Adenocarcinomas of the Jejunum and Ileum: A 25-Year Experience

Mustafa M. Ugurlu, M.D., Oktar Asoglu, M.D., Dean D. Potter, M.D., Sunni A. Barnes, Ph.D., William S. Harmsen, M.S., John H. Donohue, M.D.

Adenocarcinomas of the jejunum and ileum are rare gastrointestinal malignancies. Because few large published experiences exist, we reviewed patients with jejunal and ileal adenocarcinoma treated at our institution over the last 25 years. Between January 1976 and December 2001, 77 patients had an operation for a jejunal or ileal adenocarcinoma. Records were retrospectively reviewed for patient, tumor, and treatment variables. Factors affecting disease recurrence and patient survival were investigated.

Fifty-two of the adenocarcinomas (67%) occurred in the jejunum and 25 occurred in the ileum (33%). Mean patient age was 63 ± 14 years. Segmental bowel resection was performed in 50 patients (65%) with curative intent. Palliative operative procedures including resection or bypass were performed in 27 patients (35%). One (1%) patient had stage I, 18 (23%) stage II, 19 (25%) stage III, and 39 (51%) stage IV adenocarcinoma at diagnosis. Postoperatively, 12 patients had palliative and 18 adjuvant chemotherapy (n = 30), radiation therapy (n = 1), or combination treatment (n = 7). Median patient survival was 19 months. Sixty-six percent of patients who had a curative operation had a tumor relapse. Tumor stage had a highly significant effect (P < 0.0001) on median survival (72 months for stage I and II, 30 months for stage III, and 9 months for stage IV disease). In multivariate analysis of patients having curative treatment, tumor recurrence (P < 0.0001), stage (P < 0.0002), and weight loss (P < 0.001) were significant negative prognostic indicators.

Most patients with adenocarcinoma of the jejunum or ileum present with advanced disease. Tumor stage, disease recurrence, and weight loss predicted patient outcome following a curative operation. Early recognition of these tumors requires a high index of suspicion. (J GASTROINTEST SURG 2005;9:1182–1188) © 2005 The Society for Surgery of the Alimentary Tract

Key words: Small bowel adenocarcinoma, surgical treatment, survival, local recurrence

Small bowel cancers are a rare and challenging problem for diagnosis and effective treatment. Despite the fact that the small bowel has the largest mucosal surface area in the gastrointestinal (GI) tract, only 1%–2% of all GI tumors occur in the small intestine. Adenocarcinoma (ACA) occurs most often in the duodenum, and with diminishing frequency, in the jejunum and the ileum. The lack of specific symptoms and rarity of small bowel ACA contribute to advanced-stage presentations. Because the surgical treatment of duodenal adenocarcinomas differs from jejunal and ileal cancers due to anatomic considerations, we decided to evaluate the latter group of patients separately, unlike many reported experiences with small bowel cancers. Segmental bowel resection generally provides sufficient margins for adenocarcinomas of the jejunum and ileum. No standard adjuvant chemotherapy or radiotherapy is currently recognized. This retrospective study evaluates a 25-year experience at a tertiary referral center in an effort to identify prognostic factors for patient survival and to better define appropriate
treatment strategies in the management of jejunoileal adenocarcinomas.

PATIENTS AND METHODS

Between January 1976 and December 2001, 77 patients diagnosed with ACA of the jejunum or ileum were treated surgically at Mayo Clinic. All medical records were reviewed retrospectively. Data regarding patient demographics, presenting symptoms, predisposing risk factors, diagnostic studies, operative procedures, tumor characteristics, and nonsurgical treatment were collected. Operative management consisted of either en bloc tumor resection, including adherent structures, with curative intent or a segmental bowel resection or bypass procedure for the palliation of advanced cancer.

Statistical Analyses

Actuarial patient survival was calculated from the date of the operation using the Kaplan-Meier method. Univariate tests of association with discrete risk factors were made using the log-rank test. For continuous risk factors, the Cox proportional hazards model was used. The Cox proportional hazards model was also used in multiple variable models, with stepwise and forward selection procedures used to select the final models. Overall patient survival was analyzed to identify adverse prognostic variables.

RESULTS

Patient Demographics and Presentation

Of the 77 patients, 43 were men and 34 were women. Mean patient age was 63 ± 14 years. Fifty-two of the ACA (67%) occurred in the jejunum, and 25 occurred in the ileum (33%). Presenting symptoms and signs included a wide spectrum: most commonly pain, followed in prevalence by nausea and vomiting, anemia, weight loss, gastrointestinal hemorrhage, fatigue, and abdominal mass (Table 1).

Table 1. Adenocarcinoma of the jejunum and ileum, presenting signs and symptoms

<table>
<thead>
<tr>
<th>Presenting signs &amp; symptoms</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain</td>
<td>66</td>
</tr>
<tr>
<td>Nausea and vomiting</td>
<td>51</td>
</tr>
<tr>
<td>Anemia</td>
<td>38</td>
</tr>
<tr>
<td>Weight loss</td>
<td>23</td>
</tr>
<tr>
<td>GI bleeding</td>
<td>19</td>
</tr>
<tr>
<td>Fatigue</td>
<td>18</td>
</tr>
<tr>
<td>Abdominal mass</td>
<td>9</td>
</tr>
</tbody>
</table>

Preoperative diagnostic studies included one or more of the following: small bowel follow-through 60%, abdominal CT scan 48%, extended upper endoscopy 30%, abdominal X-ray 16%, colonoscopy 14%, enteroclysis 8%, hypaque enema 4%, and ultrasonography 1% (Table 2). These numbers do not reflect our current practice, because many patients were evaluated early in the CT era. Small bowel follow-through had the highest yield for a specific diagnostic result of 65% (n = 30/46). The value of extended upper endoscopy was limited by the location of the tumors; a diagnosis was established in 30% (n = 7/23) of patients. Abdominal CT scan was the most useful examination for detecting metastases (34%, n = 12/35).

Predisposing risk factors for adenocarcinoma were present in 14 patients, representing 20% of all patients. The majority of these patients had Crohn’s disease (Table 3). Small bowel cancer represents a well-known, but infrequent, complication of this condition.

Operative Procedures and Tumor Stage

Fifty patients (65%) underwent segmental bowel resection, including en bloc resection of adherent structures (14 patients), with curative intent. Palliative operative procedures, including a resection or bypass, were performed in 27 patients (35%). Twenty patients (26%) had an emergency operation for perforation (n = 1) or obstruction (n = 19). Twelve of these patients (60%) had potentially curative operations. Pathologic evaluation revealed most patients had advanced tumor (T) stage. T3 and T4 lesions were present in 98% of the patient population. Nodal metastases were documented in 44% of the pathologic specimens. Distant metastasis was present in 51% of patients at the time of operation. Using the current AJCC staging system (6th edition), one (1%) patient had stage I, 18 (23%) stage II, 19 (25%) stage III, and 39 (51%) stage IV ACA at diagnosis.

Postoperative therapy

Chemotherapy was the mainstay of postoperative treatment. Thirty-six percent of the patients who had curative resection and 44% of the patients who had palliative operations received postoperative chemotherapy. Out of 37 patients who received chemotherapy or a combination of chemotherapy and radiation therapy, fluorouracil and leucovorin were the most commonly used drugs (n = 20, 51%), followed by fluorouracil alone in 14% (n = 5) of the patients. Other chemotherapy regimens included single-drug regimens: TNF, L-alanine, 6