ORIGINAL COMMUNICATIONS

COLON CANCER IN BLACKS: A DISEASE WITH A WORSENING PROGNOSIS

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Despite the fact that a significant national effort has been made over the past 10 years to improve the early detection and treatment of colorectal cancer, blacks have not had any change in their prognosis compared to whites, and their survival rate appears to be independent of stage at the time of diagnosis. The disease incidence is practically the same for both races, 49 per 100 000. We reviewed all patients with colorectal cancer in our Tumor Registry over a 10-year period to determine whether the experience at an all-black institution with a black patient base for much of its history would help clarify these crucial questions. There were 118 cases (73 women/45 men), and the mean age was 68 years (range: 29 to 93). The most common signs and symptoms were gross bleeding (34%) and abdominal pain (30%), with most patients presenting with a combination of symptoms. Remarkably, none were symptom-free. Of the 96 patients who were staged surgically and pathologically, 68 (71%) were beyond Duke's B staging at the time of diagnosis and surgery. The overall 5-year survival rate was 47%, significantly related to stage of disease at diagnosis ($P < .001$).

We concluded that blacks have not shared in the progress made in early diagnosis and treatment of colon cancer, and that special attention should be given to developing screening and surveillance methodology targeted specifically at blacks.

Key words • colorectal cancer • Duke's B staging

Despite the overall improvement in survival for colorectal cancer, there is still evidence of racial disparity which appears to be increasing.[1] Colon cancer data collected and reviewed between 1973 and 1981 from the Surveillance, Epidemiology, and End Results (SEER) Program revealed the following results:

1. Whites showed increased survival during the last decade for each year following diagnosis of colon cancer and blacks experienced a largely unchanged survival pattern.
2. Differences in survival between blacks and whites were independent of stage at time of diagnosis.
3. Differences in the occurrences of histologic tumor types appeared to account for some of the racial differences of survival experiences.[2]

From 1978 to 1981, the incidence of colorectal cancer in whites was 49.6 per 100 000 compared to 48.9

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TABLE 1. DEMOGRAPHIC DATA ON PATIENTS WITH COLORECTAL CANCER (N = 118)

Age Group	Males	Females
≤39	2	2
40-49	2	4
50-59	8	6
60-69	16	22
70-79	14	16
80-89	2	12
90+	1	3
Survival		
<5 years	23	38
≥5 years	22	29

TABLE 2. SIGNS AND SYMPTOMS OF COLORECTAL CANCER PATIENTS FROM 1971 TO 1982 (N = 118)

Signs/Symptoms	Frequency*	Percent
Abdominal pain	35	30
Gross bleeding	34	29
Weight loss	27	23
Constipation	19	16
Anemia	15	13
Obstruction	4	3
Other	56†	47

*More than one per case allowed
†May not be related to colorectal cancer

per 100 000 for blacks, while the 5-year survival rate for colorectal cancer for whites was 51% versus 44% for blacks.[2] Although a reasonable explanation of these discrepancies continues to be lack of access to the health care system and a certain element of patient delay, these data suggest that there may be an environmental or biological basis for the unchanged prognosis in blacks. The cause of colon cancer remains to be determined, but dietary factors have been implicated. Therefore, it may be possible that the lifelong habit of a low-fiber, high-fat diet may be an important etiologic factor in blacks.

Finally, the screening process may not be applicable to the majority of blacks because of lack of awareness and word of mouth "hearsay" about the pain and discomfort associated with screening procedures, such as colonscopy. We reviewed our experience with this disease to determine if these demographic observations were similar in an all black institution with patients from all socioeconomic levels.

TABLE 3. DISTRIBUTION OF COLORECTAL CANCER BY ANATOMICAL SITES: OBSERVED VERSUS EXPECTED PERCENTAGES

Site	Percent Observed	Percent Expected*
Cecum and appendix	5	13
Ascending colon	11	9
Transverse colon	9	11
Descending colon	12	6
Sigmoid colon	28	24
Rectum and rectosigmoid junction	35	31

*Textbook of Medicine, 1984.

METHOD

All cases diagnosed as colorectal cancer between 1971 and 1981 were reviewed at a hospital tumor registry, in existence since 1949 under the supervision of one coordinator.

The following information was extracted from the records and compiled using a D-base Management System: demographic data, date and method of diagnosis, tumor type, location and stage, symptoms, treatment intervention, and follow-up. The cases were coded and analyzed by SAS statistical software applications.

RESULTS

The review of colon/rectal cancer cases from 1971 to 1982 resulted in 118 cases of primary colorectal cancer. All patients were black and 73 (62%) were women. The mean age was 68 years (range: 29 to 93) (Table 1).

Diagnoses were most frequently made by endoscopy with biopsy (44%) and barium enema (42%). The most common presenting symptoms were gross bleeding (34%) and abdominal pain (30%) (Table 2). Most patients had more than one sign or symptom at the time of diagnosis and none were symptom-free.

The anatomical distribution of disease in these patients varied from the expected distribution (Table 3). Five percent had cancer in the cecum; 12% in the descending colon.

Ninety-three (80%) of the tumors were adenocarcinomas and seven (6%) mucinous adenocarcinomas. Ninety-nine (84%) patients had surgical intervention with the following being the most frequently used procedures: segmental resection (2%), left hemicolectomy (15%), right hemicolectomy (15%), abdominal perineal resection (13%), and low anterior resection (7%). Chemotherapy was given to eight patients (7%), and radiation treatments to 11 (9%).

TABLE 4. FIVE–YEAR SURVIVAL BY STAGE: MALES AND FEMALES

Stage	Number of Cases	Five Year Survival	
		Males	Females
1	4	1	1
1b	2	1	1
2*	22	6	9
3	36	6	11
4	32	4	1

*Staging not available on 22 cases/Duke's B

TABLE 5. MEAN SURVIVAL IN MONTHS BY AGE GROUPS FOR MALES AND FEMALES

Age Group	Mean Survival (Months)	
	Males	Females
<39	7	7
40-49	35	20
50-59	43	105
60-69	67	57
70-79	87	75
80-89	7	45
90+	107	69

Of the 96 patients staged surgically and pathologically, 68 (71%) were beyond Duke's B (Table 4). The overall 5-year survival rate was 43%. Survival was significantly related to stage of disease with a *P*-value $< .001$. When analyzed by sex, a smaller proportion of women (43%) survived 5 years compared to the men (49%). Also, survival time for women was significantly related to stage, but significance was not demonstrated for men. Survival was not found to be statistically related to age; however, both men and women <50-years-old had mean survival times <5 years (Table 5).

DISCUSSION

Although the exact cause of colorectal cancer is unknown, many epidemiologists have made a strong correlation between the traditional low-fiber, high-protein, high-fat content diet consumed by people in the Western world.[3] There have been many observations of immigrant populations developing cancer profiles diametrically opposed to those of their native lands, after living in America for a number of years.

The hypothesis is that carcinogens are generated from the interaction of these dietary substrates and the colonic flora, and carcinogens have prolonged exposure to the colonic mucosa at a high concentration because of the slow transit time secondary to a low-fiber diet. There is experimental evidence that high-fiber, bran diets can lower the incidence of colon cancer in mice receiving 1,2-dimethyl hydrazine.[4] High fat diets also alter the intestinal flora resulting in more organisms capable of changing primary bile acids and 17-hydroxy compounds into carcinogens.[4] Blacks of all socioeconomic classes have consumed this potentially carcinogenic diet out of proportion to the general population for most of their existence in America. The dismal 5-year survival rate of 43% for this study is consistent with other studies during the same period.[2]

From 1971 to 1982, the standard of care for screening and diagnosis of colon cancer was serial guaiac testing, barium enema, and endoscopy with biopsy. As in the population at large, most colon lesions are left-sided, and strict adherence to surveillance protocols should increase detection of early colon cancer.

When comparing our site distribution against other reports in the literature, we had a slightly higher incidence of disease in the rectum. Perhaps this is more indirect evidence for the "diet theory" because the stool remains in the rectal vault for the longest period of time, relative to the remainder of colonic segments.[5-8]

Mucus secreting adenocarcinomas are associated with a worse prognosis in all races, occurring in 10-15% of colon cancers.[4] The incidence in our series was only 6%, and although our group was small, this does not appear to be the reason for the poor prognosis in blacks. The most significant finding in this study was that no patients were symptom-free. Some presented with complaints which were probably not related to the colon disease, but none of the colorectal cancers were incidental findings of cancer screenings. This explains our finding that 71% were beyond Duke's B at the time of diagnosis.

In summary, blacks continue to have a poor prognosis following a diagnosis of colorectal cancer compared to whites. Although changes in eating habits towards a high-fiber, low-fat diet may have a positive effect 25 years from now, immediate attention must be given to the large number of blacks who have and will develop this lesion in the interim. Blacks traditionally do not respond to hospital-based, mass screening programs, and an increasing number are becoming less active in other fabrics of their society which also offer screening programs, such as churches and community recreation halls. Therefore, the medical establishment must become more aggressive in marketing mass screening programs in a manner that is both appealing and acceptable to these constituents. The cost of caring

for these patients with far-advanced disease would be more than offset by early detection and treatment.

Acknowledgements

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Literature Cited

1. US Department of Health and Human Services. *Cancer Among Blacks.* National Cancer Institute; 1986:6.

2. *Office of Disease Prevention and Health Promotions, Disease Prevention/Health Promotion.* US Public Health Service. Palo Alto, California: Bull Publishing Company; 1988;207:253-265.

3. DeCosse JJ. Cancer of the colon and rectum. In: Holleb AI, ed. *The American Cancer Society Cancer Book—Prevention, Detection, Diagnosis, Treatment, Rehabilitation and Cure.* Garden City, NY: Doubleday and Co, Inc; 1986:347-361.

4. Goldberg SM, Nivatongs S, Rothenberger DA. Colon, Rectum and Anus. In: Schwartz S, Shires GT, Spence F, eds. *Principles of Surgery.* 5th ed. New York, NY: McGraw Hill; 1989:1270-1271.

5. Johnson H. Site-specific distribution of large-bowel adenomatous polyps. *Diseases of the Colon and Rectum.* 1988;31(4):258-260.

6. Johnson H. Anatomical distribution of colonic carcinomas. *Cancer.* 1986;58(4):997-1000.

7. Nagel S, Chung EB, Dewitty RL Jr, Leffall LD Jr. Colorectal cancer in young black patients. *J Natl Med Assoc.* 1988;80(1):37-40.

8. Silverberg BS, Lubera JA. Cancer statistics. *Ca-A Cancer Journal for Clinicians.* 1989;39(1)4.