Analysis of Hepatic Resection of Metastasis Originating From Gastric Adenocarcinoma

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Few patients with metastatic gastric cancer have disease that is amenable to curative surgery. Thus far, little is known about liver surgery for metastases arising from gastric adenocarcinoma and prognostic factors. Of 73 patients operated on between 1980 and 1999 for noncolorectal, non-neuroendocrine hepatic metastases, 15 underwent liver resection for gastric adenocarcinoma metastasis. Ten patients underwent synchronous hepatic resection and five underwent metachronous hepatic surgery after a median disease-free interval of 10 months (range 6.1 to 47.3 months). None of the patients died within the first 30 days after surgery, and the in-hospital mortality rate was 6.7%. Among patients in the synchronous group, 26.7% experienced major complications mainly associated with gastric surgery. Overall median survival was 8.8 months (range 4 to 51 months); two patients survived more than 3 years. Univariate analysis revealed that the appearance of liver metastasis (synchronous vs. metachronous), the distribution of liver metastases (unilobar vs. bilobar), and the primary tumor site (proximal vs. distal) were marginally significant predictive factors regarding overall survival. Because of its high morbidity, synchronous liver resection for metastases originating from gastric adenocarcinoma is rarely followed by survival longer than 2 years. Primary tumor localization within the proximal third of the stomach and bilobar liver involvement appear to be predictive of poor outcome. On the other hand, curative resection of metachronous liver metastases may allow long-term survival in selected patients. (J GASTROINTEST SURG 2002;6:682–689.) © 2002 The Society for Surgery of the Alimentary Tract, Inc.

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The diagnosis of advanced gastric cancer goes hand in hand with a seriously impaired prognosis. Metastatic liver involvement, which occurs in up to 50% of patients with gastric cancer, makes long-term survival without treatment impossible; median survival is reported to be approximately 6 months (range 2 to 4 months) with palliative chemotherapy. Surgery is the only treatment modality that offers the potential for cure. Morbidity and mortality have decreased remarkably as a result of improvements in perioperative management and surgical technique. Precise staging is a prerequisite for a tailored treatment. If liver resection is being considered for metastatic disease, other sites of metastases should be ruled out. Liver imaging techniques, such as contrast-enhanced helical computed tomography and magnetic resonance tomography, have undergone immense technical refinements but still fail to detect malignant hepatic lesions in a remarkable proportion of patients. Intraoperative ultrasonography has been shown to substantially improve detection of liver metastases in resection candidates and we have duplicated these findings at our institution. This technique is not appropriate for screening, however. Ultrasound-guided resections have reduced the incidence of involved resection margins and made tissue-sparing, segment-oriented resections feasible, even for comparably large lesions.

On the other hand, hepatic metastases from gastric cancer, once recognized, generally are scattered throughout both lobes of the liver. Liver metastasis is frequently accompanied by peritoneal dissemination and/or gross involvement of lymphatic tissue under synchronous as well as metachronous condi-
tions. Thus, in contrast to secondary hepatic lesions arising from colorectal metastases, curative resection of metastases from gastric cancer is not feasible in most cases. Moreover, surgery for liver metastases arising from gastrointestinal carcinoma remains controversial, even in potentially resectable cases. Because of the small number of suitable cases, only a few studies have been published. Most reports dealing exclusively with surgical treatment of hepatic infiltration of gastric cancer originated in Japan. European and American centers have generally reported on noncolorectal metastasis. However, most of these reports do not provide specific information about the treatment of secondary tumors originating from adenocarcinoma of the stomach.

In an attempt to focus on this subject, we evaluated our experience with patients undergoing liver resection for hepatic metastasis of gastric adenocarcinoma. Because careful patient selection seems crucial in the surgical treatment of advanced malignancies, we analyzed several factors that had the potential to identify patients who might benefit from this surgery.

MATERIAL AND METHODS

Between 1980 and 1999, 14% of patients admitted to our institution for treatment of gastric adenocarcinoma already had hepatic metastasis at the time of diagnosis. Liver resection was considered in patients with hepatic metastasis, when complete tumor resection—metastasis, and primary tumor and lymph node involvement in synchronous disease—seemed possible and liver function was normal. Patients with evidence of other distant metastases or with severe comorbidity that increased their perioperative risk were excluded. We reviewed the records of 15 patients who underwent hepatic resection for secondary hepatic tumors discontinuously arising from gastric cancer. The group consisted of five women and 10 men ranging from 37 to 81 years of age (median 61.6 years).

This retrospective evaluation included assessment of the following: type of gastric resection, histopathologic pattern of the primary tumor, type of hepatic resection, interval between the primary operation and the liver resection, if appropriate, and several perioperative parameters such as the duration of the operation, amount of blood transfused, lengths of stay in the intensive care unit and hospital, perioperative complications, completeness of the resection, adjuvant therapy, and overall survival after hepatic surgery.

Operative death was defined as death occurring within 30 days of the operation; in-hospital death was defined as any death occurring before discharge. Morbidity included any type of complication, either surgical or nonsurgical. Complications considered life-threatening or requiring surgery or other interventional treatment and those that substantially prolonged the hospital stay were classified as major. Survival curves were calculated according to the Kaplan-Meier method. The log-rank test was used for univariate comparisons of survival between groups.

RESULTS

The characteristics of primary neoplasms are presented in Table 1. Because some patients had undergone primary surgery for gastric cancer elsewhere, data regarding primary tumors are incomplete. In the five patients who underwent metachronous liver resection, the median interval between gastric resection and the diagnosis of hepatic metastases was 10.1 months (range 6 to 47 months). In these patients there was no evidence of hepatic involvement at the time of surgery for the primary tumor. In the remaining 10 patients, the primary and secondary tumors were resected during the same operation (synchronous resection). None of the patients had any apparent distant metastasis other than hepatic metastases. The median diameter of liver metastases was 17.5 mm (range 3 to 200 mm). Solitary manifestations were found in eight patients and multiple manifestations in seven patients (unilobar in two and bilobar in five).

Regarding the type and extent of resection, nine patients had nonanatomic (perilesional) resections, three underwent bisegmentectomy (one in combination with a wedge resection), and three underwent right hemipatectomy (with expansion to the central segment in two patients). In three patients with synchronous and one patient with metachronous liver resection (plus resection of the gastric remnant), splenectomy was also included in the procedure.

The overall mean duration of the operation was 276 minutes (range 135 to 540 minutes). On average, four units of erythrocyte concentrate were administered intraoperatively (range 0 to 12 units). Additional data regarding perioperative parameters are presented in Table 2. Postoperative complications occurred in 40% of patients in the metachronous group and in 50% of patients in the synchronous group (30% in direct association with concomitant