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Case Report

Successful Laparoscopic Management of Giant Hydatid Liver Cyst: A Case Report

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Abstract

Hydatid cyst disease is a common worldwide anthropozoonosis affecting the liver as the most common infected organ. A definitive diagnosis usually requires a combination of imaging, serologic, and immunologic studies. Although there are a variety of treatment options for hydatid liver cysts, surgical treatment remains the gold-standard management. We hereby present unusual case of 28 years-old-male patient, known case of idiopathic thrombocytopenia, complaining of intermittent right upper quadrant and epigastric pain diagnosed by computed tomography as a case of giant hydatid liver cyst measuring 12.6*8 cm. He was successfully treated by neoadjuvant oral albendazole followed by laparoscopic hydatid deroofing and omentoplasty surgery. Giant hydatid liver cyst is a rare case and few cases are reported in the literature. A liver cyst reaching an extremely large size may lead to serious and fatal complications such as cyst rupture.

Keywords: *Laparoscopic Management; Giant Hydatid Liver Cyst*

Introduction

Hydatid disease is endemic in the Middle East, Mediterranean region, and South America [1]. It's caused by parasitic infection, mainly *Echinococcus* tapeworm. This parasitic infection could cause cysts almost anywhere in the human body but seventy-five percent of all hydatid cysts are found in the liver [2]. Infected patients may be asymptomatic for a long time. They usually seek medical care when their cysts have reached a large size, and a large part of the liver parenchyma has already been affected [3]. However, hepatic hydatid cysts may cause abdominal pain, jaundice, and visible abdominal mass, or they may present with non-specific complaints [4]. Proper imaging and serologic and immunologic studies are required in order to make a definitive diagnosis [5]. Surgery is considered as the gold standard management of hydatid cyst although it may become challenging in patients presenting with giant liver cyst [6]. In this article, we present a case of a 28 years-old- male patient, known case of idiopathic thrombocytopenia, referred to our hospital as a case of liver cyst for further evaluation. Computed tomography (CT scan) of the abdomen has been done for the patient and it revealed a giant hydatid cyst with multiple daughter cysts. The patient underwent a successful laparoscopic management and smooth recovery.

Case Presentation

A 28 years-old-male patient, known case of idiopathic thrombocytopenia otherwise medically free, complaining from intermittent right upper quadrant and epigastric pain, fullness and general fatigue. Patient was diagnosed with a cystic lesion in the liver by other hospital and transferred to our center for further evaluation. The abdominal pain wasn't radiating to anywhere, no exacerbating or relieving factors, and it became progressively worse over the last two weeks. It was associated with nausea and a few episodes of vomiting.

There was no change in bowel habits, neither diarrhea or constipation.

Physical examination revealed alert, conscious, and oriented patient with stable vital signs. On local examination, the abdomen was soft and lax with mild tenderness in right upper quadrant region. Abdominal examination hasn't revealed any evidence of liver mass or liver enlargement. Complete blood count has been ordered which showed: Hemoglobin 15.5 g/dL, White blood cells 7.3 x 10^9/L, Platelets count 40 x 10^9. *Echinococcus* antibody titer test was ordered which revealed a positive result. Abdominal ultrasound was done and showed large cystic lesion occupying the liver with multiple daughter cysts (Figure 1). Then, our patient underwent computed tomography (CT scan) of the abdomen and pelvis which showed a 12.6*8 cm large cystic lesion presents in the left lobe of liver occupied by hydatid cyst with multiple daughter cyst (Figure 2). Hydatid cyst in the lungs was a concern for us so we have ordered a CT chest to rule out the presence of any cyst. Laparoscopic removal of the giant liver cyst was planned. So, hematology consultation has been done regarding his platelets count and infectious diseases department was consulted in order to start the course of oral albendazole treatment for 21 days before the surgery.

Figure 1: *Ultrasound abdomen showing giant liver cyst.*

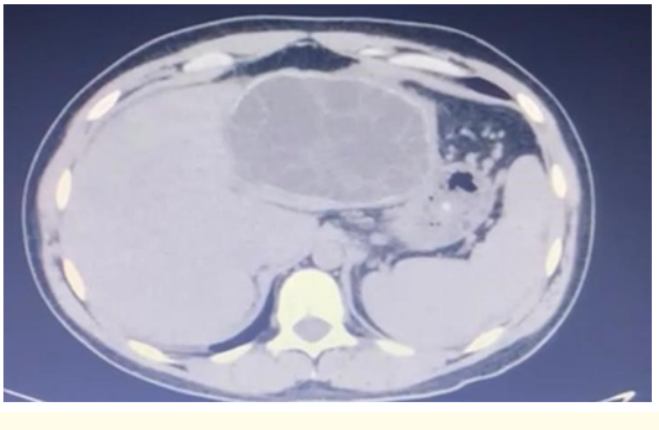

Figure 2: *CT scan axial view of the abdomen and pelvis showing large cystic lesion in the left lobe of liver.*

After the raise of the patients' platelets count to 100 x 10^9 and finishing the course of oral albendazole management, laparoscopic hydatid deroofing and omentoplasty surgery have been scheduled for the patient. Under general anesthesia, four incisions have been done in order to insert four ports. After we have inserted the camera port and identify the hydatid cyst that occupied the left lobe of the liver, adhesiolysis was carried out in order to separate the cyst from the anterior abdominal wall. The laparoscopic needle was inserted inside the left lobe of the liver for the aspiration of the cystic fluid. Hypertonic saline was injected and kept for 15 minutes and aspirated and then re-injected again. Deroofing of the anterior abdominal wall has been carried out with the removal of all the daughter cysts and germinal layer (Figure 3A and 3B). The abdominal cavity has been washed and two drains have been placed, one in the liver cavity and the other one in the sub-hepatic area.

Figure 3A

Figure 3B: *Removal of the cystic lesion in the liver.*

Hemostasis was achieved and the wound closed with prolene 3.0. The patient had a smooth recovery post-operatively with a satisfactory outcome.

Discussion

Hydatid disease is caused by *Echinococcus granulosus* or *Echinococcus multilocularis* parasites that are always live in intestine of dogs and related carnivores [7,8]. The liver is the most common organ that is accessible to develop Echinococcal cysts with a percentage reaching up to 75%. Less frequently, hydatid disease causes a cyst in the lungs with a percentage of 15%, brain, bones, and the heart [9]. A study that involves 150 cases of hydatid cysts in different body organs has been done by Al-Hashimi, 78 of them were hepatic cysts [10]. The two species of hydatid disease (*Echinococcus granulosus* and *Echinococcus multilocularis*) are quite different. *Echinococcus granulosus* tends to produce a typical large, single, round or ovoid, well-defined hydatid cyst and it's the most common species. On the other hand, *Echinococcus multilocularis* causes an irregular, small, fluid-filled cavity or an invasive spongy mass resembling an infiltrating malignant liver tumor [11]. The clinical manifestations of hepatic hydatid cysts are highly variable and diverse. They depend mainly on the site of the cyst, size, and stage. Uncomplicated hepatic cysts may remain silent and asymptomatic for many years. Pain in the right upper quadrant region is considered as the most important diagnostic symptom of the disease [12].

Other symptoms may include nausea, vomiting, dyspnea, and dysphagia.

Jaundice could take place in patients with hepatic hydatid cyst and its occurrence depends on the local mass effect of a gradually enlarging cyst or the rupture of a hydatid cyst into the biliary tree [7].

Imaging studies are very helpful in establishing the diagnosis of liver hydatid cyst as typical radiological findings of the disease are well known and several classification schemes based on cyst appearance have been proposed [13,14]. Ultrasonography (US) is considered as the first diagnostic technique for hepatic hydatid cyst and no further imaging techniques are requested when the appearance is typical and characteristic [15]. Computed tomography (CT scan) and magnetic resonance imaging (MRI) may show the same findings shown on US.

However, calcification of the cyst wall or internal septa is easily detected by CT. Furthermore, abdominal CT scan is known to be the main diagnostic tool due to its higher rate of accuracy [16]. Immunologic studies could help when imaging studies are inadequate especially in distinguishing hydatid cysts of the liver from pyogenic abscesses or cystic neoplasms [17].

The management of hydatid liver cysts composed of operative and nonoperative management. It highly depends on the stage of the disease, localization, size and complications of the cysts [18]. According to the World Health Organization (WHO) guidelines, chemotherapy with mebendazole or albendazole is the preferred treatment when the disease is inoperable, when surgery or percutaneous aspiration and injection of hypertonic saline (PAIR) can't be achieved, or when there are too much cysts [19]. However, when used alone, chemotherapy with antihelmintics of the benzimidazole family has limited efficacy. Mostly related to the accessibility of the cyst to the drug. This treatment outcome is better when used as an adjunct therapy to surgery in order to prevent recurrence [20]. Active cyst, infected cyst, cyst causing obstruction, cyst located nearby vital organs (central nervous system, spinal cord and heart) and giant cyst which is at risk of rupture are all considered as indications for surgical treatment [21]. Operative methods include total or subtotal cyst-pericystectomy, partial hepatectomy, capsulorrhaphy, capitonnage, omentoplasty, and less invasive techniques such as laparoscopic procedure [20]. Surgical management of hepatic hydatid cysts remains the preferred method of treatment as it aims to inactivate the parasite, to evacuate the cyst along with resection of the germinal layer, to prevent peritoneal spillage of scolices, and to obliterate the residual cavity [22]. A radical approach needs an accurate preoperative localization and may include total cystectomy, or liver resection [23,24]. Laparoscopic procedure has also been reported with good results in selected patients [25-27]. The management of the hydatid liver cysts is sometimes challenging especially in patients who present with giant hydatid cysts like in our case, as cyst size has been identified as a significant predictor of morbidity and mortality [28]. Rupture of the cyst due to trauma or hyper-pressure from the growing cyst are the most common complications of hepatic hydatid cysts, and may lead to anaphylactic shock or the formation of secondary echinococcosis so proper and quick management is essential [9].

Conclusion

Even though rare cases have been diagnosed in non-endemic areas, hydatid disease of the liver can occur worldwide due to the increased chances of travel, immigration, and contact with domestic pets and wildlife. So, the specific sonographic and CT appearances of

hydatid cysts should be kept in mind whenever a liver cystic lesion is suspected. Giant hydatid liver cyst is a serious clinical problem as it can lead to serious complications such as rupture of the cyst and anaphylactic shock. We successfully managed giant hydatid cyst in the liver by laparoscopic hydatid deroofing and omentoplasty surgery of giant hydatid hepatic cyst without any complications and with satisfactory outcome.

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