Early Diagnosis of Colorectal Cancer

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In 1974, almost 100,000 Americans will develop cancer of the colon and rectum and approximately 48,000 will die of this disease. Only lung cancer kills more men and only breast cancer kills more women.

As in all cancers, early diagnosis is the key to higher cure rates and lower mortality. Unlike many cancers, however, the detection and localization of colorectal cancer at an early and even asymptomatic stage is possible with the tools already available: digital rectal examination, proctosigmoidoscopy and/or colonoscopy, barium enema with air contrast studies and guaiac testing for occult blood. These modalities combined with a high index of suspicion can, if applied judiciously, detect cancer at an early stage and achieve cure rates of up to 75-80 percent.

Clinical Manifestations

While detection of asymptomatic colorectal cancer is the ideal, in reality clinical manifestations most often alert the clinician to the possibility of cancer. (Table) The signs and symptoms of colorectal cancer differ depending on the location, size and stage of the disease but generally include abdominal pain or discomfort, blood in or on the stools and change in bowel habits.

Abdominal pain is the most common symptom of colon cancer. In right colon cancer, pain is vague, dull and annoying and may be confused with gall bladder disease or peptic ulcer. The characteristic feature of the pain is that it is uncharacteristic. In left colon cancer, pain is usually secondary to obstruction of the colon and produces what the patient often refers to as "gas" or "cramps." In patients with rectal cancer, pain is a late manifestation.

Rectal bleeding is another significant finding. In right colon cancer, blood is usually dark or mahogany red and mixed in the stools, while in lesions of the left colon and rectum, it is a brighter red and coats the surface of the stool. The passage of bloody mucus usually indicates cancer, polyps or, less commonly, ulcerative colitis.

Other clinical manifestations of right colon cancer include anemia—secondary to bleeding—and a palpable mass in the right lower quadrant of the abdomen. In left colon cancer, pain and bleeding are accompanied by a decrease in the caliber of stools, change in bowel habits and increased use of laxatives. A common complication of left colon cancer in the adult is acute large bowel obstruction, usually in the region of the sigmoid or rectosigmoid although other sites may be involved. These patients present with increasing abdominal distension, abdominal pain, vomiting and constipation progressing to obstipation. Cancer of the cecum or ileocecval valve must always be considered in older patients with symptoms of appendicitis or...
| Right Colon | Left Colon | Rectum |
|-------------|------------|--------|
| Vague, dull uncharacteristic pain | "gas" pain; "cramps" | Pain is a late feature |
| Dark or mahogany red blood mixed in the stool | Bright red blood coating surface of stool | Bright red blood coating surface of stool |
| Anemia | Decrease in caliber of stools | Sense of incomplete evacuation |
| Mass in right lower quadrant | Change in bowel habits; increased use of laxatives | Tenesmus |
| | Acute large bowel obstruction may occur causing progressive abdominal distention, pain, vomiting and constipation | |
low small bowel obstruction; emergency barium enema is indicated in these cases. (Figure.)

Signs and symptoms of rectal cancer, other than bright red bleeding, include a sense of incomplete evacuation and tenesmus. Cancer of the anus also produces bright red bleeding and local discomfort and may be confused with hemorrhoids. Never ascribe rectal bleeding in adults to hemorrhoids—even in those patients with a past history—without first searching for additional lesions by proctosigmoidoscopy and/or colonoscopy. Enlarged inguinal nodes, secondary to metastases, may also be found in patients with anal cancer.1-3

Patients with suspicious findings must be thoroughly examined for signs of metastatic cancer. These include (1) supraventricular adenopathy (Virchow’s nodes); (2) an enlarged nodular liver; (3) ascites; (4) Blumer’s rectal shelf; (5) bilateral ovarian tumors (Krukenberg tumors); and (6) umbilical metastases.

Diagnostic Methods

Since some rectal lesions are within reach of the examining finger, digital rectal examination, including inspection of the anal area, is essential for diagnosis. Approximately 12-15 percent of all colorectal cancers may be detected by this technique. To avoid overlooking palpable tumors, the examination should not be confined to the area of the prostate but must include the entire circumference of the anorectal segment. Asking the patient to strain mildly will cause some high lesions to descend with the bowel wall and come in contact with the examining finger. (For an outline guide to performing a digital rectal examination as well as a description of the classic “cancer feel,” see “Close-up: Digital Rectal Examination,” in the March/April 1974 issue of CA—A Cancer Journal for Clinicians, pages 100-103.)

Proctosigmoidoscopy is also a vital diagnostic tool which can detect 60-65 percent of colorectal cancers if the terminal 25 cm. of the large bowel is visualized. It is recommended annually in asymptomatic patients over 45 years of age and is mandatory in patients with colorectal symptoms. Bolt notes that in a review of 18,335 proctosigmoidoscopies in asymptomatic patients, unsuspected cancers were consistently found in approximately one out of every 435 individuals. He also reports a five-year cure rate as high as 88 percent in asymptomatic patients, compared to 50 percent for those with symptoms.4 In another study, Gilbertsen points out that the removal of all benign polyps and adenomatous lesions detected by proctosigmoidoscopy sharply reduces the incidence of rectal cancer.5

Despite current misconceptions, a proctosigmoidoscopy can be quickly and safely performed with relative ease, even by physicians with little specialized training. Since 1948 more than 75,000 annual proctosigmoidoscopies have been performed by a wide variety of physicians at the Cancer Detection Study of the University of Minnesota. Only three perforations occurred; the patients were promptly treated and there were no deaths. Based on this information, Gilbertsen theorizes that a physician could perform five to 10 proctosigmoidoscopies a week for 25 to 50 years
and anticipate only one perforation or less. Thus, usual care must be exercised in performing any endoscopic procedure, but the implication that a proctosigmoidoscopy should only be performed by a specialist or physician with extensive training and experience does not appear warranted. (For detailed information on endoscopic examination, see “Close-up: Endoscopic Colon and Rectum Examinations,” in this issue of *Ca—A Cancer Journal for Clinicians.*

Barium enema examination is another essential technique in patients with colorectal symptoms. With the exception of emergency conditions such as acutely obstructing lesions which are revealed by barium enema alone, the addition of air contrast provides valuable diagnostic information. Air contrast is mandatory in patients with rectal bleeding. Careful X-ray search of the colon may detect many small or large lesions overlooked by palpation or endoscopy. However, lesions located in certain areas of the colon, particularly the flexures, may not be easily detected. A negative barium enema examination should be repeated when suspicious symptoms persist.

With the development of the fiberoptic colonoscope, the entire colonic lumen from the cecum to the anus can be directly examined in a very high percentage of patients. However, the safety and accuracy of this technique when applied on a large scale by physicians of varying skill and experience must still be determined. Wolff and Shinya have performed over 2,000 colonoscopies with insignificant morbidity and without mortality. They routinely use the 106 cm. colonoscope which reaches the transverse colon; the 186 cm. scope, which can be introduced deep into the cecum, is employed only when specifically indicated. According to Overholt, colonoscopy can successfully complement barium enema examination of the colon. Under direct visualization, small lesions previously missed by X-ray may be detected and suspicious lesions can be studied and biopsied.

The use of commercially available guaiac impregnated slides is a simple, inexpensive and esthetically acceptable method of testing the feces for blood. Patients are asked to prepare at home six stool slides from three consecutive daily bowel movements. (Two slides per day.) To increase the accuracy and discriminating ability of the stool analysis, Gregor believes that a special meat-free, high-residue diet should be implemented at least 24 hours before the first stool specimen is collected and then during the next three days. The diet should contain (a) no meat, fish or chicken; (b) plenty of vegetables, both raw and cooked, especially lettuce, spinach and corn; (c) plenty of fruit, especially prunes, grapes, plums and apples; (d) moderate amounts of peanuts and popcorn each day; and (e) “All-Bran” for the daily cereal. If any of these foods is known to cause serious diarrhea or severe abdominal pain, it should obviously not be eaten.

Another diagnostic technique which shows promise for the future is exfoliative cytology of the stool. Although early methods of studying the stool for malignant cells did not yield useful information, recent reports by Raskin prove that this method can detect col-
Figure. Diagnostic Guide for Asymptomatic Patients Over 40 Years of Age

Mandatory
- Occult blood test
- Digital Rectal examination
- Endoscopy (Proctosigmoidoscopy/Colonoscopy)

All 3 negative

Susicious lesion

Barium enema with air contrast

Biopsy

Cancer diagnosed

Repeat in 1-2 years

Benign

Appropriate therapy

Stools positive for blood, no lesion found

No lesion found, but persistent blood in stools

Repeat digital Rectal endoscopy and Barium enema

U stools positive for blood, no lesion found

I, Barium enema with air contrast

Biopsy

No lesion found, but persistent blood in stools

Repeat digital Rectal endoscopy and Barium enema

Figure-Diagnostic Guide for Asymptomatic Patients Over 40 Years of Age
orectal cancer. As further refinements in techniques occur, even more valuable information should be forthcoming.

On the other hand, early enthusiasm for carcinoembryonic antigen (CEA) determinations as a screening test for colorectal cancer has waned following evidence that the test is positive in many cancerous and noncancerous lesions. Its greatest potential value will probably be to help determine the effectiveness of therapy and indicate prognosis. Further immunological studies of CEA are being conducted.

**Differential Diagnosis of Common Conditions**

Many conditions must be considered in the differential diagnosis of colorectal cancer. A high index of suspicion, a good history, thorough physical examination and biopsy will usually provide adequate information to make a definitive diagnosis.

**Colorectal Polyps**

Patients with polyps typically present with rectal bleeding, prolapse through the anus and, rarely, intussusception. The most common polypoid lesion is the adenomatous polyp, occurring almost eight times more frequently than villous adenoma. Juvenile polyps are found principally in children under 12 years of age, but may occasionally develop in adults. Multiple polypoid lesions are usually noted in patients with familial polyposis or Gardner’s syndrome. Patients with these hereditary disorders will usually develop colorectal cancer by the age of 40 to 50 years unless total colectomy is performed. Thus, families with a history of these conditions must be very carefully followed.

Sigmoidoscopy and barium enema with air contrast are essential in the differential diagnosis of cancer. The larger the polyp, the greater the risk of cancer: lesions larger than 1.5–2.0 cm. in size are more likely to be malignant than those less than 1 cm. in size.

**Diverticulitis**

Diverticulitis produces symptoms of left-sided appendicitis and the patient usually gives a history of pain and tenderness in the left lower quadrant associated with fever, nausea, anorexia, vomiting and leukocytosis. These symptoms are usually controlled with antibiotics and resting the intestinal tract. When acute symptoms subside, sigmoidoscopy and/or colonoscopy and barium enema are performed to differentiate diverticulitis from cancer. In diverticulitis, the mucosa is intact and perforation, peritonitis, abscess and fistula formation occur more commonly than in cancer. Both lesions may produce signs or symptoms of obstruction. There is no causal relationship between diverticulitis and the development of colonic cancer, but these lesions may coexist since both are diseases of older age groups. When the differential diagnosis cannot be made with endoscopy and barium enema, exploratory laparotomy is mandatory.

**Chronic Ulcerative Colitis**

This condition usually develops in younger patients than does cancer and is characterized by repeated attacks of bloody diarrhea, crampy abdominal pain, the passage of sanguinopurulent
material from the rectum, fever, malnutrition and dehydration. The symptomatology and age group involved are of great clinical value in differentiating chronic ulcerative colitis from cancer. Endoscopy, barium enema and biopsy of suspicious lesions usually provide a definitive diagnosis.

Granulomatous Colitis

Granulomatous colitis generally involves the right colon while ulcerative colitis affects the left colon and rectum, although the entire colon may be involved in both diseases. The patient presents with chronic diarrhea associated with abdominal cramps, fever, weight loss and often a palpable abdominal mass. Grossly bloody stools which are the hallmark of ulcerative colitis are not seen as frequently in granulomatous colitis but abscesses, fistulae and perianal sinuses are common. In patients with granulomatous colitis, sigmoidoscopy reveals an essentially normal or edematous mucosa without bleeding. Barium enema shows inconspicuous shortening and segmental involvement with intervening normal segments of colon. Clinical findings, endoscopic evaluation and barium enema examination can usually differentiate granulomatous colitis from cancer. In some cases, however, it is extremely difficult to distinguish granulomatous from ulcerative colitis.

Appendiceal Abscess

The patient presents with a palpable, tender or nontender mass in the right lower quadrant associated with vague abdominal symptoms, mild fever and leukocytosis. A careful history usually uncovers symptoms of appendicitis several days or weeks prior to the development of an abdominal mass. Barium enema shows extrinsic pressure on the terminal ileum and cecum without any evidence of intrinsic involvement, thus differentiating an appendiceal abscess from cancer of the cecum.

Rectal Abscess

The manifestations of a loculated pelvirectal, chronic pararectal or retrorectal abscess, particularly after the acute phase has subsided, may be confused with cancer. However, a previous history of an acute inflammatory reaction, a persistent nonmucosal mass, cryptitis and pus following incision point to the diagnosis of rectal abscess.

Thrombosed Hemorrhoids

The patient has a history of hemorrhoids and examination reveals a tender, painful, bluish-colored, firm and slightly mobile mass in the anus. A puffy, shiny red swelling beneath the skin and mucous membranes will also be noted. Thrombectomy usually affords dramatic relief.

Hypertrophied Anal Papillae

Enlargement and ulceration of anal papillae at the pectinate line is not uncommon. Anoscopic examination shows no induration in the anorectum, thus ruling out cancer.

Condyloma Acuminata

These lesions are probably of viral etiology and tend to occur in groups, generally in the perianal skin and perineum, but may extend into the anal canal. They are seen more frequently in men and present with itching, bleeding, a
slight but offensive discharge and occasionally ulceration. On examination they appear as glistening, pale-pink, wart-like elevations without induration.

Anal Fistula

Fistulae usually follow drainage of an ischiorectal or perianal abscess and may rarely develop into cancer. The most common finding is a brownish, fecal discharge soiling the underclothes. Cryptitis is seen on anoscopy.

Anal Fissure

Pain is the chief symptom. Palpation reveals a tender ulcer, secondary to cryptitis and associated with fibrosis. On anoscopy the ulcer is seen at the posterior anal raphe often guarded by inflamed edematous tissue—sentinel tag. The elevated, rolled, overhanging edges found in malignant ulcers are absent.

Summary

The early diagnosis and localization of colorectal cancer is possible with the tools already available: digital rectal examination, proctosigmoidoscopy and/or colonoscopy, barium enema with air contrast and guaiac testing for occult blood. These modalities of treatment combined with a high index of suspicion can detect colorectal cancer at an early stage and achieve cure rates of up to 75-80 percent.

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In Sterile Agreement

Granted that speeches and articles should not always deal with local particulars, they should always deal with some particulars, if only by way of illustration. Otherwise, writer and audience waste their time in sterile agreement over absolute unknowns. In this world, at any rate, no art or science can long afford to invite assent of this kind to what is unproductive, to what will make no difference in action—including the action of thinking—J. Barzun. "So Long as Doctors Have to Think." Bulletin of the New York Academy of Medicine 47: 234, 1971.