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Intrahepatic mucinous biliary cystadenoma

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Abstract Mucinous biliary cystadenoma (MBC) is a very rare cystic tumour of the liver usually occurring in middle-aged women. This condition is difficult to diagnose before surgery; differential diagnosis with hydatid disease of the liver has to be done and is difficult to distinguish from mucinous biliary cystadenocarcinoma. We report two diagnosed and treated cases of intrahepatic MBC.

Key words Hepatic mucinous cystadenoma • Hepatic cystic tumour

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Introduction

Mucinous biliary cystadenoma (MBC) is an uncommon cystic tumour of the liver. MBC accounts for 4–6% of non-parasitic intrahepatic cystic tumours [1, 2]. More than 80% of patients are middle-aged women [1].

MBC originates in intrahepatic bile ducts, and its cause has not been elucidated yet. Less commonly, the condition arises in the extrahepatic biliary tract [1, 2]. MBC is characteristically lined by a mucin-secreting columnar epithelium [3]. The presence of benign epithelium in most mucinous biliary cystadenocarcinomas makes its origin in a prior benign cystadenoma highly likely [1].

As differential diagnosis of cystadenoma and cystadenocarcinoma is difficult before surgery, and recurrence occurs if partial resections are made, complete lesion resection is indicated [2, 3].

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Most publications about these tumours consist of case reports and literature reviews [3]. Our objective is to report two diagnosed and treated cases of MBC and perform an analysis of the literature, with a special emphasis on the imaging diagnostic aspects, treatment and pathological findings.

Case reports

Case report 1

A 35-year-old woman complained of abdominal discomfort for the past year. Physical examination showed an increased abdominal circumference, and palpation revealed a non-tender, rounded tumour in right epigastrium and hypochondrium, with a defined lower margin.

Abdominal ultrasonography showed an image consistent with an 18-cm hydatid cyst in the left lobe of liver. An abdominopelvic CT scan revealed a cystic lesion consistent with a hydatid cyst in the left lobe of liver, segments II–III, approximately 16×11×18 cm in size, showing slightly enhancing thin septa. No daughter vesicles or calcifications were seen inside the lesion. No other focal lesions were identified. There was no intra- or extrahepatic biliary tract dilatation (Fig. 1). Serologic testing for hydatid disease was negative.

Elective surgery was performed, and a cystic tumour approximately 18 cm in diameter was found in segments II and III, displacing the parenchyma. A left lobectomy was carried out (II–III).

The pathological report described a resection specimen of the left lobe of liver measuring 17×12 cm. Virtually the whole lobe was replaced by a cystic, multiloculated formation from which a clear fluid oozed. Cyst diameter ranged from 1–2 mm to 8 cm. Microscopically, the cystic formation was lined by a layer of cubic or cylindrical epithelium, with acid mucopolysaccharides in its cytoplasm of a biliary appearance with apical PAS positivity for Alcian blue. A subepithelial dense (ovarian-like) stroma was seen. Diagnosis was MBC.

The patient had a good postoperative course, with no recurrence to date.

Case report 2

A 41-year-old woman with an epidemiological history of contact with a dog in a rural environment attended the office for epigastric pain for the past 5 days. Physical examination revealed a non-tender, three-finger-breadth hepatomegaly in epigastrium.

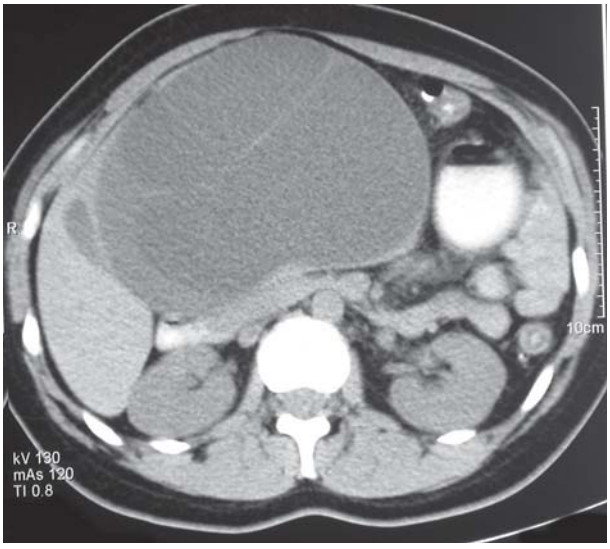

Fig. 1 CT scan hypodense lesion in segments II and III, showing slightly enhanced thin septa

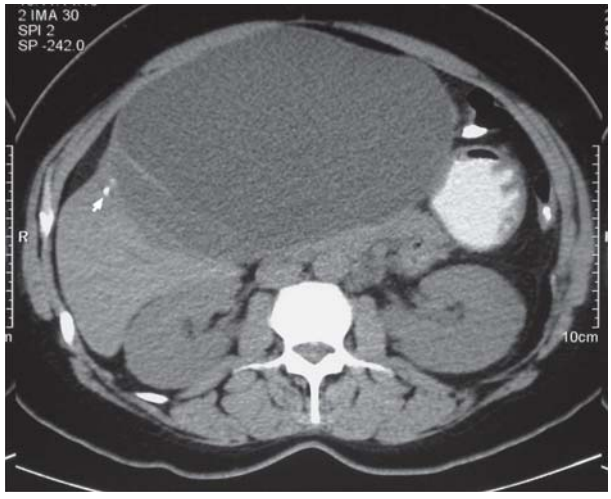

Fig. 2 CT scan septate cystic lesion, 19?19 cm in size, with calcification image (white arrow)

hypochondrium area compressing the gallbladder and pancreatic head. An abdominal CT (Fig. 2) showed a big cystic image located in the left lobe of the liver, displacing and compressing the right portal branch, approximately 19×19 cm in size. There was a small calcific image in the right margin, with multiple internal septations. A fat density image, consistent with bile contamination or communication with the biliary tract, was seen within the cystic tumour. No peripheral uptake suggesting other cystic tumours was seen. The condition was reported as a multiseptate cystic tumour with a small amount of calcium in its wall consistent with diagnosis of a hydatid cyst with signs of communication with the biliary tract. Serologic testing for hydatid disease was negative.

Elective surgery was performed, at which a cystic hepatic tumour, approximately 20 cm in transverse diameter, was located in segments II, III, IV, V and VIII. The tumour rejected and divided in two liver parenchyma. Cyst was evacuated, followed by resection of the emerging dome and closure of biliary fistula. A pathological diagnosis of MBC with ovarian-like spindle cell stroma was made.

During follow-up, a new abdominal CT showed a persistent cystic image in segment IV with septa inside. These septa, approximately 8 cm in diameter, had a relatively thin wall inside. This cystic image, approximately 8 cm. in diameter, had septa with a thin wall and some solid uptake zone inside. Elective repeat surgery was performed, at which a cystic, multiloculated tumour 10 cm in diameter was found in segment IV in intimate contact with vascular and biliary elements. Complete dissection and excision of the tumour was carried out, followed by closure of the biliary fistula. The postoperative course was uneventful, with no recurrence to date.

Discussion

Both cases of MBC occurred in middle-aged women. This condition has been reported by most authors as being more common in females (80%) at around 40 years of age [1, 3–5].

Clinical signs and symptoms are variable, and symptom duration before diagnosis may range from 5 days to 17 years [6]. Usual manifestations include abdominal mass and pain in the upper hemiabdomen. Dyspepsia, anorexia, nausea and/or vomiting occur less commonly [1]. In our cases, pain in the upper hemiabdomen and a palpable mass were reported. One of the patients complained of discomfort for one year.

Tumour location is variable. Ishak et al. [1] found MBC more commonly in the right liver, while other authors found it with a similar frequency in both lobes [7] or even more frequently in the left lobe [3, 5]. In our patients, both MBCs occurred in the left side, one of them in segments II and III and the other in segment IV. From 6% to 15% of MBCs have been reported to originate in the extrahepatic biliary tract [1, 7]. As regards size, tumours measured 18 cm and 19 cm in largest diameter at diagnosis, in agreement with other authors, who found that most tumours exceed 10 cm in diameter [1, 3, 5, 7], with values ranging from 3.5 to 25 cm [1].

Ultrasonography and CT have a supplemental rather than excluding role in preoperative evaluation of these cystic hepatic tumours [5]. They provide us with an evaluation of topography, size, vascular–biliary relations and internal morphology. A recent study [8] shows that gadolinium-enhanced magnetic resonance imaging in combination with magnetic resonance cholangio-pancreatography is a helpful tool to determine the diagnosis and extension of hepatobiliary cystic tumours and allows detection of mucin and blood in a cystic lesion, but distinction between cystadenomas and cystoadenocarcinomas cannot be achieved. The findings characteristic of MBC in CT and ultrasonography include the presence of a multiloculated, intrahepatic cystic tumour [5–7] and occasional internal papillary projections,

though the latter suggest cystadenocarcinoma [7]. Cases of uniloculated MBC have also been reported [1, 3, 5, 7]. The typical presentation of these lesions was found in both our patients.

The most common condition to be considered in differential diagnosis is hydatid cyst of the liver, as occurred in both patients. Hydatid cyst of the liver with daughter vesicles inside has a very similar appearance in imaging tests, but vesicles are reported to be smaller and more uniform than MBC multiloculations [5, 7]. Cyst wall calcifications were seen in the second case, as is common in hepatic hydatidosis [9], but we have found cases of MBC with wall calcifications [2, 5]. Serologic testing for hydatid disease was negative in both patients. In our setting, particularly when serologic tests for hydatid disease are negative, cystadenoma should be considered the first presumptive diagnosis [10].

Biliary cystic intraductal papillary mucinous tumours (IPMT) mimic MBC and cystic variants of IPMT may present superficially spreading tumour growth involving a variable length of the bile ducts; this condition can be differentiated on CT images on the basis of the presence of a large intrahepatic cystic tumour containing fungating mural nodules and associated dilated downstream bile ducts [11].

Gross examination revealed a multiloculated cystic formation with a 0.2-cm wall. Internal cystic formations ranged from 1–2 mm to 8 cm in size. The inner surface was smooth and the wall had a fibrous consistency. A 1-cm yellowish lesion was found in the cyst wall in one of the patients, but no malignant elements were found in 10 sections. Microscopically, cystic cavities were lined by cubic or cylindrical epithelium with acid mucopolysaccharides in its cytoplasm of a biliary appearance with apical PAS positivity for Alcian blue. There were no atypias, but denudation was seen some areas. A dense ovarian-like, spindle-cell stroma was seen under the epithelium. This latter feature categorises MBCs within the subgroup described by Wheeler et al. as cystadenoma with mesenchymal stroma [3]. Microscopically, this consists of 3 different tissue layers: (1) an epithelial layer of cuboid or columnar mucin-secreting cells lining the cysts; (2) a dense layer of spindle-shaped mesenchymal cells that simulate the "ovarian-like" stroma, usually less than 3 mm thick; and (3) a dense layer of collagenous connective tissue, 2–5-mm thick. This subgroup of MBCs has only been reported in women and has been considered a sign of favourable prognosis both for cystadenoma and cystadenocarcinoma [7].

With regard to treatment, complete resection of the lesion should be done, either by enucleation through healthy liver parenchyma or hepatectomy encompassing the lesion [1–3, 5–7, 9, 10, 12–16]. This approach is based on two considerations: (1) an eventual recurrence after partial resection, as occurred in case 2 reported here and already reported by other authors [2, 3, 6, 14, 16], necessitating repeat surgery to perform a total resection; and (2) the difficulty of differentiating MBC from a mucinous biliary cystadenocarcinoma before surgery, which would be obviated by a pathological study of the whole lesion [10, 13, 15, 16]. There is also a possibility of the lesion becoming malignant [1–3, 5, 9, 10, 12, 13, 15, 16].

Conclusions

Intrahepatic MBC is a rare benign tumour of a biliary origin with non-specific clinical signs. Its radiographic characteristics make it difficult to differentiate from hydatid disease of the liver. The treatment of choice for MBCs is complete resection of the lesion. When this is possible, prognosis is excellent. In addition, surgery allows for differential diagnosis with cystadenocarcinoma, which is difficult based on imaging tests alone. Recurrence usually occurs in cases with incomplete resection, and the possibility that MBC is transformed into a mucinous biliary cystadenocarcinoma should be taken into account.

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