Colorectal cancer: are the “young” being overlooked?

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Abstract

BACKGROUND: Colorectal cancer (CRC) is increasing in young patients. We aimed to assess the trends of CRC and its corresponding clinical presentation in the young.

METHODS: Cancer registry patients were divided into 3 groups according to age: <50, 50–75, and >75 years. Charts were reviewed for average-risk patients <50 years of age to assess clinicopathological data.

RESULTS: We identified 3,599 patients between 1982 and 2010. Patients aged <50 years increased from 6.8% in (1982–1990) to 8.5% in (2000–2010) with a decrease in the 50–75-year age group from 45.5% to 43.4% (P = .03). One hundred eighty-eight patients were <50 years of age at the time of diagnosis. None had screening tests. Eighty-four percent had symptoms including rectal bleeding (76.5%), abdominal pain (58%), and an altered bowel pattern (71%). Twenty-one percent had symptoms for >6 months before diagnosis. Forty percent had stage III and 20% stage IV disease. This is unlike the 50–75-year age group in which the majority of patients had stage I disease.

CONCLUSIONS: Young CRC patients are mostly symptomatic. Advanced disease at presentation could be caused by a delay in investigating these patients. Colonoscopy should be offered early to young patients presenting with warning symptoms.

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Colorectal cancer (CRC) is the third most frequently diagnosed cancer and the second leading cause of cancer-related deaths in the United States. An estimated 143,460 men and women will be diagnosed with colorectal cancer in the United States in 2012, and of those an estimated 51,690 will die in 2012.

The United States Preventive Services Task Force recommendations on colorectal screening were published in 2008 and recommend screening for CRC using fecal occult blood testing, sigmoidoscopy, or colonoscopy in adults beginning at age 50 years (<45 years of age in black men) and continuing until 75 years old. Epidemiologic studies suggest that the incidence of CRC may be increasing in those younger than 50 years. Young patients with genetic risk factors like familial adenomatosis polyposis, hereditary nonpolyposis CRC, or inflammatory bowel disease have been shown to have decreased mortality from CRC with effective early screening.

Our purpose was to assess the trends of CRC in a community hospital. Furthermore, we aimed to determine the adequacy of the current screening guidelines. We also attempted to identify early clinical symptoms at presentation for CRC in patients <50 years with no predisposing genetic risk factors or inflammatory bowel disease.

Methods

We performed a retrospective review of all cases of CRC from the Providence Hospital tumor registry. This was

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performed after institutional review board approval had been obtained. The cancer registry has information on all CRC cases diagnosed or treated at Providence Hospital, Southfield, MI, between 1982 and 2010. We identified 3,599 patients with a diagnosis of CRC from the registry database. Information on age at diagnosis, sex of the patient, tumor location, and stage of disease were collected. The data were analyzed after dividing them into 3 time intervals: 1982 to 1990, 1991 to 2000, and 2001 to 2010. Patients were further divided into 3 age groups (ie, <50 years, 50–75 years, and >75 years) to evaluate whether there were any changes in the age distribution, location of tumor, and stage distribution during the examined intervals. Furthermore, the charts of patients younger than 50 years and with a negative family history were analyzed to identify clinical risk factors for colon cancer. Patients with inflammatory bowel disease were excluded. Information was collected on clinical and pathological features of these patients.

Statistics

Data were summarized using frequencies and percentages for all categoric variables. We determined the differences in the different groups of patients using the chi-square test for categoric variables and the t test for continuous variables. \( P < .05 \) was considered to be statistically significant.

Results

The cancer registry identified 3,599 patients with CRC. The percent of patients with colorectal cancer aged <50 years increased from 6.8% (1982–1990) to 8.5% (2000–2010) with a decrease in those aged between 50 and 75 years from 45.5% to 43.4% \((P = .03)\). Patients older than 75 years of age comprised 47% of all patients with CRC cancer in the first time interval (1982–1990); this increased to 52% in 1991–2000 and decreased to 48% in 2001–2010. We identified 283 patients who were younger than 50 years of age at diagnosis. After excluding patients with a family history of CRC or inflammatory bowel disease, 188 patients were identified with a diagnosis of CRC at age <50 years. Clinical data were available for 79 patients. The mean age at diagnosis was 43 years. The majority of these patients (85%) were symptomatic at presentation. Clinical features in symptomatic patients included rectal bleeding (76.5%), abdominal pain (58%), a change in bowel pattern (71%), melena (9.3%), weight loss (27%), and nausea and vomiting (25%). Fourteen patients (21%) had symptoms for more than 6 months before diagnosis (Fig. 1A). Patients were also evaluated for findings of anemia (58%), a positive guaiac test (33%), the presence of an abdominal mass (16%), and the existence of a rectal mass (25%). None of the patients under 50 years of age had undergone a screening colonoscopy. The demographics and clinicopathological data of this group based on colonic or rectal cancer are shown in Table 1. The most common site of the tumor was equally distributed between the left and right colon (28 [35.4%]). Most patients had stage III (40%) or stage IV (20%) disease. Four patients had synchronous lesions. Mucinous and signet ring cell histology was seen in 7.4% and 1.5%. Fifty patients were alive at the end of this study. In comparison, in the age groups 50 to 75 years and >75 years, more patients had early stage disease (Fig. 1B).

Comments

The United States Preventive Services Task Force (USPSTF) guidelines from 2008 recommend screening for CRC using fecal occult blood testing, sigmoidoscopy, or colonoscopy in adults beginning at 50 years of age and continuing 75 years of age.3 In terms of screening programs, annual fecal occult blood testing has been shown by randomized controlled trials to actually decrease CRC-specific mortality,6 but it is limited in its ability to identify premalignant lesions. Flexible sigmoidoscopy may identify only 50% to 80% of advanced adenomas or CRC. However, colonoscopy has the highest specificity and sensitivity and can be used not only for screening but also for diagnosis and treatment of lesions throughout the colon.7

Failing to screen patients younger than 50 years and over 75 years of age would possibly miss 57% of patients diagnosed with CRC from 1982 to 2010 in our system. Forty-nine percent of these patients were older than 75 years of age. Screening patients older than 75 years of age with previous negative screening has been shown to have a minimal benefit compared with the resources required.7 Furthermore, the risks associated with screening have to be considered. Colonoscopy is considered the reference standard against which other screening modalities for CRC are compared. Other positive screening test results require colonoscopy regardless of the screening test used. Although it is the most effective modality for screening, colonoscopy also has the highest risk of complications. These include perforation, bleeding, and even death in an otherwise asymptomatic population.8 Therefore, USPSTF guidelines to continue screening in individual patients older than 75 years of age may be apt especially because the performance status of the majority of patients older than 75 years may preclude them from surgery or chemotherapy if they are diagnosed with CRC. Current screening guidelines would have missed a diagnosis of CRC in 8% of patients younger than 50 years. The USPSTF guidelines were based on reports by investigators using 2 CRC microsimulation models evaluating different screening strategies to standard populations of adults in the United States. These reports showed that screening strategies that began at 50 years of age were the most efficient in terms of life years gained.7 However, one of the microsimulation models showed favorable results with strategies to begin screening
at 40 years of age, but the investigators concluded that the evidence for prevalence of adenomas at age 40 is weak.

In this study, we have shown an increase in the incidence of CRC in young patients. This is consistent with the previous report by Cooley et al,\textsuperscript{4} who found that colorectal resection for cancer increased in patients younger than 50 years from 11.8% to 13.3% from 1998 to 2005. Therefore, consideration should be given to extend screening to patients aged younger than 50 years. The locations of the tumors in our series were equally distributed between the right and left colon, which again underlines the importance of total colonic evaluation. It is of interest that in this study the incidence of CRC in those aged over 75 years actually decreased from 1991 to 2010. Additionally, even in the 50- to 75-years age group, the group with the highest incidence of CRC, fewer patients had advanced disease. This probably is a reflection of the advantage of screening and early diagnosis. Patients younger than 50 years are most likely to be suitable for treatment among the three age groups in our study. Moreover, this group includes the most productive section of the society in terms of contribution to the workforce. In deference to the rising incidence of CRC and the factors mentioned previously, earlier routine screening is likely to be the most beneficial for patients younger than 50 years of age and should be reconsidered in future guidelines.

None of the patients aged younger than 50 years in our study had undergone a screening colonoscopy. We aimed to identify clinical risk factors in this population with no history of high-risk genetic predisposition or inflammatory bowel disease. The majority of the patients younger than 50 years of age were symptomatic. Colonic cancer was more prevalent than rectal cancer. The most common symptoms were rectal bleeding, altered bowel movements, and abdominal pain. This is similar to the review of 55 articles by O’Connell et al\textsuperscript{9}; they found that the 2 most common

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**Figure 1**  (A) The duration of symptoms in months (along the y-axis) in patients with symptoms (along the x-axis) for longer than 6 months before diagnosis. (B) Stage distribution in the following age groups: <50 years, 50 to 75 years, and >75 years.
symptoms in patients <40 years of age were rectal bleeding (46%) and abdominal pain (55%). Dozois et al. showed in their study of 1,925 young-onset CRC patients with no known genetic predisposition that 86% patients were asymptomatic, with the most likely symptoms being rectal bleeding (51%), an altered bowel habit (18%), and abdominal pain (32%). Unlike their population, which was from a tertiary referral–based population, our study population from a community setting is more consistent with the general population of the United States. A higher percentage of younger patients had advanced disease at presentation (ie, stage III [40%] and stage IV [20%]). Similar to our study, Dozois et al. found a higher percentage of stage III (32%) and stage IV (34%) disease. In comparison, the older patients presented with more early-stage disease. Our study shows the same pattern with older patients presenting with more stage I and stage II disease than later stages. This was also consistent with a study using the Surveillance, Epidemiology and End Results (SEER) database, which showed that younger patients present with more advanced disease compared with older patients. One potential reason for less advanced disease in the older populations could be a result of the advantages of screening and early diagnosis. Conversely, advanced disease could be a reflection of a delayed diagnosis in younger patients. Although a limitation of this study is that medical information was not available on all the patients younger than 50 years, we do note a delay in diagnosis of more than 6 months in 21% of our symptomatic patients. The individual reasons for this delay cannot be assessed because of the retrospective nature of this study and the limited data available. However, studies have shown that physician-related factors play an important role in the delayed diagnosis of CRC. These authors cite the most common error was the attribution of benign etiology such as bleeding hemorrhoids to a clinical presentation of rectal bleeding or anemia without a complete colonic evaluation, leading to delays in diagnosis. This bias was more prevalent in patients younger than 50 years old. A delay in the diagnosis of young patients could be caused by a delay in referral of these patients for total colonic evaluation. Patient-related factors such as ignorance of symptoms, a lack of access, and patient denial also likely to contribute to a delayed diagnosis.

The current study is limited by its retrospective nature. Information on clinical presentation, investigations, and modality of diagnosis were not available in the tumor registry database. A review of the patients’ charts was performed, but clinical information was inadequate in some of the patients from the early years. This study was also based in the suburbs of Detroit, which has over the decades seen a shift in its population. However, because race was not recorded in the admission data, we could not make any conclusions of increasing incidence in a particular population group. The majority of the patients in the registry had insurance. Therefore, the delays in diagnosis in young patients were unlikely to be caused by financial constraints.

This study showed that the incidence of CRC is increasing in young patients. Moreover, patients younger than 50 years of age with CRC, who are otherwise “average risk” are often symptomatic and present with more advanced disease. Future studies with larger databases using genomic hybridization may be required to be able to selectively choose which patients younger than 50 years of age with no currently known genetic predisposition would benefit from selective surveillance.

## Conclusion

An increase in the incidence of CRC has been noted in patients younger than 50 years, whereas a decrease has been seen in patients between 50 and 75 years, highlighting the effectiveness of routine screening. Moreover, most patients younger than 50 years were symptomatic. This highlights the need to maintain a high level of suspicion for malignancy and pursue a complete investigation early on during the course of presentation.

## References

Discussion

William C. Cirocco, M.D. (Grosse Pointe, MI): The authors have exposed an alleged defect in the published screening guidelines for CRC; that is, whether age over 50 years should be the determinant for screening for CRC in an average risk population. There is strong evidence to support current screening guidelines; however, for those of us who treat young patients in their 20s and 30s who present with typically advanced stage colorectal cancer with inherently poor prognosis, the screening strategy seems woefully inadequate. Given the political and financial upheaval in the Detroit metropolitan area over the past 30 years with population shifts mostly out of the city, has there been a change in demographics in your hospital’s catchment area that might explain your findings? Is there less CRC in the older age groups simply because this age group has shrunk in relation to younger age groups? Has there been a change in other demographics such as race? Many published guidelines have already decreased the age of screening for CRC (eg, in black men to 45 years of age).

Deepa Taggarshe, M.D. (Southfield, MI): Regarding the question on demographics, we tried to go back and look at our database to see if there was any information on demographics, especially with regard to race. As you know, it is very sensitive information, and it is only entered in the database if the patient reveals it. What surprised us was that it was either labeled as unknown or patients refused to divulge their race, and, hence, we could not come with any figures as to how much of a population is black and what it was in the different age groups. For our hospital, up until about a few years back, most of the population was insured, so most of these were insured patients.

Dr Margo C. Shoup, M.D. (Maywood, IL): What percentage of your patients who have these questionable symptoms for CRC actually have CRC?

Dr Taggarshe: It probably would be useful, but this study was limited to just our registry. Therefore, we do not have information as to how many young patients who present with those symptoms actually tend to have CRC. I think we will need to look at all patients who present to the hospital looking at all the physician databases before we come up with the figures for that.