

Case Report

Drainage of the hepatic cyst by laparoscopy - clinical case

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ABSTRACT

Liver cysts are formations of serous content surrounded by normal liver parenchyma, without communication with the bile duct. The cyst wall is generally lined with cuboidal epithelium surrounded by layers of connective tissue. They are rare entities in adult patients, generally, they are asymptomatic in 3%, and between 10-15% of all patients will generate symptoms that lead them to consult. A 38-year-old man with an external abdominal tomography study that reported a giant hepatic cyst. Laboratory blood tests: hemoglobin 7.9 g/dl; leukocytosis 11,000/ul; serum electrolytes, liver transaminases, and bilirubin were normal, alkaline phosphatase, and gamma glutamyl-transpeptidase 94 U/l and 241 U/l, respectively. Non-reactive anti-human immunodeficiency virus (HIV 1) and two antibodies, venereal disease research laboratory (VDRL), cancer antigen (CA) 19-9 antigen, hepatitis B-C surface antigen, and carcinoembryonic antigen were negative. He underwent surgery by laparoscopic drainage of the liver cyst, through a median infraumbilical incision with the Hasson technique and placement of three 12 mm trocars, hepatomegaly was observed without finding an exit site for purulent material, it was punctured through liver segment V, and 2000 ml of citrine fluid was extracted. The hepatic wound is addressed with a 1-0 caliber chromic catgut thread, placing a Penrose-type drain. At 48 hours postoperatively, it evolves favorably, so it is decided to discharge. Hepatic cysts are fluid-filled cavities lined by a single-layered cuboidal or columnar biliary epithelium in the liver. A majority of hepatic cysts are found incidentally on liver imaging, such as abdominal ultrasonography, computed tomography, or magnetic resonance imaging.

Keywords: Liver, Simple hepatic cyst, Aspiration, Laparoscopic technique

INTRODUCTION

Liver cysts are collections of serous content surrounded by normal liver parenchyma, which lack communication with the intrahepatic bile duct. The cyst wall is lined with cuboidal epithelium surrounded by layers of connective tissue.¹ They are rare entities in adult patients, their presentation is asymptomatic in 3%, and between 10-15% of all patients will be symptomatic, which leads to first-time consultation with a doctor.² The diagnosis is integrated through the transoperative findings due to its

complications and the rest incidentally during the imaging studies.³ Complicated simple cysts occur in 5% of patients. The two most frequent complications are colonization and infection, generally monomicrobial by *E. coli*, and hemorrhage.⁴ It is a rare pathological entity with variable therapeutics, which depend on factors such as the location, number and relationship with other structures and the content of the cysts: aspiration by laparoscopy or percutaneous puncture guided by ultrasound with or without injection of sclerosing agents, argon plasma coagulation on the wall of the cyst cavity, unroofing and

communication with the peritoneal cavity, cystojejunostomy, complete resection of the cyst, partial hepatectomy, hepatic lobectomy and even complete hepatectomy resulting in liver transplantation.⁵

CASE REPORT

A 38-year-old man attended the general surgery outpatient clinic with an external abdominal tomography study that reported a giant hepatic cyst. He has a history of pulmonary tuberculosis of two years of evolution under treatment and denies another chronic-degenerative history, allergies, and previous surgeries denied. He reports a fever of 4 months of evolution, the presence of low back pain, generalized joint pain, vomiting, early anxiety, headache, asthenia, adynamia, and a weight loss of 20 kg a month ago. He was admitted to the general surgery floor and laboratory blood tests were taken, reporting anemia of 7.9 g/dl; mild leukocytosis of 11,000/ul at the expense of neutrophils; serum electrolytes, liver transaminases, and bilirubin were normal, alkaline phosphatase and gamma glutamyl-transpeptidase slightly elevated 294 U/l and 241 U/l, respectively. Non-reactive anti-HIV 1 and two antibodies, VDRL, CA 19-9 antigen, hepatitis B-C surface antigen, and carcinoembryonic antigen were negative. Empirical intravenous antibiotic therapy with a full dose of imipenem was started. He was evaluated by the internal medicine service estimated surgical risk in Goldman II and later underwent surgery by laparoscopic drainage of the liver cyst (04.25.22), through a median infraumbilical incision with the Hasson technique and placement of three 12 mm trocars, hepatomegaly was observed. Without finding an exit site for purulent material, it was punctured through liver segment V, and 2000 ml of citrine fluid was extracted, a sample was taken for cytochemical, cytological, and culture study (Figures 1 and 2).



Figure 1: Trocar in situ on hepatic cyst.

The cavity is washed and the hepatic wound is addressed with a 1-0 caliber chromic catgut thread, placing a Penrose-type drain directed to the right parieto-colic slider and exteriorized on the ipsilateral flank (Figure 3). Trans-surgical bleeding was quantified in 1500 ml. After the surgical procedure, he was readmitted to the general surgery floor where he was transfused with a packed

erythrocyte with control hemoglobin of 8.8 g/dl at 24 hours. At 48 hours postoperatively, it evolves favorably, so it is decided to discharge. Cytochemical control laboratories reported glucose of 73 mg/dL, LDH 789 U/l, total protein 5.8 g/dl; albumin of 2.3 g/dl, and negative fluid culture at 7 days.



Figure 2: Evacuation of sallow fluid from the liver cyst.



Figure 3: Hepatic cyst puncture site closure.

DISCUSSION

Hepatic cysts are collections of fluid lined by a single-layered cuboidal or columnar biliary epithelium located exclusively in the liver. Most liver cysts are found incidentally on imaging studies, such as abdominal ultrasound (US), computed tomography (CT), or magnetic resonance imaging (MRI). Hepatic cystic lesions are heterogeneous pathological entities; the vast majority are simple cysts, but some may have malignant degeneration, such as cystadenocarcinoma. Previous knowledge reports that simple liver cysts are congenital abnormalities of biliary development. During embryonic development, aberrant intrahepatic bile ducts develop and dilate to form hepatic cysts. Liver cysts are usually asymptomatic and may never be diagnosed. However, they can be complicated by colonization and subsequent infection, and may even rupture, causing fever or abdominal pain, respectively. The prevalence and incidence become more frequent with age. The cysts can grow and become gigantic, developing symptoms such as abdominal

distension, icterus, portal hypertension, and edema of the pelvic extremities by compressing the abdominopelvic organs or the hepatic vasculature.⁶

Liver lesions are common findings in imaging studies. It is a heterogeneous pathological entity, ranging from isolated benign lesions to malignant liver degeneration and metastasis. Benign isolated liver lesions can develop from different liver cell lines: epithelial (hepatocytes and biliary cells) and non-epithelial (mesenchymal cells). In most cases the diagnosis is simple, although the differentiation between malignant and non-malignant formations can be a challenge for the treating physician, due to the atypical appearance and peculiarities of the tumor. To avoid misdiagnosis, one must emphasize the key points of each tumor and decide which imaging study [ultrasound, computed tomography and/or nuclear magnetic resonance] is more reliable to form the diagnosis. The use of advanced hepatic magnetic resonance techniques, such as diffusion-weighted imaging (DWI), the multiarterial phase technique, the use of hepatobiliary contrast agents, and artificial intelligence, have improved the characterization and identification of isolated hepatic lesions. In addition, liver MRI can be the last non-invasive study, before opting for sampling and biopsy.⁷

Simple liver cysts (SLC) are mostly congenital formations of the ductal tree detached from the main biliary system, which dilated to become cystic lesions. There is no consensus on its actual origin. Some authors think that they are due to the dilation of a previous hamartoma and do not communicate with the bile duct. The literature reports its prevalence in a range of 2.5 to 18%, occurring more frequently in women than in men, which increases with age. SLCs are mostly benign entities that will not be symptomatic. The serous fluid within the cyst is produced by the lining cuboidal epithelium. A very large or giant cyst can cause abdominal pain or early satiety, as well as urinary symptoms due to compression of neighboring organs. Their complications, such as infection and bleeding, can generate complex cysts.⁸

A ciliated hepatic foregut cyst (CHFC) is a rare cystic lesion arising from the embryonic foregut with only 100 cases reported. Most commonly identified in segment IV of the liver, CHFCs are usually asymptomatic and found incidentally in routine imaging studies. It is important to keep this type of pathology in mind in the differential diagnosis when atypical characteristics are found, since CHFC carries a risk of transformation to squamous cell carcinoma. Therefore, the suspicion of CHFC is an indication of surgical treatment.⁹

The prevalence of simple hepatic cysts is 4.5-7%, and they usually have a greater presence in women than in men, in a 1:5 ratios. An infected liver cyst is characterized by clinical symptoms such as fever and abdominal pain. Routes of infectious origin include the biliary, gastric, hematogenous tract, nearby foci of infection, trauma, and unknown. In general, the routes of infection in specific

cases are usually unknown. Risk factors for infected liver cysts in women include age greater than 40 years, diabetes mellitus, bile duct stone or stenosis, and subsequent pancreatic head surgery. A cavity diameter >10 cm increases the probability of symptoms in adjacent organs. However, there are no previous reports involving the pancreas.¹⁰

Mucinous cysts are considered complex due to the presence of multiple septa and it is relatively common to find wall thickening, the association of multiple nodules, fluid containing cellular debris, hemorrhagic and proteins. Biliary mucinous cystic neoplasm (BMCN) is one such complex cyst and is a rare benign cystic neoplasm of the hepatobiliary tract, with an estimated incidence of about 5% of all hepatobiliary cystic neoplasms. BMCN occur almost exclusively (85-95%) in middle-aged women.¹¹

Spontaneous rupture of a hemorrhagic liver cyst is not common. Currently there is no specific treatment for these conditions. Chogahara et al, report two cases of hemorrhagic cysts that ruptured spontaneously and were resolved by unroofing them laparoscopically.¹² Their cases were: the first was an 85-year-old man who was admitted due to sudden onset of pain in the right upper quadrant and fever. Computed tomography revealed a 13-cm hepatic cyst occupying the right lobe of the liver and a spontaneous rupture of the cyst. Laparoscopic deroofing was performed and continuous exudate from the cystic wall was found. In the second case, a 77-year-old woman was admitted for a simple liver cyst (13 cm) due to sudden onset of pain in the right hypochondrium. Abdominal tomography revealed a 9.9 cm liver cyst occupying segment IV of the liver. Laparoscopic deroofing was performed with the improvement of symptoms. In both cases, the pathological studies reported simple cysts and the patients evolved towards improvement in the postoperative period.

Mo et al reviewed patients who received aspiration sclerotherapy with OK-432 (group A) or 99% ethanol (group B) for symptomatic simple liver cysts and included 42 patients in group A and 39 patients in group B.¹³ No found significant differences in the mean volume of liver cysts between the two groups. The overall success rates were 93% in group A and 79% in group B (p=0.08). Treatment success for cyst volumes <200 ml, 200–500 ml, and >500 ml was 100, 93, and 88% in group A, and 100, 85, and 57% in group B, respectively. The symptomatic relief rate in group A was higher than in group B for cysts of 500 ml (p=0.049) and cysts <500 ml. For treatment-related complications, the incidence of injection site pain in group A was lower than in group B. Their conclusion was: single-session OK-432 sclerotherapy was safer and more effective than multiple-session 99% ethanol sclerotherapy to treat large cysts, although both treatments had similar effects on small cysts.

He et al presented the challenges of managing giant simple liver cysts accompanied by obstructive jaundice and compared the safety and efficacy of percutaneous

aspiration and lauromacrogol sclerotherapy with other management strategies.¹⁴ The case is a 39-year-old woman with jaundice and abnormal liver function. Imaging studies revealed a giant simple liver cyst with obstruction of the intrahepatic bile ducts. A combination of percutaneous catheter aspiration and sclerotherapy with lauromacrogol was performed successively, achieving satisfactory efficacy. Therefore, a combination of percutaneous aspiration with consequent sclerotherapy with lauromacrogol can be suggested to resolve these cases.

CONCLUSION

Laparoscopic drainage of a liver cyst is a surgical treatment with excellent results, with high safety and low morbidity and mortality for these patients.

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