Colon cancer in patients 40 years old or younger

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This report examines risk factors and survival outcomes in 64 patients aged 40 years or younger (mean = 34) with colorectal adenocarcinoma seen in a single institution from 1986 to 1996. Bleeding and pain were the most common symptoms. Risk factors identified in 31 (48%) of the patients included inflammatory bowel disease, familial polyposis, family history of colorectal cancer, and/or family history of polyposis. The stage at presentation determined overall 5-year survival. There was no stage or survival difference for patients with inflammatory bowel disease, family history, or mucinous tumors. Pain was a significant prognostic indicator for stage of cancer. There were increased risk ratios for male patients, those with polyps, and those with poorly differentiated tumors.

Adenocarcinoma of the colon and rectum is the second leading cause of cancer-related deaths in the USA. Approximately 155,000 new cases of colorectal cancer and an estimated 60,000 deaths from this disease are reported each year (1-3). Estimates are that 2% to 6% of these cases are diagnosed in patients 40 years old or younger (1-3). Considerable debate remains regarding treatment and prevention of colorectal cancer in this young age group and is due, in part, to the limited number of cases reported. In addition, some contend that this age group has a more advanced stage of cancer at the time of diagnosis (2-8), while others question whether these patients have a worse survival outcome compared with the older population (4, 8). The current study examines prognostic factors and survival in patients 40 years old or younger with colorectal cancer.

METHODS

A retrospective study was performed on data from 64 patients diagnosed with colorectal cancer who were 40 years old or younger. These patients had been treated at Baylor University Medical Center (BUMC) between 1986 and 1996. The data reviewed were obtained from hospital medical records, individual physician office records, operative reports, and pathology reports. Follow-up information was obtained from clinical charts, personal contact, and written correspondence.

For each patient, age, symptoms on presentation at BUMC, premalignant factors, family history, and tumor characteristics were obtained. Premalignant factors assessed included inflammatory bowel disease, familial polyposis, and history of polyps. Family factors included colon cancer, polyps, and familial polyposis. Tumor characteristics assessed were
location, depth, size, number, and histologic findings. The Aster-Coller modified Dukes classification was used for classifying the stage of cancer in each patient.

Statistical analyses also were performed. Age, sex, symptoms, premalignant factors, family history, and tumor characteristics were analyzed univariately using the Mantel-Haenszel chi-square test to determine significance towards presenting stage and 5-year survival. Multivariate analysis of these factors on 5-year survival was calculated using the Cox proportional hazards model test. Survival curves were obtained with the Kaplan-Meier method, and significance was analyzed with the log-rank test. Comparison between these younger patients and the general population's stage of cancer and 5-year survival was performed using data from the National Cancer Data Base of the American College of Surgeons' Commission on Cancer (9).

RESULTS

In the 10-year period studied (1986–1996), 64 patients 40 years old or under were diagnosed at BUMC with adenocarcinoma of the colon and rectum: 28 were male and 36 were female. The patients' ages ranged from 16 to 40 years (mean = 34 years). Follow-up time ranged from 0.3 to 10.5 years (mean = 4.5 years).

Inflammatory bowel disease was reported in 17% of the patients, familial polyposis in 16%, and a history of polyps in 14%. Thirteen percent of the patients had a family history of colon cancer; 11%, familial polyposis; and 8%, polyps. The most common presenting symptoms were bleeding (71%), pain (30%), weight loss >10 pounds (19%), and bowel obstruction (6%).

Well-differentiated or moderately differentiated histology was present in 80% of the patients. Only 14% of the cancers were mucinous. Synchronous lesions were found in 11% of the patients, and there were no metachronous lesions. Patients with well-differentiated or moderately differentiated histology had a significantly increased survival ($P = .03$; Figure 1), whereas there was no significant difference in survival between patients with mucinous and those with nonmucinous tumors (Figure 2).

As indicated in Figure 3, 16% of the tumors were located in the right colon, 8% in the transverse area, 13% in the left region, 26% in the sigmoid colon, and 37% in the rectum. There were no significant differences between location of the tumor and 5-year survival (Figure 4).

According to the Aster-Coller modified Dukes classification, 20% of the patients were stage A, 23% were stage B, 30% were stage C, and 27% were stage D. Analysis of the relation between these data and the 5-year survival rate revealed that the more advanced the stage of cancer, the lower the survival ($P = .001$; Figure 5).

Pain was the only presenting symptom found to be significantly related to cancer stage ($P = .004$; Figure 6). Those patients <30 years old had a significantly increased survival compared with those aged 30 to 40 years ($P = .02$; Figure 7). There was no significant relation between history of inflammatory bowel disease and survival in these younger patients (Figure 8).
Male patients, patients with a history of polyps, and patients with poorly differentiated tumors had an increased risk ratio (Table). Patients with synchronous lesions had a decreased risk ratio.

<table>
<thead>
<tr>
<th>Variable</th>
<th>P value</th>
<th>Risk ratio</th>
<th>95% confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>0.0479</td>
<td>3.171</td>
<td>1.011 to 9.952</td>
</tr>
<tr>
<td>Polyps</td>
<td>0.0499</td>
<td>8.854</td>
<td>1.011 to 77.584</td>
</tr>
<tr>
<td>Histology</td>
<td>0.0014</td>
<td>8.031</td>
<td>2.242 to 28.780</td>
</tr>
<tr>
<td>Synchronous lesions</td>
<td>0.0020</td>
<td>0.079</td>
<td>0.016 to 0.387</td>
</tr>
</tbody>
</table>

Using the National Cancer Data Base of the American College of Surgeons, a comparison was made between colorectal cancer in the general population and this younger patient group. No statistical difference, however, was found between stages of cancer and stage-related survival (Figures 9 and 10).

DISCUSSION

In this study, bleeding, pain, and weight loss were the most common symptoms in patients 40 years old or younger with colorectal cancer. Most studies have found that there is no correlation between symptoms and cancer stage (2, 3, 8, 10). In contrast, pain was shown to be a significant indicator of more advanced disease in this study. Duration of symptoms did not have significant predictive value for either stage of cancer or survival.

When age, sex, and premalignant symptoms were assessed univariately for correlation with 5-year survival, age was the only factor associated with 5-year survival. When all of the factors were analyzed together, significant correlations were found between male patients and 5-year survival, and patients with polyps and 5-year survival. It has long been thought that in order for younger patients to develop colorectal cancer, premalignant factors, such as a history of polyps, familial polyposis, or inflammatory bowel disease, had to be present. However, in this study <40% of the patients had any of these factors. One consistent finding between this study and previous studies was that the presenting stages of cancer and 5-year survival were similar in patients both with and without inflammatory bowel disease (2, 3, 5, 8).

Both univariate and multivariate analyses found well-differentiated and moderately differentiated cancers to have a significantly better 5-year survival than poorly differentiated cancers. Unlike other larger studies, this study did not reveal an increased percentage of younger patients with poorly differentiated cancers or a correlation between these cancers and mucin production (2). Mucin-producing tumors have long been thought to be a factor of poorly differentiated cancers, with decreased survival rates. This factor, however, was not found to be of significance to either cancer stage or 5-year survival in this and in a number of other studies (2, 3). Cancer stage was found to be the strongest indicator of 5-year survival.

A number of other studies indicate that younger colorectal cancer patients present with more
advanced disease (2, 4, 5, 8). The present study, compared with the National Cancer Data Base, does not support this conclusion. As with most reports of survival rates for patients with colorectal cancer, patients 40 years of age or younger with this disease appear to have 5-year survival rates that are similar to those of patients with colorectal cancer who are older than 40 (2, 3, 6, 10, 11).

References


