

Primary Biliary Lymphoma Mimicking Cholangiocarcinoma: A Characteristic Feature of Discrepant CT and Direct Cholangiography Findings

Primary non-Hodgkin's lymphoma arising from the bile duct is extremely rare and the reported imaging features do not differ from those of cholangiocarcinoma of the bile duct. We report a case of a patient with extranodal marginal zone B-cell lymphoma of mucosa associated lymphoid tissue (MALT), who presented with obstructive jaundice and describe the distinctive radiologic features that may suggest the correct preoperative diagnosis of primary lymphoma of the bile duct. Primary MALT lymphoma of the extrahepatic bile duct should be considered in the differential diagnosis when there is a mismatch in imaging findings on computed tomography or magnetic resonance imaging and cholangiography.

Key Words : Lymphoma; Bile Ducts, Extrahepatic; Magnetic Resonance Imaging; Tomography, Spiral Computed; Cholangiography

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Received : 11 November 2008
Accepted : 22 June 2009

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INTRODUCTION

Lymphoma involvement of the bile duct is rare and is usually a secondary manifestation of disseminated disease (1). In contrast to secondary involvement, primary non-Hodgkin's lymphoma arising from the bile duct is extremely rare and presents with obstructive jaundice (2, 3). Since Nguyen reported the first case in 1982 (4), less than 20 case reports on primary non-Hodgkin's lymphoma of the extrahepatic bile duct had been published by 2007 (5). Although there has been no report describing in detail the imaging features of primary biliary lymphoma, the reported imaging features do not differ from those of cholangiocarcinoma of the bile duct (1-7). Most patients with primary biliary lymphoma may have received a preoperative diagnosis of cholangiocarcinoma of the bile duct and have undergone major biliary surgery (1-7). However, given that the incidence of primary biliary lymphoma presenting with obstructive jaundice is low and due to the general lack of familiarity with this disease, many radiologists do not consider it in the differential diagnosis of obstructive jaundice. We report a case of a patient with extranodal marginal zone B-cell lymphoma of mucosa associated lymphoid tissue (MALT), who presented with obstructive jaundice. We also describe the distinctive radiologic features that may raise strong suspicions for primary lymphoma of the bile duct.

CASE REPORT

A 62-yr-old male patient presented with a two-week history of dark urine, progressive jaundice and recent weight loss of three kilograms. On physical examination, no superficial lymphadenopathy was detected, and his abdominal findings were normal. Laboratory evaluation confirmed cholestasis with a total bilirubin of 13.5 mg/dL, direct bilirubin 9.8 mg/dL, aspartate amino transferase (AST) 71 U/L, alanine transferase (ALT) 268 U/L, and alkaline phosphatase of 157 U/L. In tumor marker studies, the CA 19-9 was mildly elevated with a value of 55.4 U/mL. Serologic markers of hepatitis A, B, and C were all negative.

Post-contrast abdominal CT scans showed dilatation of the intrahepatic bile ducts (IHD) and a long, segmental circumferential wall thickening of entire extrapancreatic portion of CBD with involvement of both right anterior and posterior segmental IHD and suspicious involvement of left secondary biliary confluence as well as of the cystic duct (Fig. 1A-C). The patient had anatomic variations of intrahepatic ducts, i.e. the right anterior hepatic duct draining into the left intrahepatic duct and the right posterior duct draining into the common hepatic duct. The thickened segment of the bile duct created marked but smooth, luminal narrowing without intraluminal mass or filling defect and showed

homogeneous enhancement during the arterial, portal, and delayed phases. Although there were several, sub-centimeter-size lymph nodes in the portocaval space and along the com-

mon hepatic artery, there was no evidence of enlarged lymph nodes greater than 1 cm in short-axis diameter. Extrahepatic hilar cholangiocarcinoma was suspected from initial com-

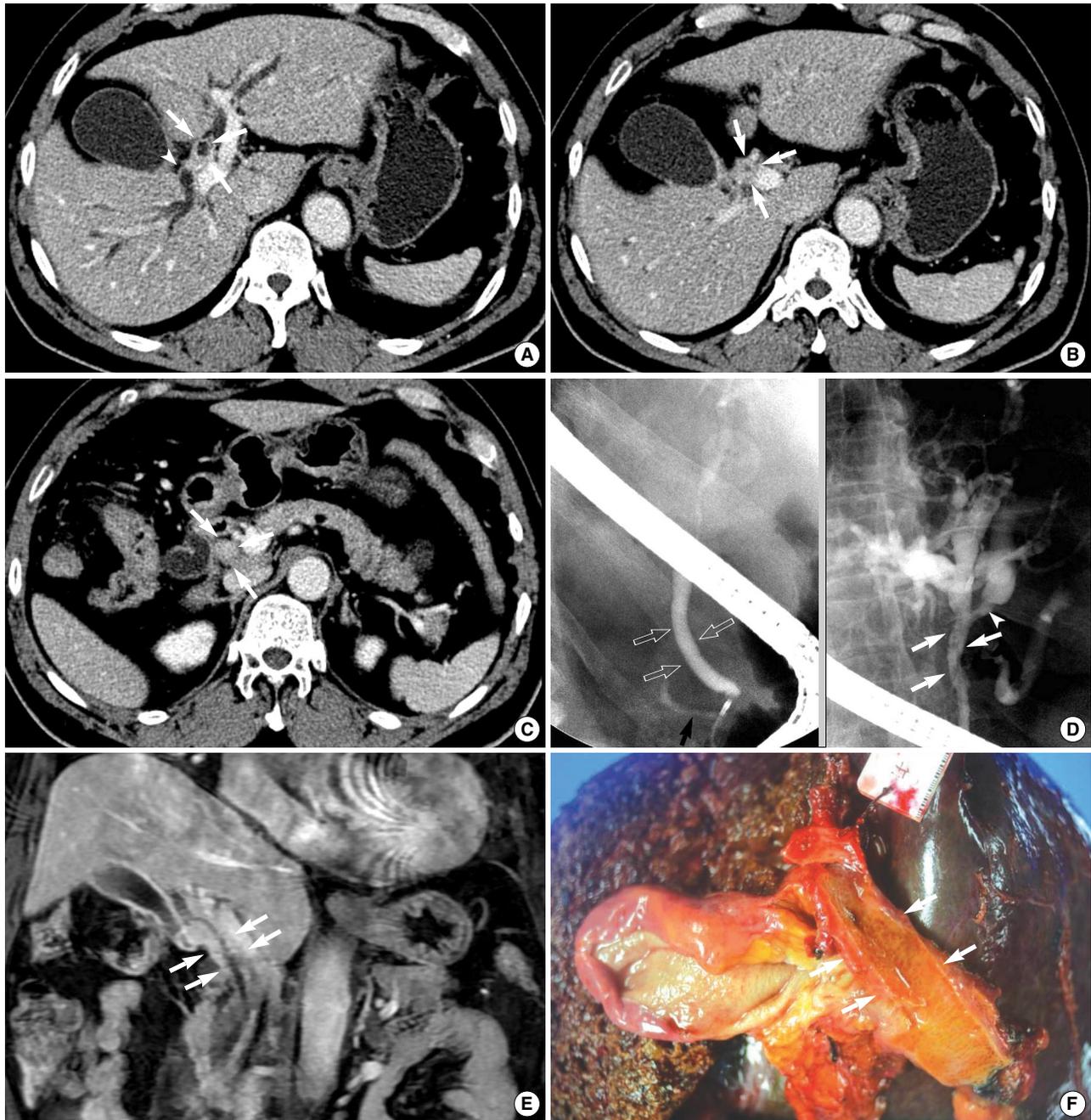


Fig. 1. Radiological images and gross finding of the primary mucosa-associated lymphoid tissue lymphoma of the extrahepatic bile duct. (A) Axial contrast-enhanced CT scan obtained during portal venous phase shows thickening of the left intrahepatic duct (arrow) and subtle thickening of the right anterior segmental intrahepatic duct (arrowhead) as well as dilatation of the intrahepatic bile duct. (B) Axial CT scan shows circumferential wall thickening of the proximal extrahepatic bile duct (arrow). Note the homogeneous enhancement of the thickened bile duct wall. (C) Axial CT scan at the level of distal extrapancreatic CBD shows marked thickening of the bile duct (arrow). Note that the bile duct lumen is not seen. (D) Cholangiography from the ERCP shows mild and smooth luminal narrowing of proximal (arrow) and distal (open arrow) extrahepatic bile duct and the proximal portion of the right posterior segmental intrahepatic bile duct (arrowhead) with upstream ductal dilation. Note. Black arrow=pancreatic duct. (E) Coronal gadolinium-enhanced T1-weighted MR image of the portal phase (acquired after ERBD tube insertion) shows long, segmental wall thickening (arrows) of the extrahepatic bile duct with homogeneous enhancement. (F) Gross specimen shows diffuse wall thickening of the extrahepatic bile duct (arrows) with smooth inner and outer surfaces.

puted tomography (CT) scan, the patient underwent endoscopic retrograde cholangiopancreatography (ERCP). ERCP showed a mild degree of smooth, luminal narrowing of the extrahepatic bile duct and the proximal portion of the right posterior segmental IHD, whereas a diffuse, long segmental tight stricture of the extrahepatic bile duct was presumed from the patient's CT findings (Fig. 1D). Forceps biopsies of the hilar duct and the proximal CBD as well as brushing cytology were performed and revealed only chronic inflammation with atypical columnar epithelial cells. For biliary decompression, endoscopic stent placement and percutaneous transhepatic biliary drainage (PTBD) of the right IHD were performed. Due to a mismatch in the imaging findings between CT and the cholangiographies, magnetic resonance imaging (MRI) with MR cholangiography was performed. On T2-weighted images with a fast spin-echo sequence, ductal wall thickening was slightly hyperintense relative to the liver parenchyma, and on T1-weighted images with a gradient-echo sequence, it was hypointense. Dynamic MR imaging after administration of 0.1 mM of gadobutrol per kilogram of body weight, revealed diffuse circumferential wall thickening of the extrahepatic bile duct (Fig. 1E) extending to right anterior and posterior segmental IHD and left secondary biliary confluence with strong enhancement.

Based on the radiologic features of the CT scans and the MR images, extrahepatic hilar cholangiocarcinoma with involvement of both the right and left bifurcations with extension into the secondary hepatic ducts was suspected although the ERCP features were atypical for cholangiocarcinoma of the bile duct. The patient underwent right hemi-hepatectomy and caudate lobectomy combined with resection of the bile ducts and lymph node dissection. The biliary tract was reconstructed with Roux-en-Y hepaticojejunostomy. At surgery, the common bile duct was noted to be diffusely thickened from the hilum to the superior border of the pancreas.

On the gross specimen, the extrahepatic bile duct showed diffuse wall thickening with smooth inner and outer surfaces, and there was no intraluminal polypoid mass in the CBD (Fig. 1F). Histologic examination under light microscopy revealed dense and diffuse infiltration of atypical lymphoid cells in the CBD walls and with occasional lymphoid follicles. On immunohistochemical staining, the tumor exhibited characteristic histology consisting of atypical lymphoid cells with diffuse positivity of L 26 and focal positivity of CD 3, Ki-67, Bcl-2, CD 43, and weak positivity in the germinal center of Bcl-6 and negativity for CD 10 and cyclin D1. Histology and immunohistochemistry confirmed malignant extranodal marginal zone B-cell lymphoma of the MALT type arising from the extrahepatic bile duct.

DISCUSSION

We report a patient presenting with obstructive jaundice,

in whom CT and MR imaging showed diffuse circumferential wall thickening of the bile duct. These imaging features associated with the patient's obstructive jaundice, suggested a preoperative diagnosis of cholangiocarcinoma. This clinical scenario does not differ much from the previous 18 case reports on primary extrahepatic biliary lymphoma (1-7). The previous study concluded that the radiologic resemblance of primary lymphoma of the extrahepatic bile duct to cholangiocarcinoma made the correct preoperative diagnosis extremely difficult (2).

However, on retrospective review, we found a characteristic feature of primary biliary lymphoma to be the discrepancy in the degree of luminal narrowing in cross-sectional examinations such as CT or MR imaging and ERCP; although CT and MR imaging demonstrated diffuse luminal narrowing with smooth wall thickening of the extrahepatic bile duct and upstream intrahepatic duct dilatation, ERCP revealed relatively subtle, symmetrical luminal narrowing of the bile duct or irregular asymmetric stricture. This finding has not yet been reported in the previously published studies of primary biliary lymphoma (1-7). However, this imaging feature in our case can be explained by the fact that as lymphomas are usually not associated with desmoplastic reactions, with rare exceptions such as the nodular sclerosing type of Hodgkin's disease, therefore despite the substantial ductal wall thickening, the degree of luminal narrowing and mucosal the irregularities may not be evident in lymphomas (8). We believe that this unique histologic subtype of lymphoma may show similar radiologic features regardless of its primary site, and that the discrepancy between the CT/MR findings and the cholangiographic findings may allow differentiation of primary extrahepatic biliary MALT lymphoma from typical hilar cholangiocarcinoma. We believe that this lymphoma feature may be a unique feature which provides a clue for differentiating it from cholangiocarcinoma or other adenocarcinomas of the bile duct which are usually infiltrative in nature with pervasive growth and which provoke dense peritumoral fibrosis and present as severe luminal narrowing or stricture of the bile duct on cholangiography.

In addition to the radiologic uniqueness, our case was histopathologically unusual. Immunohistochemistry confirmed malignant, extranodal, marginal zone, B-cell lymphoma of MALT arising from the extrahepatic bile duct. A retrospective review of previously published case reports on primary extrahepatic biliary lymphoma indicated that the most common subtype is large-cell lymphoma (5 of 18 cases), and the most common immunophenotype was B-cell lineage (7 of 18 cases) (2, 7). Only two cases of MALT lymphoma of the extrahepatic bile duct have been reported (1, 6).

With regard to the treatment of primary biliary lymphoma presenting with obstructive jaundice, there seems to be no solid consensus among medical institutions. In our case, preoperative endoscopic tissue biopsy failed to confirm the histologic diagnosis, and due to rarity of the disease, our lack

of familiarity with this entity deterred us from suggesting the diagnosis of biliary lymphoma for which patients receive radical resection of the bile duct with right hepatectomy. Surgical approaches for resectable hilar cholangiocarcinomas are radical, i.e. extrahepatic bile duct resection, hepatectomy, extended liver resections, involved vascular resection, and reconstructions. Postoperative complications of curative surgery for hilar cholangiocarcinomas, such as bile leak, hemorrhage, and cholangitis, are associated with a high morbidity rate of 13–42% (9). Therefore, given that treatment management of resectable hilar cholangiocarcinomas and lymphomas could differ greatly and that radical resection of bile duct malignancy includes the possibility of high morbidity, it is very important for radiologists to suggest the possibility of primary biliary lymphoma when cholangiography shows smooth, mild, luminal narrowing of the extrahepatic bile duct without mucosal irregularity, despite diffuse thickening of the ductal wall on CT/MR images.

In conclusion, despite the paucity of published medical reports, primary MALT lymphoma of the extrahepatic bile duct should be considered in the differential diagnosis when a patient with obstructive jaundice presents with discrepant imaging findings on CT or MRI and ERCP. Multiple, deep biopsies from the biliary segment of the suspected lesion are mandatory in order to establish a definitive diagnosis before surgical treatment.

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