Intraluminal Papillary Growth of Liver Metastasis Originating from Colon Carcinoma in the Bile Duct: Report of a Case

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Abstract
Morphologically, liver metastases from colorectal carcinoma usually form as nodular tumor masses, whereas intraluminal papillary growth in the bile duct is rare. A 65-year-old man underwent right hemicolectomy for advanced colon carcinoma, and histology of the primary carcinoma confirmed moderately differentiated adenocarcinoma with subserosal invasion, no vascular infiltration, and no lymph node metastasis. A liver tumor was found in the right paramedian Glisson pedicle and intraductal growth of cholangiocarcinoma was seen on imaging. We performed right hepatectomy and macroscopically, the resected specimen contained a growth in the bile duct lumen similar to cholangiocarcinoma. Histological examination revealed intraductal papillary proliferation of well-differentiated adenocarcinoma without vascular infiltration or lymph node metastasis in the hepatic hilum. Immunohistochemical staining revealed that the tumor cells were negative for cytokeratin-7 and positive for cytokeratin-20. Based on these findings, liver metastasis from colon carcinoma was diagnosed. Liver metastasis from colorectal carcinoma rarely arises as intraluminal papillary growth in the bile duct, but the possibility of liver metastases with unusual morphology must be borne in mind for patients with a history of carcinoma in the digestive tract.

Key words Intraluminal papillary growth · Bile duct · Liver metastasis · Colorectal carcinoma · Hepatectomy

Introduction
Liver metastasis is common after colorectal carcinoma resection.1 The gross appearance of metastases is usually of a regular or irregular round mass.2 Intraluminal growth of liver metastasis originating from a colorectal carcinoma is a rare manifestation of metastatic liver carcinoma.3–7 This type of tumor usually shows biliary invasion of the main mass lesion and sometimes resembles intrahepatic cholangiocarcinoma with intraductal growth.5–9 Immunohistochemical examination is necessary to differentiate between metastatic liver carcinoma and cholangiocarcinoma.7,9,10 We report a case of liver metastasis resembling intrahepatic cholangiocarcinoma.

Case Report
A 65-year-old man underwent right hemicolectomy for pathological stage II colon carcinoma. Histological examination of the primary tumor revealed a moderately differentiated adenocarcinoma with subserosal invasion, but no lymphatic or vascular infiltration or node metastasis. About 15 months postoperatively, his serum carcinoembryonic antigen (CEA) level was found to be elevated slightly, at 5.2 ng/ml (normal range, <5.0 ng/ml), although his carbohydrate antigen 19-9 (13.5 U/ml) and α-fetoprotein (1.1 ng/ml) levels were normal. Otherwise, the Laboratory data showed normal liver function, but slightly elevated levels of alkaline phosphatase (542 IU/ml). Computed tomography (CT) showed intrahepatic biliary dilatation in the right paramedian and lateral sectors. Enhanced multidetector CT showed an irregular hypovascular lesion, 3 cm in diameter, along the right paramedian and lateral Glisson pedicles with peripheral bile duct dilatation (Fig. 1A). Magnetic resonance cholangiography showed a defect of cholangiogram in the confluence of the right paramedian and lateral bile ducts in the liver (Fig. 1B). Endoscopic retrograde cholangiography and intraductal biopsy were unsuccessful. As his liver function was well preserved, we performed a right hepatectomy following portal vein embolization. The initial
preoperative diagnosis was intrahepatic cholangiocarcinoma, although colonic liver metastasis was differentially diagnosed. Therefore, right hepatectomy with lymph node dissection in the hepatoduodenal ligament surrounding the common hepatic artery and in the para-aortic lesion was added.

The resected specimen contained a solid tumor lesion along the right paramedian and lateral bile ducts, spread within 3.5 cm, with peripheral bile duct dilatation (Fig. 2). The macroscopic findings resembled intrahepatic cholangiocarcinoma. Histological examination revealed papillary adenocarcinoma in the intraluminal side of the bile duct (Fig. 3), extending to the epithelium of the intrahepatic duct. Perineural infiltration was observed, but no portal or vascular infiltration or lymph node metastases were identified. At this stage, we suspected intraductal papillary bile duct carcinoma because of the differences in pathological differentiation from the primary colon carcinoma. However, after pathological consultation, immunohistochemical analysis showed positive expression of cytokeratin (CK) 20 and negative expression of CK7 (intestinal type) (Fig. 4). Neighboring biliary epithelium was CK7-positive and CK20-negative (pancreatobiliary type). Based on the results of immunohistochemistry, the tumor was diagnosed as metastatic liver carcinoma arising from colonic carcinoma. Figure 5 shows moderately differentiated adenocarcinoma in a primary colonic carcinoma, in which the papillary carcinoma component is similar to that in the liver tumor.

Fig. 1. A Computed tomography (CT) showed a low-density, hypovascular tumor lesion extending along the intrahepatic Glisson pedicle in the right paramedian and lateral sectors (arrow). The peripheral bile duct was mildly dilated. B Magnetic resonance cholangiography showed a deficit of cholangiogram in the right paramedian and lateral intrahepatic bile ducts (arrow).

Fig. 2. Resected specimen showing a growing tumor lesion in the lumen of the bile duct in the right paramedian and lateral bile ducts limited to within 3.5 cm with peripheral bile duct dilatation (arrows).