

Case Report

Primary Bile Duct Cystadenocarcinoma with Direct Invasion to the Gastric Wall

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Bile duct cystadenocarcinomas are rare cystic neoplasms of the liver. A 70-year-old woman with a cystadenocarcinoma with the invasion to the stomach as a submucosal tumor is presented. There were unrepresentative findings in a pre-operative examination, and it was difficult to distinguish whether this cystic tumor was malignant or benign. The tumor in the stomach was diagnosed as submucosal prior to operation, but was revealed as an invasive tumor from a bile duct cystadenocarcinoma in a left lobe of the liver during surgery. As it metastasized to the stomach and spread intraductally, a left lobectomy was performed. The operation was noncurative but the patient has been alive for 19 months since.

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Introduction

Bile duct cystadenocarcinomas are rare cystic neoplasms of the liver that arise from the biliary epithelium, representing fewer than 5% of solitary nonparasitic cysts of biliary origin¹ and constitute as few as 0.41% of all malignant hepatic epithelial tumors.² They are often misdiagnosed as bile duct cystadenomas; as histological differentiation between cystadenocarcinomas and cystadenomas is difficult, and it is uncertain whether cystadenocarcinomas are de-novo cancer or whether they are derived from cystadenomas.³ It has been reported that bile duct cystadenocarcinomas metastasize to regional lymph nodes, the colon, the duodenum, the peritoneum, and the heart,^{1,4,8} but there is no report of it directly invading to the stomach.

Patient

A 70-year-old woman had upper abdominal pain, nausea and vom-

iting in October 2001. She was diagnosed as having a submucosal tumor (SMT) by endoscopy at Nagasaki Municipal Medical Center on January 25, 2002, and admitted for further examinations. In macroscopic findings, there was an elevated tumor, 3.0 cm in maximal diameter, in the lesser curvature of the upper stomach with an umbilication (Figure 1). An upper gastrointestinal series (UGIS) showed that there was an elevated tumor with a bridging fold (Figure 2). Endoscopic ultrasonography (EUS) showed a tumor with a homogeneous solid pattern that continued into the muscularis propria of the stomach (Figure 3). Computed tomography (CT) scans showed that the liver had small multilocular cysts, dilatation of intrahepatic bile ducts and atrophy in a left lobe of the liver, but that there were no significant changes in other organs and no lymph nodes were swollen (Figure 4). Contrast CT was not performed. Ultrasonography (US) showed liver atrophy in the left lobe. Multilocular cysts were not detected. The patient was referred to Nagasaki University Hospital on March 13, 2002 with a diagnosis of a gastrointestinal stromal tumor (GIST).

Her history was that she had undergone a cholecystectomy for

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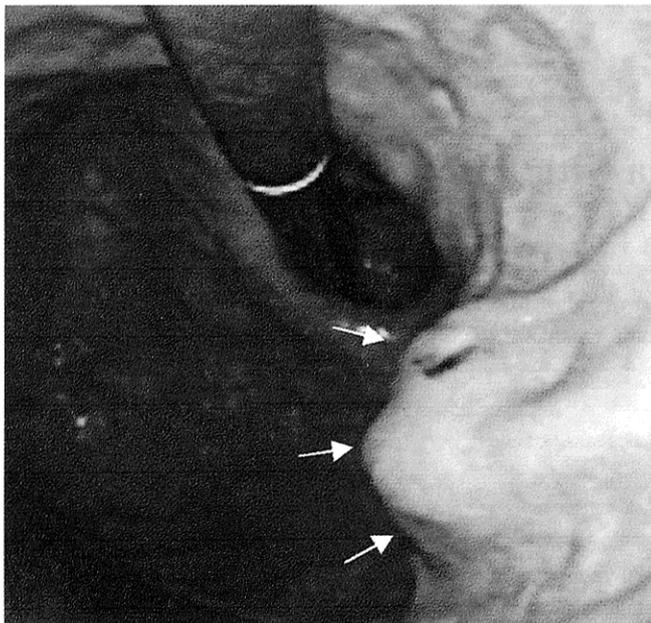


Figure 1. Macroscopic findings: an elevated tumor in the lesser curvature of the upper stomach with umbilication.

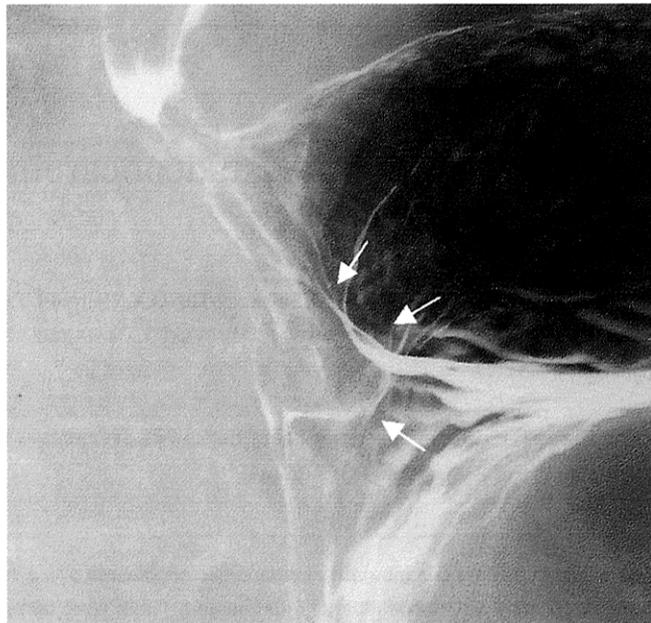


Figure 2. UGIS findings: an elevated tumor with a bridging fold in the lesser curvature of the upper stomach.

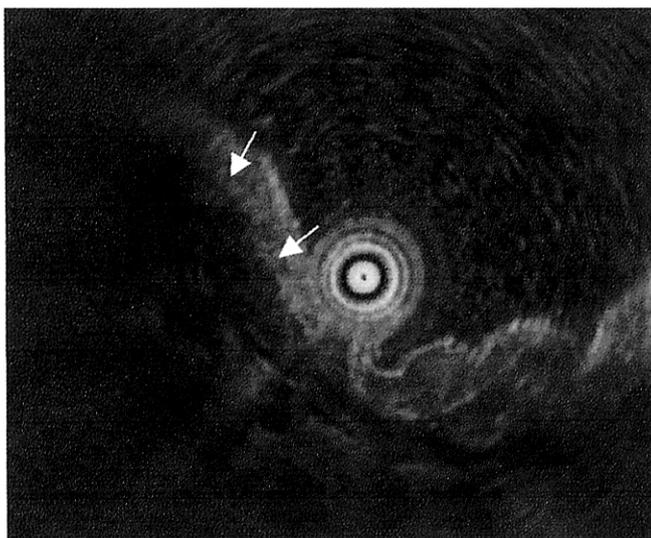


Figure 3. EUS findings: a tumor with a homogeneous solid pattern continues to the muscularis propria of the stomach.



Figure 4. CT scan findings: small multilocular cysts, dilatation of intrahepatic bile ducts and atrophy in a left lobe of the liver, but no significant changes in other organs and no swollen lymph nodes.

cholelithiasis in 1971. When she went to the Nagasaki Municipal Medical Center in 1999, intrahepatic bile duct dilatation and a multilocular cyst were detected. Since then, she hadn't sought any medical attention. In an endoscopy performed in 1998, there was no evidence of an SMT. The degree of bile duct dilatation and the size of a liver cyst hadn't increased but the left lobe showed atrophic change during the follow-up period. In a CT performed in September 2001, the SMT had also not been detected.

Routine laboratory test results were nonspecific, and she had no liver dysfunction. Serum tumor markers, carcinoembryonic antigen

(CEA) and carbohydrate antigen (CA) 19-9 were negative. We looked upon the cysts as benign. However, at surgery we found a mass in the lesser curvature of the gastric wall that continued to a left lobe of the liver; where it was too deep to resect by local excision, so the amount of the liver to be removed was changed to a lateral segmentectomy. At the edge of the section, there were only cysts and no solid component. Frozen section showed that the cyst was an adenocarcinoma and that there was residual cancer in the edge of the resection; moreover, the resection expanded to a left lobectomy with dissection of regional lymph nodes along the hepatoduodenal

ligament. Frozen section showed residual cancer in the stump of the left hepatic duct; and it was considered that a curative operation would be impossible. We decided on Photodynamic Therapy (PDT) for after the operation, and so an indwelling T-tube in a common hepatic bile duct for PDT was inserted during the operation. The resected main mass was a whitish yellow tumor of 4.8 × 4.2 × 4.8 cm and with components of multilocular cysts (Figure 5 A). The inner linings of the locules were smooth and glistening (Figure 5 B). Histological examination revealed the surgical specimen to be composed of a well differentiated adenocarcinoma with papillary structure (Figure 6). There was no evidence of metastasis in the regional lymph nodes of the hepatoduodenal ligament.

After operation, PDT (100 J, 40 Hz, 10 minutes) was implemented on May 15; but the tumor progressed to stenose the common bile duct. Metallic stenting was undertaken on July 1 and drainage of bile improved to good. She was discharged on July 10 and has been alive for 19 months since.

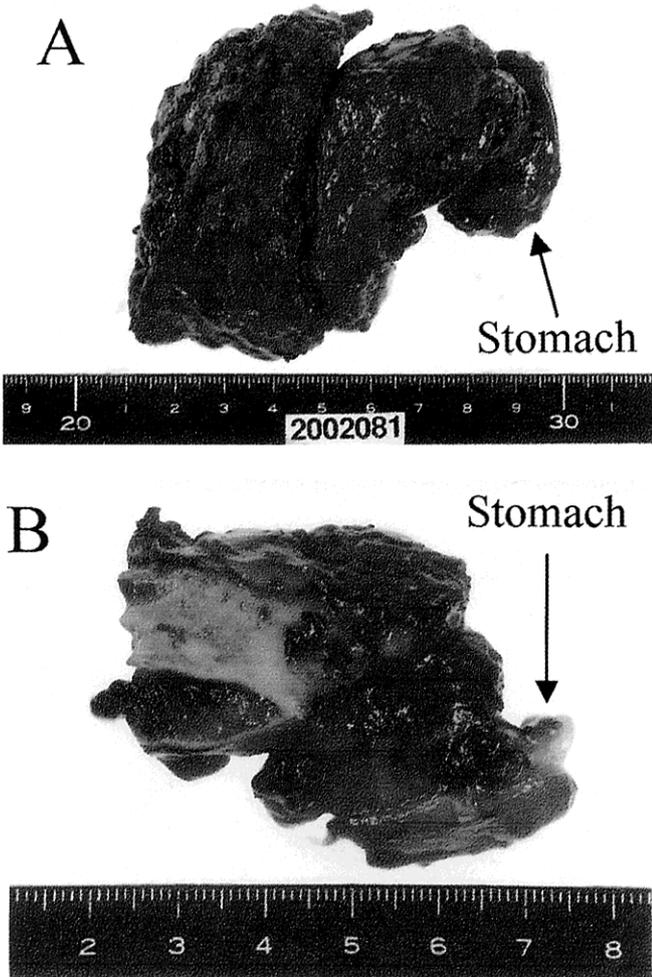


Figure 5. Surgical specimen: the resected main mass is whitish yellow with multilocular cysts, 4.8×4.2×4.8 cm (A). The inner linings of the locules are smooth and glistening (B).



Figure 6. Histology: the surgical specimen is composed of a well differentiated adenocarcinoma with papillary structure. H&E, ×20.

Discussion

Malignant liver tumors with cystic formations are classified into three Classes; A, B and C. Class A is additionally classified into three as Types I, II and III. Bile duct cystadenocarcinomas come under Class A Types I and II. Type II is a cystadenocarcinoma with cystadenoma having a honeycomb (Type II-A) or unilocular (Type II-B) pattern.⁹ Patients with a cystadenocarcinoma often present with abdominal pain and a mass.^{3,8,9} A few patients also have jaundice, bile fistula and fever.^{3,9} In tumor markers, the serum levels of CA19-9 and CEA are elevated.^{3,9} In imaging techniques, plain CT scan reveals a low density mass occasionally with papillary mural nodules. On a contrast study of a CT scan, nodules are enhanced. US showed a cystic mass with mural nodules, but some of these tumors are misdiagnosis as bile duct cystadenomas.¹⁰⁻¹² Cysts are usually multilocular and a large papillary mass of over 10 cm diameter.^{3,9} In pathological findings, tumors are usually multilocular and contain mucoid fluid. Malignant changes may not involve all of the epithelium lining the cyst.³

Cystadenocarcinomas show intrahepatic spread and metastasis to regional lymph nodes in the hepatoduodenal ligament. Distant metastasis occurs most frequently in lung, the pleura and the peritoneum.² The case here was a rare one that had no metastasis in the regional lymph nodes, but directly invaded to the stomach and showed intraductal spread. The prognosis of patients with biliary duct cystadenocarcinomas is good if a curative resection is possible.³

Our case here was Group A, Type II-A. It was difficult to diagnose this lesion as malignant prior to the operation. This could have been due to; 1) On CT findings, the size of the liver cyst hadn't

increased during the follow-up period. 2) The atrophy of the liver made for poor evaluations of the cystic lesion on US or CT findings. 3) The SMT was diagnosed as being different from a liver cyst as it continued into the muscularis propria of the stomach with a homogeneous solid pattern like a GIST in the EUS finding. 4) Tumor makers were within normal limits, and 5) In a bile duct cystadenocarcinoma, direct invasion to the stomach is rare.

We experienced a rare cystadenocarcinoma case that had been diagnosed as a benign cyst, which included it being a cystadenoma, and it was difficult to distinguish. Cystadenomas have the potential to degenerate into cystadenocarcinomas.^{3,10} Complete surgical excision should be performed when a diagnosis of cystadenoma is suspected, because only microscopic examination is able to differentiate a cystadenocarcinoma from a cystadenoma, which has the potential to degenerate into a cystadenocarcinoma.

References

1. Isha KG, Willis GW, Cummins SD, Bullock AA. Biliary cystadenoma and cystadenocarcinoma: report of 14 cases and review of literature. *Cancer* 38: 322-328, 1977
2. Takayasu K, Muramatsu Y, Moriyama N, et al. Imaging diagnosis of bile duct cystadenocarcinoma. *Cancer* 61: 941-946, 1988
3. Wittekind C, Fischer HP, Ponchon T. Bile duct cystadenoma and cystadenocarcinoma. In *Pathology and genetics of tumours of the digestive system* (Hamilton SR, Aaltonen LA eds.; IARC Press, Lyon) pp. 182-183, 2000
4. Bardin RL, Trupiano JK, Howerton RM, Geisinger KR. Oncocytic biliary cystadenocarcinoma: a case report and review of literature. *Arch Pathol Lab Med* 128: 25-28, 2004
5. Kinoshita H, Tanimura H, Onishi H, Kasano Y, Uchiyama K, Yamaue H. Clinical features and imaging diagnosis of biliary cystadenocarcinoma of the liver. *Hepatogastroenterology* 48: 250-252, 2001
6. Bacher H, Cerwenka H, Werkgartner G et al. Primary biliary cystadenocarcinoma perforating the duodenum left intrahepatic biliary tree-mimicking a hydatid cyst. *Liver* 19: 39-41, 1999
7. Stacher R, Szolar DH, Bacher H, Preidle KW. Mucinous biliary cystadenocarcinoma containing gas bubbled secondary to duodenal invasion. *Br J Radiol* 71: 683-685, 1998
8. Nakajima T, Sugano I, Matsuzaki O, et al. Biliary Cystadenocarcinoma of liver. *Cancer* 69: 2426-2432, 1992
9. Mizumoto R, Noguchi T. Cholangioma. (in Japanese) In *Liver* (Okudaira M, Mizumoto R, Tanigawa K eds.; Bunkodo Co., Ltd. Tokyo) pp. 104-120, 1991
10. Kubota E, Katsumi K, Iida M, et al. Biliary cystadenocarcinoma followed up as benign cystadenoma for 10 years. *J Gastroenterol* 38: 278-282, 2003
11. Boillot O, Domergue J, Fabre JM, et al: Intrahepatic bile duct cystadenocarcinoma: case report and imaging diagnosis. *J Surg Oncol* 43: 193-195, 1990
12. Stanley J, Vujic I, Schabel SI, Gobien RP, Reines HD. Evaluation of biliary cystadenoma and cystadenocarcinoma. *Gastrointest Radiol* 8: 245-248, 1983