Percutaneous Approach to the Diagnosis and Treatment of Biliary Tract Malignancies

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KEYWORDS

• Biliary • Malignancies • Percutaneous • Management
• Chemoembolization • Drainage

The role of percutaneous, transhepatic management of biliary tract malignancies is to provide diagnostic and palliative care for improving patient quality of life. The most common causes of death in patients who have unresectable disease include liver failure and cholangitis secondary to the obstruction. These patients often die 6 to 12 months after diagnosis.[1,2] Measures aimed at relieving patient symptoms include surgical, percutaneous, and endoscopic decompression of the biliary system.[3] Although surgical resection offers the only significant chance for 5-year survival, few patients are operative candidates.[4] In addition, extrahepatic malignancies are cured by surgery in less than 10% of all cases.[5] Interventional radiologists continue to develop techniques in the hope of improving quality and prolongation of life. To this end, there are several nontraditional treatments that interventional radiologists may offer in their management of biliary cancers. This article focuses on percutaneous approaches to management of biliary tract malignancies during diagnosis, including cholangiography and intraductal biopsy, treatment of malignancy via transhepatic decompression, and transarterial and transhepatic therapies.

EPIDEMIOLOGY AND ANATOMY

Malignant biliary obstruction is caused by primary and secondary diseases. Primary bile duct malignancies include cholangiocarcinoma and gallbladder cancers. Secondary malignancies include pancreatic and hepatic cancers and metastatic disease to the biliary tree or adjacent structures. All of these secondary malignancies

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can cause biliary obstruction by direct invasion or extrinsic compression.[6] Primary cancers or cholangiocarcinomas generally are separated anatomically as intrahepatic or extrahepatic by location (arising within the liver capsule or in the extrahepatic biliary tree from the capsule margin to the ampulla of Vater). Extrahepatic malignancies can be subdivided further into perihilar (Klatskin tumor) and distal cancers. Distal cancers involve the common bile duct from the superior margin of the pancreatic head to the ampulla of Vater.[7,8] Among cholangiocarcinomas, 5% to 10% are intrahepatic and two thirds are hilar/perihilar, with 25% of cholangiocarcinomas occurring in the distal bile ducts.[9,10] Adenocarcinoma is the most common cell type, accounting for 90% to 95% of all cholangiocarcinomas.[11] It is estimated that 4600 new cases of cholangiocarcinoma will be presented in the United States in 2008.[9]

PREPROCEDURAL EVALUATION AND MANAGEMENT

Initial preprocedural evaluation of patients who have obstructive biliary disease requiring biliary intervention requires a thorough history, physical examination, and review of all imaging and laboratory work. Malignant obstruction frequently is accompanied by jaundice, malaise, weight loss, anorexia, pruritis, acholic stools, dark urine, abnormal liver function test (LFT) results, and other metabolic abnormalities.[12] In 90% of those patients who have severe pruritis and metabolic abnormalities resulting from extrahepatic biliary obstruction, percutaneous transhepatic biliary drainage (PTBD) alleviates these conditions.[13,14] Review of patient laboratory data includes a complete blood cell count, coagulation profile, serum urea nitrogen, creatinine, electrolytes, and LFTs, including direct, indirect, and total bilirubin. If there are no signs suggesting biliary sepsis, then intravenous (IV) antibiotics are given the day of the procedure and continued for 24 hours. If a patient presents with signs and symptoms of biliary sepsis, then IV antibiotics are started immediately after blood cultures are obtained.

Patient allergies should be reviewed with prophylaxis given against contrast allergies when indicated. All relevant noninvasive imaging should be reviewed, including ultrasound (US), CT, MRI, and magnetic resonance cholangiopancreatography (MRCP) (**Figs. 1** and **2**). At the authors' institution, patient platelet count is required

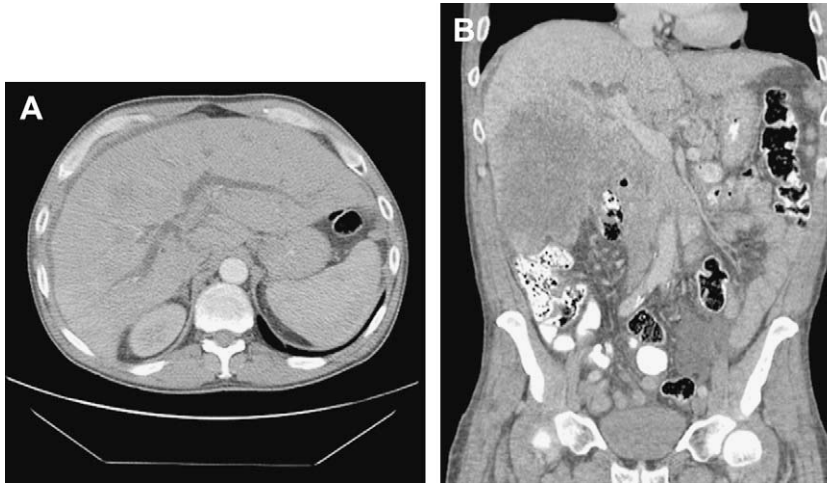

Fig. 1. A 54-year-old man who had unresectable cholangiocarcinoma and biliary obstruction. (*A*) Axial and (*B*) coronal CT images showing biliary ductal dilatation with extensive right lobe and porta hepatis involvement, leading to left-sided approach to drainage.