CLINICAL VIGNETTE

Symptomatic Simple Hepatic Cyst

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A 54-year-old female presented with progressively severe abdominal pain over the past month. The pain localized to the right upper quadrant of the abdomen radiating to the right flank. She denied any trauma, nausea, vomiting, loss of appetite, or jaundice. She also denied any fever, night sweats, shortness of breath, vomiting of blood, bloody stool, or swelling of her lower extremities. The pain did not respond to acetaminophen, ibuprofen, or even oral opioids and progressed to the point where it prompted an emergency department visit.

Her initial laboratory tests, including complete blood counts and liver chemistries, were within normal limits. Abdominal ultrasonography (US) showed a 3.7 x 3.7 x 2.2 cm anechoic subcapsular cystic structure in the left lobe with mildly irregular wall and without internal flow. Computed tomography (CT) demonstrated multiple hepatic cysts and subcentimeter low-density lesions, with the largest measuring 3.5 cm in the left lobe. Magnetic resonance imaging (MRI) of the abdomen again showed multiple (approximately 15-20) simple and mildly complex cysts scattered throughout the liver, the largest measuring 3.5 x 2.4 x 3.2 cm in segment 4A/B (Image 1). There were no findings of significant rim or nodular enhancement.

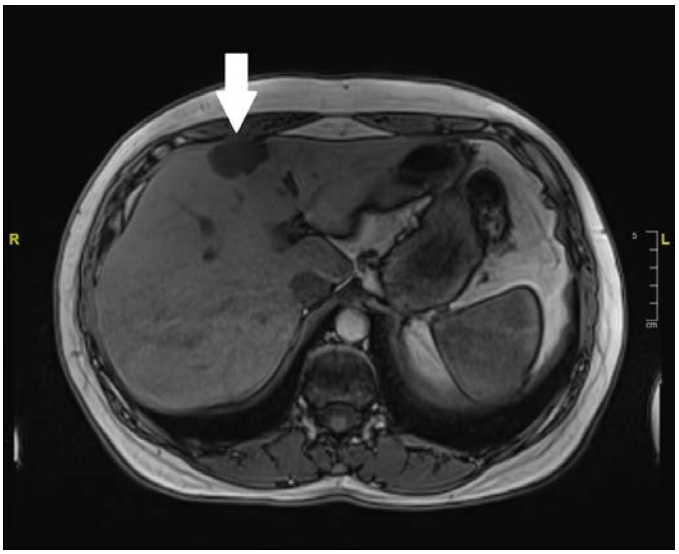

Figure 1. Axial MRI scan image of the abdomen showing the left hepatic lobe simple cyst (marked by arrow).

The patient consulted with a hepatologist who did not think the cyst was the source of the pain due to its smaller size. MRI of the lumbar spine was also performed to evaluate the possibility of a dermatomal distribution of the pain. It showed mild discogenic changes with multiple small disc/osteophyte complexes without significant foraminal or canal stenosis at any level. The patient was then evaluated by a general surgeon who thought that the subscapular cyst might have ruptured, leading to peritoneal inflammation. Given the pain was severe and non-abating, the patient agreed to proceed with a laparoscopic hepatic cyst fenestration.

During the surgery, the surgeon noted the peritoneum adjacent to the cyst was visibly thickened, indicating possible chronic irritation. The cyst was aspirated and then unroofed using an ultrasonic dissector to divide the cyst wall from the liver. Once the cyst wall was excised, the interior of the cyst cavity was fulgurated with an argon beam device to decrease future fluid production from the epithelialized surface. Surgical pathology revealed a benign simple cyst without any dysplasia or malignancy. Following recovery from surgery, the patient had no further abdominal pain. Follow-up CT imaging which did not show any recurrence of the cyst.

Arising from aberrant bile duct cells that develop during embryonic development, simple hepatic cysts are the most commonly diagnosed benign liver lesions. They are typically saccular, thin-walled masses with fluid-filled epithelial lined cavities.[1] Before widespread use of diagnostic imaging techniques, hepatic cysts were primarily diagnosed intraoperatively. In 1974, Sanfelippo et al. reported that the incidence of hepatic cystic lesions was 17 per 10,000 explorations.[2] With the development of diagnostic modalities including US, CT, and MRI, simple hepatic cysts are now frequently detected as incidental findings on clinical examinations. The prevalence of simple hepatic cyst on US ranges from 3% to 5% to as high as 18% on abdominal CT imaging.[3] There is a female predominance with a ratio of 4:1, and large hepatic cysts occur more frequent in females older than 50 years.[4,5]

Simple hepatic cysts do not include parasitic and polycystic hepatic cysts.[5] Differential diagnosis of hepatic cysts includes: infectious (hydatid cyst, amebic and pyogenic abscesses), and noninfectious (simple cyst, polycystic liver disease (PCLD), cystadenoma, cystadenocarcinoma and hepatocarcinoma, cholangiocarcinoma, intrahepatic pseudocysts secondary to pancreatitis, liver hematomas, biliomas, ciliated hepatic foregut cyst).[6] With advances in diagnostic techniques and minimally invasive technology, the management of hepatic cystic disease

continues to improve. US is the best imaging modality for recognizing a simple hepatic cyst, which appears as a circular or oval, anechoic lesion with smooth borders, acoustic posterior enhancement and without septations.[7] Further imaging studies are not routinely required for non-septated, round and water-dense lesions. Cysts with irregular walls, septations, calcifications, or daughter cysts on US should be further evaluated with enhanced CT or MRI, in order to differentiate simple hepatic cysts from cystic neoplasms or hydatid cysts.[7]

Growth and compression of hepatic cysts can cause abdominal pain, distension, nausea, vomiting, fullness sensation, and early satiety. Complications of simple hepatic cysts include infection, spontaneous hemorrhage, rupture, and external compression of biliary tree or major vessels.

The management of simple hepatic cysts requires correct differentiation from neoplasms and infections, and selection of a reliable treatment. Simple asymptomatic hepatic cysts typically do not require treatment because they can regress spontaneously, especially if their diameter is less than 4 cm.[8] Treatment options for symptomatic simple hepatic cysts includes percutaneous aspiration, aspiration followed by sclerotherapy, and surgical options including laparoscopic and open fenestration. The American College of Gastroenterology clinical guidelines recommend laparoscopic fenestration because of its high success rate and low invasiveness.[9] Percutaneous procedures as treatment of simple hepatic cysts are particularly effective in providing immediate relief of symptoms. However, they are not generally recommended because of higher rates of recurrence. A recent systematic review, however, reported that the outcome of percutaneous aspiration followed by sclerotherapy for symptomatic simple hepatic cyst appears to be fairly comparable to laparoscopic cyst fenestration, while open surgery showed the least favorable outcomes.[10] Laparoscopic fenestration can be proposed even in the treatment of recurrent symptomatic cysts, except for cysts located in segments 4, 7 and 8, where recurrence rates tend to be higher and complete resection should be undertaken.[11]

The management of cystic hepatic lesions can sometimes be challenging when the cysts are not easily differentiated on initial presentation or by imaging studies. This case presented a different diagnostic challenge in that the size of the symptomatic lesion was less than 4 cm, whereas most symptomatic simple hepatic cysts tend to be much greater in size. In the systematic review, the mean symptomatic cyst sizes were 9.3, 12.7 and 11.9 cm before percutaneous, laparoscopic and open surgical treatment, respectively.[10] One explanation to account for the discrepancy between the severity of the symptom and the small size was the subcapsular location of cyst with localized peritoneal inflammation and severe pain.

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