The Blumgart Preoperative Staging System for Hilar Cholangiocarcinoma: Analysis of Resectability and Outcomes in 380 Patients

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BACKGROUND: Complete resection of hilar cholangiocarcinoma (HCCA) is a critical determinant of long-term survival. This study validates a previously reported preoperative clinical T staging system for determining resectability of HCCA.

STUDY DESIGN: Consecutive patients with confirmed HCCA treated over an 18-year period were included. Patient demographics, preoperative imaging studies, resection type, margin status, lymph node status, histopathologic findings, morbidity, and outcomes were entered prospectively and analyzed retrospectively; changes in these variables over time were assessed. All patients were placed into 1 of 3 stages based on the extent of ductal involvement by tumor, portal vein compromise, or lobar atrophy.

RESULTS: From March 1991 through December 2008, 380 patients were evaluated. Eighty-five patients had unresectable disease; 295 patients underwent exploration with curative intent. One hundred fifty-seven patients underwent resection: 129 (82.2%) had a concomitant hepatic resection and 120 (76.4%) had an R0 resection. Of the 32 actual 5-year survivors (120 at risk), 30 patients (93.8%) had a concomitant hepatic resection. In patients who underwent an R0 resection, concomitant partial hepatectomy, well-differentiated histology, and negative lymph nodes were independent predictors of long-term survival. In the 376 patients whose disease could be staged, the preoperative clinical T staging system predicted resectability ($p < 0.001$), metastatic disease ($p < 0.001$), and R0 resection ($p = 0.007$).

CONCLUSIONS: The preoperative clinical T staging system of Blumgart, defined by the radial and longitudinal tumor extent, accurately predicts resectability of HCCA. The full outcomes benefit of resection is realized only if a concomitant partial hepatectomy is performed. (J Am Coll Surg 2012;215: 343–355. © 2012 by the American College of Surgeons)

Cholangiocarcinoma is a rare disease, accounting for less than 2% of all human malignancies.[1] Adenocarcinoma may arise anywhere within the biliary tree, from the intrahepatic radicles to just proximal to the ampulla of Vater. Excluding gallbladder carcinoma, tumors involving the biliary confluence or the right or left hepatic ducts, known as hilar cholangiocarcinoma (HCCA), appear to be the most common cancers of the extrahepatic ductal system. It is notable, however, that the proportion of patients with hilar tumors has generally remained constant over the past several years,[2,3] but recent reports have shown a rising incidence of tumors originating from the intrahepatic biliary tree (ie, intrahepatic cholangiocarcinoma).[4]

Complete resection is the most effective treatment for HCCA, although most patients have unresectable disease, either at presentation or at exploration.[5-7] Most studies on HCCA originate from surgical departments and tend to focus on operative findings and results, excluding those with unresectable disease, and do not account fully for all

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