Surgical management of a giant hepatic cyst with suspicious radiological features

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ABSTRACT

Cysts in the liver have a wide variety of aetiologies. Important features of malignancy based on various imaging techniques must be considered prior to any intervention. Perioperative decision making in complex or difficult cysts is key to appropriate patient management. A 66-year-old woman was referred to the outpatient department with a one-year history of intermittent, sharp, right upper quadrant pain, radiating to her back. Computed tomography and magnetic resonance imaging showed a large cyst in the right and left lobes of the liver with portal inflow closely related. Features such as wall thickening suspicious for cystadenocarcinoma were present. An open resection was planned but, based on perioperative findings, the cyst had features making it unsafe to perform excision. De-roofing, carefully controlled drainage and assessment of the internal aspect of the cyst were performed, which revealed an extremely close relationship to portal inflow. This case describes the decision-making process when faced with complex indeterminate pathology of the liver and proximity of critical structures.

KEYWORDS

Liver – Cyst – Surgery

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Introduction

Cystic disease of the liver is present in up to 10% of the population.¹ The differential diagnosis most commonly includes hydatid cysts, post-traumatic cysts, liver abscess, polycystic disease, haemorrhagic cysts and primary or metastatic necrotic neoplasms. Biliary cystic tumours such as cystadenoma and cystadenocarcinoma comprise less than 5% of all liver cysts.² Differentiating benign from malignant disease often relies on subtle irregularities in the cyst wall but is not definitive. This case demonstrates the interpretation of preoperative imaging and decision making intraoperatively required in the management of complex cystic disease of the liver.

Case history

A 66-year-old woman was referred to the outpatient department with a one-year history of intermittent, sharp, right upper quadrant pain, radiating to her back. She had a background of hyperlipidaemia but was otherwise fit and well. She had a mildly elevated alanine aminotransferase (44, reference range 6–33), gamma-glutamyl-transpeptidase (53, reference range 5–36) and alkaline phosphatase (114, reference range 35–105). Her bilirubin was normal. Ultrasound of the abdomen showed a very large cyst in the right lobe of the liver. Hydatid serology was negative.

Magnetic resonance imaging showed a large hepatic cyst involving both the right and left lobes of the liver. Owing to thickening of some parts of the cyst wall the differential diagnosis included biliary cystadenocarcinoma or biliary cystadenoma (Fig 1a). Staging computed tomography (CT) of her thorax, abdomen and pelvis including a four-phase liver CT showed a large fluid density mass lesion in the left and right hepatic lobe measuring 12 × 11 × 19 cm (Fig 1b). The right and left portal vein branches appeared to course around the posterior circumference of the mass.

An open excision of the liver cyst was undertaken, based on the preoperative imaging demonstrating thickening of the posterior wall of the cyst concerning for cystadenocarcinoma (Fig 1). Intraoperatively, the cyst was large and fixed in position. The appearance externally was that of a simple cyst with no suspicious macroscopic features. It was not possible to perform a Pringle manoeuvre to control hepatic inflow without draining the cyst. A Pringle manoeuvre involves placing an atraumatic vascular clamp around the hepatoduodenal ligament to control the inflow of blood through the hepatic artery and portal vein. The cyst was de-roofed and 1.5 litres of fluid was drained under control using a purse-string suture. Intraoperative cytology and histology demonstrated a benign simple biliary cyst. The portal inflow was visible in the back wall of the cyst (Fig 2). The cyst walls were subsequently attached to the diaphragm to prevent twisting or a closed book deformity and an omental

Figure 1 a) Magnetic resonance imaging of the Liver showing a large cyst with thickening of the cyst wall. b) Tri-phasic computed tomography of the liver and hepatic inflow draped around the cyst wall.

Figure 2 De-roofed cyst with portal inflow visible in the posterior wall of the cyst.

Figure 3 Omental flap raised into cyst wall following pexy of the cyst to the abdominal wall.

flap was used to fill the cyst cavity (Fig 3). Definitive histology demonstrated a benign simple biliary cyst.

Discussion

The gold standard management for symptomatic benign liver cysts is laparoscopic de-roofing, which has comparable recurrence and lower morbidity than open de-roofing.⁵ Wide de-roofing and cyst resection are associated with low incidence of cyst recurrence or complications.⁴ Radiologically benign hepatic cysts should appear as homogeneous lesions with no enhancement of the wall or content. Features suggesting biliary cystadenoma or cystadenocarcinoma are papillary projections, internal septation with nodular areas, wall thickness irregularities, mural nodules and coarse calcification along the wall. Complete resection, including a margin of normal liver, is required in biliary cystadenoma and cystadenocarcinoma to achieve optimal

outcomes with recurrence rates of 0–10% in complete resection with clear margins compared with 90–100% recurrence rate in partial resection or de-roofing.⁵ Complete formal liver resection in the case of large biliary cystadenoma and cystadenocarcinoma may require either anatomical or non-anatomical liver resection. Large central cysts involving both liver lobes have also been treated with enucleation with good outcomes.

In this case, because of the close relationship of the cyst wall to the liver inflow and portal vein branches posteriorly, a decision regarding the optimal management of the cyst combined with the lowest morbidity was required. Decompressing the cyst under control was undertaken which allowed opening and examination of its internal contents and intraoperative sampling to establish whether a cystadenoma or cystadenocarcinoma was present.

References

1. Soares K, Arnaoutakis D, Kamel I *et al.* Cystic neoplasms of the liver: biliary cystadenoma and cystadenocarcinoma. *J Am Coll Surg* 2014; **218**(1): 119–128.
2. Walt AJ. Cysts and benign tumors of the liver. *Surg Clin North Am* 1977; **57**: 449–464.
3. Koperna T, Vogl S, Satzinger U *et al.* Nonparasitic cysts of the liver: results and options of surgical treatment, *World J Surg* 1997; **21**: 850–854.
4. Sanchez H, Gagner M, Rossi R *et al.* Surgical management of nonparasitic cystic liver disease. *Am J Surg* 1991; **161**: 113–118.
5. Pitchaimuthu M, Aidoo-Micah G, Coldham C *et al.* Outcome following resection of biliary cystadenoma: a single centre experience and literature review. *Int J Hepatol* 2015; **2015**: 382315.