

Clinical Science

Rectal cancer in patients under the age of 50 years: the delayed diagnosis



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Abstract

BACKGROUND: The incidence of rectal cancer in younger patients continues to increase. Because most of these patients do not meet criteria for routine colorectal cancer screening, diagnosis may be delayed, potentially resulting in adverse outcomes. The aim of this study was to determine whether patients under the age of 50 years with rectal cancer have a delay in diagnosis and treatment leading to a worse overall prognosis.

METHODS: A case control study of patients diagnosed with rectal adenocarcinoma in an academic medical center from 1997 to 2007 under 50 years of age were matched 1:1 to randomly selected patients over the age of 50 years by sex and date of diagnosis. Time to diagnosis, time to treatment, staging of the American Joint Committee on Cancer, and 5-year overall survival were compared.

RESULTS: The overall time to treatment from symptom onset was 217 days for patients under the age of 50 years versus 29.5 days if over 50 years of age ($P < .0001$). The primary delay occurred between the onset of symptoms and presentation to the initial physician. There was no difference in stage at the time of diagnosis or 5-year survival (64% vs 71%, $P = .39$ and $P = .54$, respectively).

CONCLUSIONS: Patients with rectal cancer under the age of 50 years have symptoms for a considerable period of time before seeking medical care and are referred in less timely manner to specialists. However, the delay in diagnosis did not adversely impact stage on presentation or 5-year survival.

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Colon and rectal cancer (CRC) remains the 2nd leading cause of cancer-related death in the United States and the 3rd most common cancer in both men and women.¹

Between 1998 and 2006, the incidence in men over 50 years of age declined by 3.0% per year and 2.4% per year in women.^{1,2} This decline has been attributed to updated medical guidelines issued by the US Preventive Services Task Force stating that at age 50 years, patients should undergo a screening colonoscopy, high-sensitivity fecal occult blood testing, or sigmoidoscopy for colorectal cancer screening.³

However, large database and institutional studies have clearly demonstrated that the incidence of CRC in patients under the age of 50 years has been increasing since the

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1980s.^{1,4–7} Between 1992 and 2005, overall incidence of CRC has increased 1.5% per year in men and 1.6% per year in women patients between 20 and 49 years of age.⁸ Rectal cancer alone has increased by more than 50% in the 34- to 49-year age group from the 1980s to today.⁴ This stark disparity among the 2 age groups has triggered an increase in interest, especially related to diagnosis, specific clinico-pathologic features in the young, prognosis, and survival.

The relationship between the delay in diagnosis, staging at the time of diagnosis, and its effect on 5-year survival in the young is a key public health concern. Younger patients may experience a delay in diagnosis on the patient or physician end, potentially leading to an advanced stage at diagnosis and/or a worse prognosis. The purpose of this study is to examine the time line between onset of symptoms to the time of diagnosis and subsequent treatment in patients treated for rectal cancer under versus over the age of 50 years at an academic medical center. Our hypothesis is that younger patients with rectal cancer would report symptoms later and be less likely to be referred in a timely manner for diagnostic evaluation, leading to a more advanced stage of cancer at the time of diagnosis.

Methods

Design

A retrospective single-institution case control study of patients treated for adenocarcinoma of the rectum at the University of Vermont Medical Center from January 1, 1997 to December 31, 2007 was performed enabling 5-year follow-up. After appropriate institutional board review approval, patients were identified from our American College of Surgeons Commission on Cancer certified tumor registry. Consecutive patients diagnosed with rectal cancer under the age of 50 years were matched 1:1 to randomly selected patients over 50 years of age based on sex and date of diagnosis. Patients only diagnosed or seen for a 2nd opinion but not treated at the University of Vermont Medical Center and those with a personal history of inflammatory bowel disease, known genetic predisposing syndromes (eg, familial adenomatous polyposis and hereditary nonpolyposis colorectal cancer), or solid organ transplant recipient were excluded.

Setting and subjects

For each patient, age, sex, county of residence, family history of colorectal cancer, stage, treatment, and survival by stage were recorded from the tumor registry. An outpatient and inpatient chart review was conducted to identify the presenting symptoms and subsequent diagnostic evaluation. To assess for a delay in diagnosis, the following time points were collected: (1) time of 1st symptom to initial presentation to a health care provider; (2) time to referral from that provider to a specialist for

diagnostic evaluation; (3) time from referral to diagnosis; and (4) time from diagnosis to initial treatment.

Statistical analysis

To evaluate for differences between the 2 age groups in the database, Stata/MP 14 (StataCorp. 2015, Stata Statistical Software: Release 14; StataCorp LP, College Station, TX) was used. A chi-square test was used to analyze categorical variable differences between the 2 groups. The Mann-Whitney *U* test was used to analyze continuous variable differences among the groups. Median and interquartile ranges are reported. A *p* value of less than .05 was used to determine statistical significance.

Results

From 1997 to 2007, 1,514 patients were identified with colorectal cancer from the tumor registry. Four hundred five patients were diagnosed with rectal adenocarcinoma and met all inclusion criteria during the study period. Of this group, 349 patients (86.2%) were over the age of 50 years and 56 patients (13.8%) under the age of 50 years. Demographics of the 56 matched patients are outlined in [Table 1](#).

Fifty-four patients (96%) under 50 years of age (group 1) presented with symptoms versus 45 patients (80%) over the age of 50 years (group 2), *P* equal to .008. The 1st symptom experienced by the patient, as reported to the initial health care provider, is outlined in [Table 2](#). There were no significant differences between the overall constellations of presenting symptoms; rectal bleeding was the most common presenting symptom in both groups.

Overall, patients in group 1 had symptoms much longer time before presenting to a physician and were referred later to a specialist than the patients in group 2. The interval from symptom onset to initial presentation to a health care provider was 121 days in group 1 compared with 21 days in group 2 (*P* < .0001). The time from presentation to initial physician to referral occurred at 10 days in group 1 compared with 7 days in group 2 (*P* = .05). Overall, the

Table 1 Patient demographics

| Patient attribute | Under 50 y (n = 56) | Over 50 y (n = 56) |
|---------------------|------------------------|-----------------------|
| Age, y | | |
| Median | 45 | 64 |
| Interquartile range | 39–47 | 58–73 |
| Male sex, n (%) | 37 (66.1) | 36 (64.3) |
| State, n (%) | | |
| Vermont | 45 (80.4) | 40 (71.4) |
| New York | 11 (19.6) | 16 (28.6) |
| FmHx of CRC, n (%) | 11 (19.6) | 11 (19.6) |

CRC = colon and rectal cancer; FmHx, family history.

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