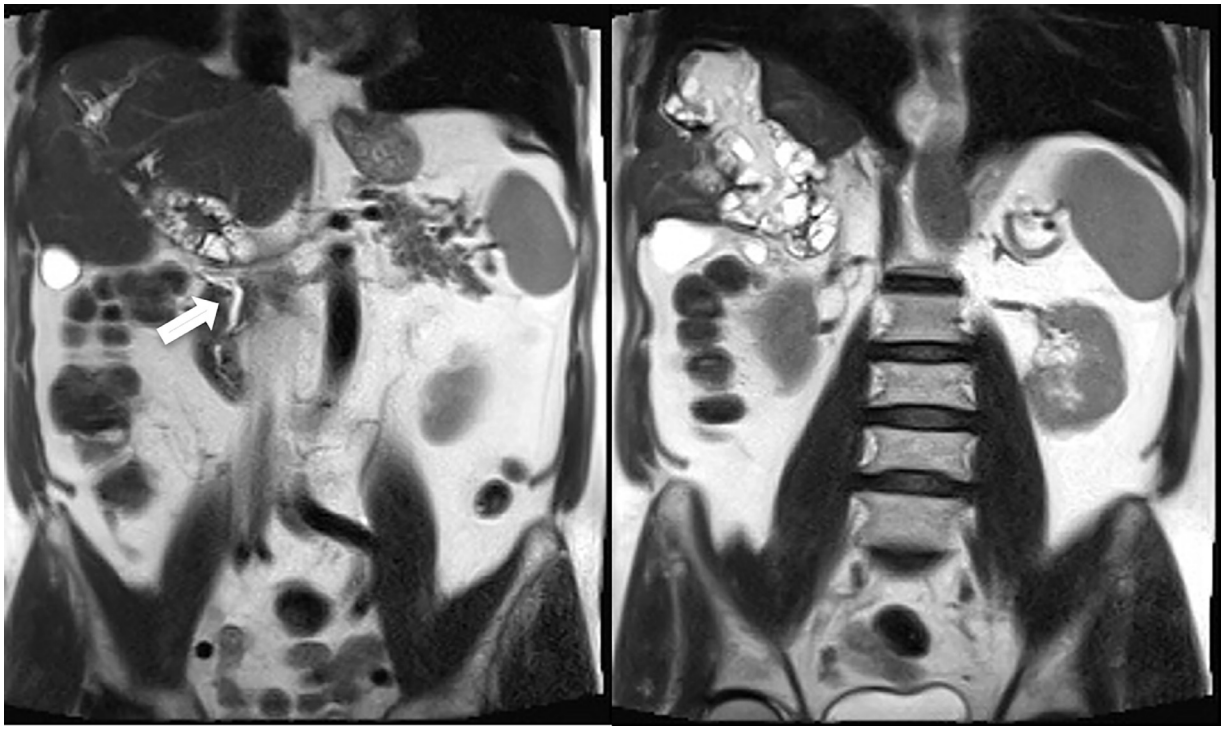

Fig. 2 – Coronal T2/w sequence demonstrating portal vein involvement with spared CBD (arrow).

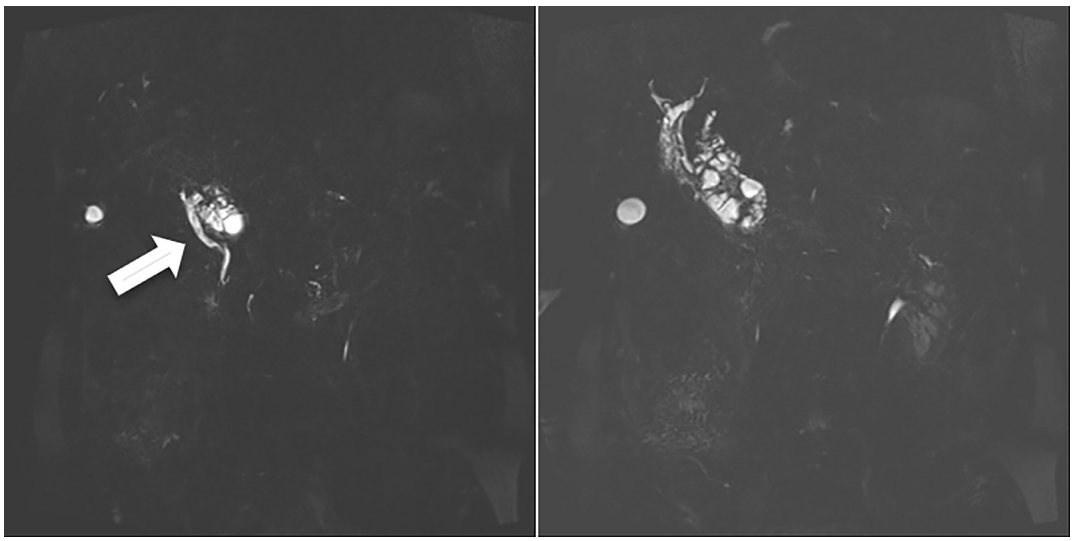

Fig. 3 – MRCP showing common bile duct sparing) Arrow) along with intraportal lesion.

imperative [16,17]. Individuals diagnosed with hepatic hydatid cysts alongside portal cavernous transformation necessitate a multidisciplinary therapeutic strategy to manage both the hydatid cysts and the ensuing portal hypertension. Treatment options for the cysts include surgical resection, medical treatment (Albendazole), or endoscopic retrograde cholangiography (ERCP). Four of the mentioned cases went through medical therapy due to the lesion's spread pattern or patients not accepting surgery [8,9,12,13], 2 of which went through surgery [1,10], and only a single patient was treated with ERCP [11]. Our patient opted for medical therapy instead of the advised treatment due to concerns about undergoing surgery.

In conclusion, invasion of the portal vein by echinococcus cysts is a rare complication. However, it's vital not to overlook the vascular complications of liver hydatid cysts. Managing this disease necessitates a multidisciplinary approach to prevent mismanagement and potential intraoperative complications.

Ethics approval and consent to participate

This study was approved by the ethics committee of Tehran University of Medical Sciences. All authors read and approved the final manuscript.

Patient consent

Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

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