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Giant pedunculated liver hydatid cyst causing inferior vena cava syndrome: a case report

Abdi Tesemma[1*], Miheret Adane[3], Kebebe Bekele[1], Bekam Debebe[1], Edoardo Rosso[2], Demisu Zenbaba[4], Degefa Gomora[3] and Girma Beressa[4]

Abstract

Background Hydatid disease is a zoonotic infection caused by the species *Echinococcus* that typically affects the liver. Most liver hydatid cysts are asymptomatic at first, but as the cyst grows larger, symptoms, such as compression effects, start to appear. Ultrasonography and computed tomography scans are the widely used diagnostic tools, and surgery is considered the mainstay of treatment.

Case presentation We present an unusual case of a giant pedunculated hydatid cyst causing inferior vena cava syndrome in a 20-year-old male patient from the Oromo ethnic group from a rural area of the country. Abdominal ultrasound and computed tomography scan confirmed the diagnosis. Our patient underwent radical surgical resection of the cyst and had a good outcome.

Conclusion Hydatid liver cyst diagnosis needs a high index of suspicion for echinococcal etiology when dealing with a giant liver cyst as it results in grave complications without any manifestations.

Keywords Compression, Ethiopia, Giant, Hydatid cyst, Liver, Pedunculated

Introduction

Hydatid disease is an infection by tapeworm of the *Echinococcus* genus. Even though it can occur almost anywhere in the body, the majority of the infection affects the liver [1]. Most liver hydatid cysts are asymptomatic at first, but as the cyst grows larger, they start to manifest by causing complications, such as a spontaneous rupture, hemorrhaging, bacterial infection, torsion of a pedunculated cyst, or compression effect on bile ducts, portal and hepatic vein, and inferior vena cava. Pressure effect on the inferior vena cava (IVC) leads to IVC syndrome [2].

Liver cysts measuring ≥ 10 cm in size are termed "giant cysts". Giant liver cysts need good preoperative preparations as they are prone to complications [3]. We present a rare case report of a giant pedunculated hepatic hydatid cyst arising from the left hepatic lobe causing inferior vena cava syndrome. Open surgical management was considered, which immediately resolved the symptoms.

Case presentation

A 20-year-old male farmer of Oromo ethnicity in southeastern Ethiopia came to Goba Referral Hospital with a complaint of gradually increasing right upper abdominal swelling for the last year, which was associated with intermittent pain from the site, bilateral leg swelling, loss of appetite, and unquantified significant weight loss of one month duration. His clinical examination showed

*Correspondence:
Abdi Tesemma
demmoabdi2@gmail.com
[1] Department of Surgery, Madda Walabu University, Goba, Ethiopia
[2] Centre Hospitalier de Luxembourg, Luxembourg, Luxembourg
[3] School of Health Sciences, Madda Walabu University, Goba, Luxembourg
[4] School of Public Health, Madda Walabu University, Goba, Ethiopia

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blood pressure (BP) of 130/80 mmHg, pulse rate of (PR) 60 bpm, afebrile, and non-icteric. On abdominal examination, there were dilated prominent tortuous veins on the anterior abdomen bilaterally, and there was a 20 cm by 14 cm giant, firm, non-tender, smooth surface with regular border mass at the right upper quadrant of the abdomen (Fig. 1). On musculoskeletal examination, bilateral grade 1 pitting edema was detected.

The biochemical tests were in the normal range, including the liver enzymes and coagulation profiles. Abdomino-pelvic ultrasonography (USG) showed a double membrane wall measuring 21.5 cm by 15 cm arising from the lower border of the left lobe of the liver, and an abdominal computed tomography (CT) scan showed a well-defined hypodense cystic mass with an endocyst grossly measuring 22 cm by 15.2 cm by 13.4 cm from the left subhepatic to the right lower quadrant compressing the IVC and also pushing the bowel posterior as well as anterior (Fig. 2). The chest x-ray did not show any lesion.

After a diagnosis of giant pedunculated liver hydatid cyst causing inferior vena cava syndrome was made, laparotomy was performed, and the patient underwent radical surgical resection of the giant penduculated mass that arises from the left lobe of the liver (Fig. 3). Albendazole at 400 mg twice daily was provided for 1 month preoperatively to prevent spread of the disease. Postoperatively, the patient had smooth recovery and discharged on the 7th postoperative day with 400 mg of albendazole twice a day for 3 months to minimize the risk of recurrence. The patient was followed for 4 years, and edema of the leg and distended abdominal wall disappeared gradually during the postoperative course. He is in better condition without any complications, and there was no recurrence during follow up.

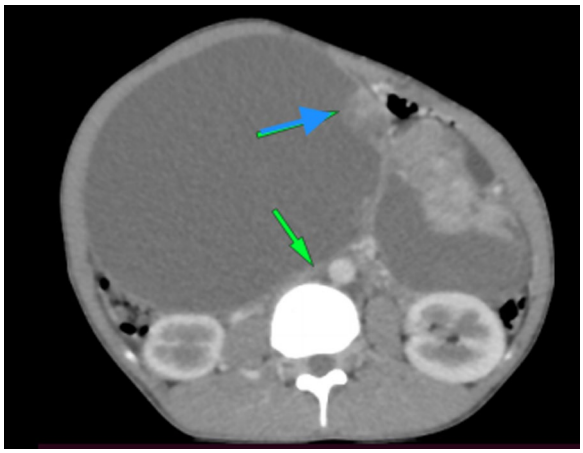


Fig. 2 Abdominal computed tomography scan showing giant pedunculated hydatid cyst with endocyst (blue arrow) in the right upper quadrant grossly measuring 22 cm by 15.2 cm by 13.4 cm from left sub hepatic to right lower quadrant compressing the inferior vena cava (green arrow)



Fig. 1 The right upper quadrant mass with bilateral dilated prominent tortuous veins on the anterior abdomen

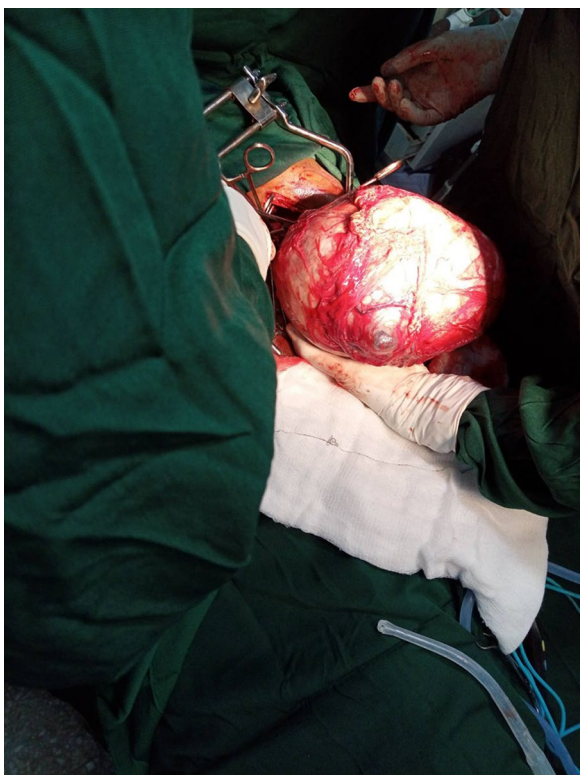


Fig. 3 Shows intraop removal of giant pedunculated hydatid cyst

Discussion

The hydatid cyst is comprised of three layers. Pericyst, the outer layer, develops around the cyst from host tissues, and the two inner layers are derived from parasite tissues. The right lobe of the liver is mostly involved in hydatid cysts, but in our case the less commonly affected location left lobe was involved [4].

The uncomplicated cyst was mostly asymptomatic and diagnosed incidentally during a medical checkup or an autopsy. Presentations from hydatid cysts mostly arise from complications of the cyst, such as obstructive jaundice from intrabiliary rupture or compression from outside or emergency presentations, such as intra-abdominal rupture, anaphylaxis, or even death [4]. In our case, presentation was owing to the local compression effect of the cyst on the IVC, causing right upper abdominal pain, swelling, and bilateral lower extremity swelling, which is the rare presentation of the disease.

Ultrasound and CT scans, the most important diagnostic tools, are helpful for determining the complications and planning treatment. MRI will show more detailed information about the organs involved, the presence of complications, and the consistency of the cyst contents, such as the presence of clear fluid, hydatid, floating membrane, or daughter cysts or calcifications in the wall of the cyst [5]. Various authors have documented the ultrasound features and patterns of a hydatid liver cyst. Gharbi's ultrasound-based classification is most often utilized because it provides a morphological description and decides the treatment technique. According to this classification, all viable cysts, with the exception of small ones, should be treated with puncture, aspiration, injection, and reaspiration (PAIR) or surgically. Cysts associated with the biliary tract, type III, compressive types IV and V, and those not suitable for PAIR, need surgical treatment [1, 6].

Medical management with antihelmintics had a better outcome to prevent recurrence when used along with surgery. Indications for surgery include active cysts, complicated cysts (infection, compression, and obstruction), cysts located near vital organs (CNS or heart), and giant cysts at risk of rupture [7]. Surgical management options include classical surgical techniques, such as pericystectomy, partial hepatectomy, capsulorrhaphy, capitonnage, omentoplasty, or minimally invasive methods, such as laparoscopic or robotic procedures, and puncture, aspiration, injection, and reaspiration of scolicidal solutions [4, 8]. Radical surgical resection considered as the backbone of curative treatment [7].

We operated on our patient because of the compression effect on the IVC and it was a giant cyst. The patient underwent laparotomy, and radical surgical resection was done with pre- and postoperatively Albendazole at 400 mg was administered twice daily for 1 month and 3 months, respectively, and no recurrence was seen in the 4-year follow-up.

Conclusion

Hydatid liver cyst is one of the diseases with public health concern in sheep-grazing areas of the world, such as sub-Saharan Africa. Giant hydatid cysts are at risk of rupture, anaphylaxis, and compression effect. These cysts are mostly managed by classical surgical techniques with anthelmintic drugs as an adjunct therapy to surgery to prevent a recurrence.

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Author contributions

AD was involved in various aspects of the case, including the idea, formal analysis, investigation, methodology, supervision, validation, writing the original document, conducting the review, and extensive editing; MA assisted with manuscript writing; KB was involved in perioperative management of the patient and assisted in formal analysis; BD involved in manuscript writing and editing; ER was involved in image reading and advice on planning of case report writing; DZ and DG contributed to manuscript writing; GB carried out validation, substantive review, and editing. All authors reviewed and approved the manuscript.

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Availability of data and materials

The data that support the findings of this study will be available for anyone by contacting the author and the corresponding author.

Declarations

Ethics approval and consent to participate

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 Editor-in-Chief of this journal.

Competing interests

The authors declare that they have no competing interests.

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