Pyogenic Liver Abscess Complicating Early Bile Duct Carcinoma in the Middle Bile Duct: A Rare Presentation

Chiah-Yang Chai¹, Yoichi Ishizaki², Yuki Fukumura³ and Seiji Kawasaki²

Abstract

We describe an 83-year-old woman who developed a pyogenic liver abscess complicated with early bile duct carcinoma. After percutaneous abscess drainage, endoscopic retrograde cholangiography revealed a filling defect in the extrahepatic bile duct suggestive of a bile duct tumor. Resection of the extrahepatic bile duct with regional lymph node dissection was carried out. The resected specimen showed a polypoid tumor in the middle bile duct and histologic examination revealed well-differentiated tubular adenocarcinoma limited to the mucosal layer. These findings suggest that careful investigation of the biliary tract is necessary in patients with pyogenic liver abscess, because of the possible association of bile duct cancer.

Key words: mucosal carcinoma, early bile duct cancer, Hepatic abscess

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Introduction

In Asian countries, hepatolithiasis and its associated biliary stricture predominate in the identifiable etiology of pyogenic liver abscess (PLA), and PLA is rarely associated with underlying malignant disease. We present a case of mucosal carcinoma of the middle bile duct that was found incidentally in the course of therapy for PLA.

Case Report

An 83-year-old woman was admitted to our hospital with fever, chills and right hypochondralgia. On admission, her abdomen was soft and flat without palpable mass, but tenderness was evident over the right hypochondrium. The initial laboratory results showed a markedly elevated total leukocyte count of 22,900/mm³. Liver function tests showed elevated levels of aspartate aminotransferase at 185 IU/L, alanine aminotransferase at 173 IU/L and alkaline phosphatase at 370 IU/L. The serum level of total bilirubin was normal. Serum levels of carcinoembryonic antigen and other tumor markers were all within the normal ranges. Abdominal ultrasonography and computed tomography (CT) showed a solitary mass compatible with a hepatic abscess located in the posterior segment of the right liver (Fig. 1). Owing to the patient’s septic condition, percutaneous transhepatic abscess drainage was performed and systemic intravenous antibiotics were administered simultaneously. Culture of the purulent material showed the presence of Klebsiella. Cytologic examination of the abscess aspirate revealed no evidence of malignancy. On contrast radiography via the catheter inserted into the abscess cavity, we did not find any communication between the abscess and the biliary system. The patient recovered and complete resolution of the hepatic abscess was noted after therapy. In order to clarify the cause of hepatic abscess, magnetic resonance cholangiopancreatography (MRCP) was carried out. MRCP revealed a suspicious filling defect (arrow) in the middle bile duct (Fig. 2). Since the findings of MRCP were suggestive of malignancy, further imaging modalities were conducted. Endoscopic retrograde cholangiopancreatography demonstrated an irregular-shaped filling defect (arrow) in the middle part of the bile duct (Fig. 3). A small amount of the bile that had been obtained during ERCP was subjected to a cytologic survey, and the result was not diagnostic for malignancy. In order to determine the extent and depth of the tumor, endoscopic ultrasonography (EUS) and intraductal ultrasonography
Figure 1. Abdominal CT showed a solitary low-density area in the posterior segment of the liver.

Figure 2. MRCP revealed a suspicious filling defect (arrow) in the middle bile duct.

Figure 3. ERCP showed irregular filling defect (arrow) in the middle bile duct.

Figure 4. EUS showed an irregularly shaped, pedunculated polypoid lesion in the middle of the bile duct and intact thin echoic lines (arrow) of the bile duct wall.

Figure 5. A frame from IDUS showing the probe in the bile duct within the ultrasonographic field of view. Note the narrow-based polypoid and papillary surface of the tumor (arrow) with the normal structure of the bile duct wall.

phy (IDUS) were carried out. EUS showed an irregularly shaped, pedunculated polypoid lesion in the middle of the bile duct and intact thin echoic lines (arrow) of the bile duct wall (Fig. 4). IDUS demonstrated the narrow-based polypoid and papillary surface of the tumor (arrow) with the normal structure of the bile duct wall (Fig. 5). These findings strongly suggested that this lesion was a bile duct cancer limited to the mucosa or fibromuscular layer of the bile duct without longitudinal spread. Therefore, bile duct resection was indicated. Resection of the extrahepatic bile duct with regional lymph node dissection was performed. The resected specimen showed a small polypoid tumor measuring 7 mm x 5 mm in the middle bile duct, located just below the opening of the cystic duct. Detached, sloughed-off tumor debris was also observed within the common bile duct. A histologic study revealed a well differentiated tubular adenocarcinoma limited to the mucosal layer without lymph node involvement (Fig. 6). No lymphatic, venous or perineural invasion was found. The proximal and distal margins of the resected bile duct were free of cancer. Postoperative recovery was uneventful, and the patient remains in good health one year after surgery.

Discussion

Ascending infection of the biliary tree secondary to obstruction is now the most identifiable cause of PLA. In Asian countries, ascending suppurative cholangitis secondary
Figure 6. Low magnification view of the specimen revealed that the carcinoma is limited to the mucosal layer of bile duct.

to malignant biliary disease is less common than that associated with choledocholithiasis (1). Recent reports from Western countries have indicated a shift from relatively benign to more malignant obstructions as a cause of PLA, because of more aggressive approaches to the management of advanced hepatobiliary and pancreatic neoplasms (2, 3). In the present case, the cause of PLA was early bile duct cancer. PLA is a rare presentation of common bile duct stricture secondary to early bile duct cancer.

The routine use of ultrasound and CT is likely to rule out unrecognized biliary sources of infection. By showing gallstones, dilated bile ducts, and hepatolithiasis, these modalities have the advantage of identifying biliary tree pathology. MRCP is a noninvasive method for identifying the nature and site of biliary pathology and permits the clinician to plan the best method of intervention. ERCP may be useful for the evaluation of PLA, particularly when biliary tract disease is present. ERCP may also help to determine the need for surgical intervention, or whether the condition is amenable to endoscopic procedures. Although MRCP or ERCP allows the size, shape, and extent of a tumor to be evaluated precisely, it is not possible to determine the depth of tumor invasion in the bile duct wall. EUS and IDUS are increasingly being used because the resolution of these modalities is better than that of transabdominal US. EUS and IDUS imaging accurately depict the histologic depth of invasion and allow for effective therapeutic decision making.

Early bile duct cancer is defined as carcinoma limited to the mucosal or fibromuscular layer of the bile duct (4). It is difficult to make a preoperative diagnosis because most patients with early bile duct cancer have no characteristic clinical symptoms, and carcinoma limited to the mucosal layer is particularly rare (5, 6). In the present patient, the absence of frank jaundice indicates that PLA may occur even in a case of incomplete obstruction of the common bile duct, perhaps facilitating bacterial contamination of the bile. The tumor debris that was found in the bile duct may have caused a ball-valve type of intermittent obstruction at the most distal part of the common duct (7).

References