Colorectal Cancer In Patients Aged Less Than 40 Years

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***Abstract*: Colorectal cancer is commonly found in adults aged > 50 years. The peak frequency occurs in the 6th to 7th decades and gradually declines in the 8th decade. This cancer is very unusual in young adults, the occurrence ranging from 1 to 17 percent of all cases of colon cancer.**

The prognosis for this disease in the young adult is reported to be unfavorable. This may be due to delayed diagnoses and a higher frequency of mucin-producing tumors and advanced stage of the disease. This article presents a case report and review of the literature and alerts the primary care physician to the possibility of serious disease in young adults who may present with protracted abdominal symptoms. Age should not be a barrier in the application of diagnostic tools. The duration and degree of symptoms should prompt early investigation. (J Am Bd Fam Pract 1990; 3:54-9.)

Colorectal cancer (CRC) is the commonest malignancy of the gastrointestinal tract in Western societies. Cancer of the colon and rectum is more commonly found in adults aged > 50 years. The peak frequency occurs in the 6th to 7th decades and gradually declines in the 8th decade. This cancer is rare in those < 15 years and unusual in the 15- to 19-year-old group. The annual age specific incidence rates for large bowel cancer are 0.6 per million in the < 15-year-old group and 4.5 per million in the 15- to 19-year-old group.[1] The incidence of this cancer in persons aged < 40 years ranges from 1 to 17 percent of all cases of colon cancer.[2-25]

Of special concern is the unfavorable prognosis of this cancer that is reported in adults aged < 40 years. Their lower survival rate may be due to delayed entry into the health care system, delayed diagnosis as a result of a low index of suspicion for colon cancer in this age group, a higher rate of mucin-producing tumors, and advanced stage of disease (Duke's C and D classification).

Although this cancer does not occur frequently in this age group, primary care physicians should be alert to this possibility early in the management of young adults who have protracted abdominal symptoms. This is of particular importance in the era of flexible sigmoidoscopy and limited colonoscopy. Age should not be a barrier in the early application of diagnostic tools. Duration and degree of symptoms should prompt early investigation by the application of modern diagnostic methods, which include air contrast barium enema, colonoscopy, flexible sigmoidoscopy, ultrasonography, and computed tomography. This article reviews the literature about colon cancer in young adults and a brief case report is presented.

Case Report

A 35-year-old black man had lost 30 pounds of weight over a 5-month period. He had melenotic stools off and on for several years, a recent increase in the frequency of stools, and a decrease in the stool caliber. He also reported episodes of left lower quadrant abdominal pain for 2 months. He had worked as a sanitary assistant in Florida, and later moved to Georgia where he worked for a lumber company. His medical history disclosed alcohol and marijuana abuse for several years.

Flexible sigmoidoscopy showed a clear constricting lesion that was 30 centimeters from the anal verge. Biopsies were performed, and a pathologist reported these as adenomatous tissue with severe dysplasia, representing a malignant polyp or invasive carcinoma.

The patient underwent laparotomy and a partial left colectomy with a low anterior ileopelvic anastomosis. The tissues removed surgically were reported as well-differentiated adenocarcinoma extending through the muscularis propria and involving subserosal fat. There was no evidence of meta-

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static cancer in 0/11 lymph nodes (Duke's B). The main mass was seen as a fungating tumor situated on the mesenteric side of the colon and measuring 7.5 cm. He recovered from surgery and has been monitored regularly; he is in good health, gaining more than 50 pounds of body weight.

Review of Literature

Table 1 presents a review of 24 articles of colon cancer in young adults. Seventeen authors reviewed patients aged < 40 years, 5 authors studied patients aged < 30 years, and 2 authors studied patients aged < 35 years. The total number of patients in these studies was 2578. Gender distribution was reported in 18 studies. The available data showed the rate of colon cancer to be almost equal for the two sexes (men, 1035; women, 1002). The percentage of colorectal cancer in adults aged < 40 years when compared with the total number of colon cancer cases that were treated at the study centers varies from 0.4 percent to 17.1 percent.[2-25] If the extremes are excluded, the range is 0.86 percent to 13.2 percent (average rate is 4.8 percent).

Delay in Diagnosis

Delay in the diagnosis of a disease can be due to the following factors:

1. The patient delays obtaining health care.
2. The physician does not have a high suspicion for the disease in that patient.
3. Medical care is unavailable.

Adults aged < 40 years are, generally speaking, a healthy group, and disease (especially cancer) is often not suspected. However, our literature review shows varying periods of delay (Table 1) from the approximate time of symptoms to the presentation to a physician and actual diagnosis. The range is from a few days to 9 years. The average delay is 6 months.

Symptoms

Fourteen of the 24 authors listed the symptoms in order of frequency (Table 2). Rectal bleeding (42.8 percent), abdominal pain (51 percent), weight loss (35 percent), and change in bowel habits (constipation or diarrhea) (35 percent) were the four most common symptoms presented.

5-Year Survival

The 5-year survival data are fairly good indicators of the effectiveness of medical care. The 5-year survival data of young adults with colon cancer were reported by 19 authors (Table 1). The range was 16.8 percent to 59 percent. Although there are variables that affect these figures, broadly speaking, the 5-year survival rate has not improved dramatically despite advanced technology. This reflects vast differences inherent in types of studies done at different times and places. The average 5-year survival was 33 percent (Table 3).

Twenty-two authors specified the stages of disease found in 2578 patients. The majority of patients were found to have disease classified Duke's C and D[26] (Tables 3 and 4).

Pathology

In cancer of the colon, the pathological tissue type is important for prognosis. Patients with mucin-producing tumors and poorly differentiated tumors appear to have a worse prognosis.[27-29] The average percentage of tumors that were mucin-producing was 28 percent; range = 3 percent[4] to 60 percent.[14] Patients with poorly differentiated tumors comprised 25 percent of the patients studied (range = 12.5 percent[8] to 48 percent.[16]

Discussion

There are few published reports about the rate of colon cancer in adults aged < 40 years. This is understandable because of the overall low rate of this cancer in this group.[2-25]

Prevalence of a disease is the number of cases that exists in a population at a given point in time. Prevalence rates for colon cancer are not available for any age group; therefore, it would be impossible to assess or even to guess the figure for this cancer in the young adult. However, the incidence of colon cancer in the general population in the U.S. is 41/100,000 population/year. Estimates for 1989 predict that there will be approximately 151,000 new cases of colorectal cancer, including all age groups.[28]

According to the SEER program, the incidence of colon cancer, including all age groups, was 38.5 per 100,000 whites and 42.9 per 100,000 blacks (1983). The average combined incidence is 40.7 per 100,000.[29]

Table 1. Studies of Colorectal Cancer in Young Adults.

Author	Total Patients	Study Patients	Ages	% Occurrence	Men	Women	5-Year Survival %	M* %	PD† %	Delay
Ezzo[2] 1958	840	33	< 40	4	20	13	21	–	–	Range 4–8 months
Hall[3] 1961	718	50	16–40	6.9	28	22	–	10	35	Av. 6 months Range 2–24 months
Mayo[4] 1963	–	126	< 30	–	72	54	54	3	25	80% < 1 year Range 1–120 months
Coffey[5] 1964	–	86	< 41	5.7	–	–	–	25	–	Av. 5.5 months
Miller[6] 1967	3805	33	< 29	0.86	21	12	–	50	–	–
Rosato[7] 1969	1084	35	< 35	3.2	18	17	40	–	–	Av. 5.5 months Range 2 weeks– 36 months
Recalde[8] 1974	2156	40	< 35	1.9	21	19	17.5	30	12.5	> 2 years
Sanfelippo[9] 1974	–	118	< 40	–	–	–	39	–	–	32% > 6 months
Howard[10] 1975	801	137	< 39	17.1	101	36	16.8	24	–	Av. 6.5 months
Walton[11] 1976	–	70	< 40	4.5	32	38	30	16	–	Av. 8.5 months
Scarpa[12] 1976	–	47	< 40	–	21	26	–	–	–	1–6 months 53% 6–12 months 17% > 12 months 17%
Vezzoni[13] 1977	–	28	< 30	–	11	17	28.6	–	–	1–6 months, 76%
Simstein[14] 1978	–	41	< 40	13.2	24	17	24	60	–	< 90 days 29% > 90 days 59%
Bulow[15] 1980	–	951	< 40	2.2	447	504	–	32	–	–
Bedikian[16] 1981	2609	183	< 40	7.0	–	–	25	33	48	Av. 3 months > 1 year 10%
Martin[17] 1981	–	37	18–40	3.5	–	–	56.8	10.8	18.9	Av. 10.4 months
Ohman[18] 1982	1061	48	< 40	4.5	–	–	33	–	–	–
Pitluk[19] 1983	862	31	< 31	3.6	14	17	22	23	26	Av. 6.4 months
Mosely[20] 1979	–	14	< 30	4.7	5	9	21	43	–	–
Bergstrand[21] 1980	6800	27	< 30	0.4	16	11	40.7	–	–	Range 9 days– 30 months
Beckman[22] 1984	–	69	20–39	–	–	–	59	28	–	–
Jarvinen[23] 1984	–	249	< 40	2.5	126	123	41.4	–	–	Av. 8.6 months
Behbehani[24] 1985	–	47	< 40	10.6	18	19	23	21	26	Av. 12 weeks
Domergue[25] 1988	2600	78	< 40	3.6	40	38	30	20	21.5	< 6 months 46.5% > 6 months 38% > 1 year 15%

*M = Mucin-producing tumors.

†PD = Poorly differentiated tumors.

The occurrence of colon cancer in persons aged < 40 years in this review is 0.4 percent to 17.1 percent of the total number of cases of colon cancer.[2-25] On this basis, there are likely to be between 1500 to 25,700 new cases of colon cancer per year in those aged < 40 years. There does not seem to be any sexual predominance; the disease occurs almost equally in both men and women.

There is reason to believe that there is a significant delay between the onset of symptoms and the diagnosis of colon cancer in patients aged < 40 years. In the analysis of such data, it becomes difficult to arrive at an average delay. The patient presented here is typical because he did not seek medical care until his symptoms were extreme. However, it would seem, from studying the list of symptoms, that in the presence of any one of the four most common symptoms, aggressive diagnostic measures should be pursued to detect serious disease at an early stage (Table 2). The locations of the tumors are listed in Table 5. Most occur in the rectosigmoid area (57.8 percent). An early intervention by flexible sigmoidoscopy and air contrast barium enema would detect a significant number of these lesions. The flexible sigmoidoscope would possibly show lesions in almost 70 percent of these patients (11.5 percent + 57.8 percent). The 60–65cm fiberoptic scope is the one used by most primary care physicians.[30-32]

In a young patient with any of the four most common symptoms (abdominal pain, rectal bleed-

Table 2. Percent of Patients by Most Common Symptoms.

Study	Rectal Bleeding %	Abdominal Pain %	Weight Loss %	Constipation or Diarrhea %
Ezzo[2]	57.6	51.5	48.5	48.5
Hall[3]	52.0	74.0	–	40.0
Coffey[5]	62.0	86.0	–	–
Miller[6]	24.0	60.6	–	24.0
Rosato[7]	20.0	31.4	45.7	28.6
Howard[10]	50.0	68.0	34.0	35.0
Walton[11]	54.0	74.0	28.0	40.0
Scarpa[12]	59.6	25.5	19.0	19.0
Vezzoni[13]	28.0	18.0	3.5	18.0
Simstein[14]	27.0	53.6	27.0	31.7
Bedikian[16]	38.0	65.0	59.0	37.0
Martin[17]	38.0	62.0	54.0	54.0
Pitluk[19]	32.0	58.0	29.0	32.0
Mosely[20]	64.0	21.0	–	64.0
Domergue[25]	35.0	15.0	–	12.0
Average	42.8	51.0	35.0	35.0

ing, weight loss, change in bowel habits), the decision to perform colonoscopy, flexible sigmoidoscopy, or barium enema will need to be made individually on the basis of clinical presentation and suspicion. There are potential blind spots in the colon where lesions can be missed by all diagnostic tools.[30-41] The barium enema is reported to miss up to 10–20 percent of lesions; this is especially so for small lesions.[36-41] Colonoscopy, also, is likely to miss some of these.[36-41] A patient who has symptoms despite a negative barium enema and flexible sigmoidoscopy would benefit from a colonoscopy, especially for small lesions and lesions in the ascending and transverse colon.

Table 3. 5-Year Survival Data and Duke's Staging.

	5-Year Survival	% Duke's C and D	% Mucin and PD*
5-Year Survival < 30%			
Recalde[8]	18%	84%	43%
Howard[10]	17%	79%	24%
Walton[11]	30%	69%	16%
Vezzoni[13]	29%	57%	–
Simstein[14]	24%	78%	60%
Bedikian[16]	25%	77%	81%
Pitluk[19]	22%	67%	49%
Behbehani[24]	23%	94%	47%
Domergue[25]	30%	80%	42%
Average	24%	76%	45%
5-Year Survival > 30%			
Mayo[4]	54%	65%	28%
Martin[17]	57%	51%	30%
Ohman[18]	33%	66%	–
Bergstrand[21]	41%	59%	–
Beckman[22]	59%	67%	28%
Jarvinen[23]	41%	53%	–
Average	48%	60%	29%

*PD = poorly differentiated.

It would appear that patients reported in this review have two major factors that account for their poor prognosis. One is the greater rate of mucinous and poorly differentiated tumors, and the other is a more advanced state of disease (Duke's C and D) at the time of diagnosis. The combined effect of these two factors probably gives rise to a worse 5-year survival rate for this age group; i.e., 33 percent versus 49–56 percent for the general population.

Table 4. Percent of Patients by Duke's Staging.

Study	A %	B %	C %	D %
Hall[3]	24		50	26
Mayo[4]	3	22	65	–
Coffey[5]	–	–	50	56
Miller[6]	0	3	37	60
Recalde[8]	10.5	5.3	31.6	52.6
Sanfelippo[9]	–	–	–	–
Howard[10]	4	17	33	46
Walton[11]	2.8	28.5	31.5	37.2
Scarpa[12]	6.3	46.9	18.8	28.1
Vezzoni[13]	0	43	57	–
Simstein[14]	–	–	78	
Bulow[15]	15	25	35	25
Bedikian[16]	–	23.5	36.7	40
Martin[17]	16.2	35	21.6	29
Ohman[18]	22	12	66	–
Pitluk[19]	0	33	22	45
Mosely[20]	7.1	14.2	42.9	35.7
Bergstrand[21]	3.7	29.6	18.5	40.7
Beckman[22]	14	16	38	29
Jarvinen[23]	17.7	29.3	18.9	34.1
Behbehani[24]	2.1	–	55.3	38.3
Domergue[25]	6	13	53	27

Conclusion

This review shows that although colorectal cancer is rare in persons aged < 40 years, a higher degree of suspicion needs to be maintained when there is rectal bleeding, abdominal pain, weight loss, and any change in bowel habits. In the presence of undue prolongation of symptoms, these patients may need to have an aggressive diagnostic evaluation that includes flexible sigmoidoscopy and an air contrast barium enema or colonoscopy. This age

Table 5. Location of Tumors.

Study	AC* %	TC* %	DC* %	RS* %
Ezzo[2]	6.0	15.0	0	76.0
Hall[3]	28.0	10.0	12.0	59.0
Mayo[4]	18.4	11.2	7.1	63.0
Miller[6]	19.0	18.1	16.0	40.0
Rosato[7]	13.3	10.0	16.7	60.0
Recalde[8]	17.5	7.5	12.5	62.5
Howard[10]	12.0	14.0	10.0	61.0
Walton[11]	20.5	5.1	17.9	56.4
Scarpa[12]	26.5	4.0	4.0	65.5
Vezzoni[13]	7.4	3.7	14.8	74.0
Simstein[14]	19.0	26.0	7.3	55.0
Mosely[20]	21.0	14.0	7.0	57.0
Bulow[15]	15.0	9.0	9.0	64.4
Bedikian[16]	27.9	13.1	14.7	44.3
Martin[17]	32.5	7.5	20.0	40.0
Ohman[18]	19.0	21.0	6.0	44.0
Pitluk[19]	25.8	9.7	3.2	61.3
Bergstrand†[21]	18.5	3.7	18.5	77.0
Beckman[22]	13.0	10.1	10.1	63.8
Jarvinen[23]	26.5	6.0	12.4	49.4
Behbehani[24]	21.0	21.0	19.0	44.0
Domergue[25]	23.0	2.6	19.0	55.0
Averages	19.7	11.1	11.5	57.8

*AC (cecum, ascending colon and hepatic flexure), TC (transverse colon), DC (splenic flexure and descending colon), RS (rectum and sigmoid).
†Some patients had multiple primary tumors.

group is not covered by present guidelines for colorectal cancer screening; hence, younger patients do not get rectal examinations or flexible sigmoidoscopy unless there is a positive family history or they volunteer for the procedure. An early diagnostic intervention would probably improve the prognosis for these patients.

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