Sigmoidoscopy in Women: Comparison with Breast and Gynecologic Examinations in 1,000 Patients

Daniel J. Abramson, M.D.

Introduction

The sigmoidoscopic examination is probably the most important single examination in the discovery of polyps and colorectal cancers. It has become an essential part of a thorough physical examination of patients 40 to 45 years of age or older on an annual or biennial basis. Forty-five years of age is probably adequate as a starting point since 90 percent of intestinal cancers occur in patients 52 years of age or older. While the procedure is not adaptable as a mass screening method, increased performance in a physician's practice will lead to the earlier discovery of colorectal cancer.

Breast and gynecologic examinations are important cancer detection procedures and are accepted by women. In contrast, few women have sigmoidoscopy on a regular basis, which indicates that educational efforts must be implemented. In 1978, it is estimated that there will be 102,000 cases of colorectal cancer, equalling the number of new cases of cancer of the lung and exceeding that of the breast in both sexes.

Moreover, colorectal cancer in women will exceed that found in men. In women, the estimated number of new cases of cancer of the breast is 90,000; of the colorectum 53,000; and of the uterus 48,000—with a mortality rate of 33,800, 26,800 and 10,700 respectively. The purpose of this study was twofold: first to compare the frequency of sigmoidoscopy (and barium enemas) with the number of breast and gynecologic examinations; and secondly to discuss sigmoidoscopy in the detection of colorectal cancer, polyps, and other pathology.

Materials and Method

One thousand women over 40 years of age who were being examined for conditions other than rectal problems were interviewed in the Surgical Clinic, Walter Reed Army Medical Center. They were questioned as to their age, familial history of colorectal cancer, and frequency of breast, gynecologic, sigmoidoscopic and barium enema examinations. Among patients who had had sigmoidoscopy, the questions related to the number of and reasons for the examinations (whether routine or not) and the patients' personal reaction to the procedure.

Findings

A comparison of the regularity of breast, gynecologic, sigmoidoscopic and barium
enema examinations is charted (Table 1). Approximately 90 percent of the women had had breast and gynecologic examinations (including Pap smears) on a routine basis, with breast examinations being slightly more frequent. The gynecologic examination was usually performed twice yearly. Most patients had breast examinations by their gynecologists, but many were also followed in the breast clinic and thus had their breasts evaluated three to four times yearly.

While sigmoidoscopy had been performed in 42.7 percent of the patients, very few had had the examination on an annual or biennial basis, or as a routine procedure. Most were performed because of rectal or abdominal complaints, for the follow-up of polyps or surgically resected carcinomas, or as part of a discharge physical or preoperative evaluation in the repair of inguinal hernias in patients over 40 years of age. In the last two instances, very few had had a prior sigmoidoscopic examination. Fifty percent of the patients had had barium enemas, although 7.4 percent of these had not had sigmoidoscopy.

The sigmoidoscopic examination and barium enema studies in 1,000 patients were evaluated in greater detail (Table 2). The lowest incidence was in the fifth decade, since the examination is rarely performed before the age of 40. Among the other decades, incidence of sigmoidoscopy ranged from 47 to 57 percent — lower than anticipated.

The patients were also studied in relation to sigmoidoscopy, barium enemas or both. Of 584 patients, 344 (58.9 percent) had had both; 83 (14.2 percent) had had sigmoidoscopy alone; and 157 patients (28.9 percent) had had barium enemas only. Generally, when a barium enema is ordered, a sigmoidoscopy should also be done.

A familial history of colorectal cancer was reported by 89 of 1,000 patients. Fifty percent had not had sigmoidoscopic examination and only 20 percent had had the examination because of the positive family history. The remainder were examined for many other reasons, few on a repetitive basis.

In Table 3 the number of times sigmoidoscopy had been performed is recorded. Five hundred and seventy-three patients had never had sigmoidoscopy, and 231 of these patients (40.3 percent) had never heard of the procedure. Of the 427 patients who had had sigmoidoscopy, 246 (57.6 percent) had had this examination once. It was performed twice in 72, three times in 50, and four times in 21 patients. Only 38 patients (8.9 percent) had had sigmoidoscopy more than four times, and 12 of these had had more than 10 sigmoidoscopic examinations.

Most of the sigmoidoscopies were performed in the investigation of rectal or abdominal complaints. They were performed as a routine procedure or as part of a general physical examination in 98 patients (23.8 percent). In the 38 patients who had had the examination more than four times, only 10 had been examined as part of a routine investigation.

As a matter of interest, 125 male patients over 40 years of age were also questioned. More men than women had had sigmoidoscopic examinations (54.4 vs. 42.7 percent), and men were more aware of sigmoidoscopy than were women. When sigmoidoscopies and barium enemas were analyzed, 63 percent of men had both, 21 percent had sigmoidoscopy alone and 16 percent had barium enema alone. In percentages, sigmoidoscopy was performed in both sexes an equal number of times.

Comment

This study was performed at the Walter Reed Army Medical Center, Washington, D.C., primarily upon military dependents whose access to medical care is excellent. It was evident that the women interviewed were well aware of the high incidence of breast and uterine cancer and of the importance of periodic gynecologic and breast examinations — including the breast self-examination. Most of the women had little knowledge of the importance of sigmoidoscopy in the detection of colon or rectal cancer. In contrast to women's acceptance of breast and gynecologic examination, the patient often rejects sigmoid-
oscopy because of the preparation required, the esthetic factor and because they have heard or found that it is an uncomfortable or painful procedure. On the other hand, many women are not even aware of the sigmoidoscopic examination. Many of the women questioned believed that colorectal cancer was a disease that occurred only in males.

The number of sigmoidoscopies and other detection methods to diagnose colorectal cancers at an earlier stage could be improved; among these women, nonetheless, the number done probably exceeds those performed in civilian practice. Patients in the higher socioeconomic levels often have sigmoidoscopy on a regular basis, but patients in a lower socioeconomic level, comprising a larger segment of the population, do not have this advantage. Many do not have private physicians and others do not seek or have regular preventive medical care. Holleb* found, in a Gallup poll of 1,527 patients, that awareness of proctosigmoidoscopy in 1976 was 56 percent, and that only 11.6 percent of respondents over 50 years of age had had a sigmoidoscopic examination in the year 1976.

The obstacles to routine sigmoidoscopy are not attributable to patients alone. Grant's survey revealed that while 67 percent of physicians perform sigmoidoscopy, only 14 percent perform sigmoidoscopy routinely in asymptomatic patients. In another survey of 308 physicians in a suburban practice it was found that sigmoidoscopy was performed in 67.9 percent of patients; however, more than one-half of the physicians did not do it routinely. The gynecologic and breast examinations, on the other hand, were done in a high percentage. In the initial examination of patients Gilbertsen* found that the detection rate of cancer by proctosigmoidoscopy in men was greater than that for the cervical smear in women. The detection rate for cervical cancers on first

| Age Yr. | No. | Gyn. | Percent | Breast |
|---------|-----|------|---------|--------|
| 40 - 49 | 372 | 336  | 90.3    | 351    |
| 50 - 59 | 360 | 320  | 88.9    | 330    |
| 60 - 69 | 177 | 156  | 88.1    | 162    |
| 70 - 79 | 70  | 53   | 75.7    | 64     |
| 80 - 89 | 21  | 15   | 71.4    | 16     |
| Total   | 1000| 880  | 88.0    | 923    |
examination of asymptomatic women was 2.1 per thousand examinations.

Many physicians are reluctant to perform sigmoidoscopy because it is troublesome, time-consuming and costly, or because they lack the necessary equipment. Others feel that the yield is too small, that sigmoidoscopy should be done only if the Hemoccult test is positive, or that it should be done by a specialist. Those objections are not valid and with minimal training most physicians should be able to perform this procedure. In a small group of physicians over 40 years of age who were questioned, one-fourth had not had a proctoscopic examination themselves and among those who had, the majority had had it done only once. It is clear that increased efforts toward physician education concerning the early detection of colorectal cancer are necessary.

The examination can be done in a few minutes, in a variety of positions, is not costly or troublesome and requires minimal specialized training. A knowledge of anatomy is necessary, and the examination should be done with extreme gentleness and empathy to preserve the dignity and comfort of the patient. We found that in 15 percent of 300 patients the sigmoidoscope could not be passed the full 25 cm. length.

Public awareness of the importance of this procedure and increased public education efforts through the media are essential. It is the goal of the National Task Force on Colon and Rectal Cancer to thoroughly indoctrinate physicians and the public as to the early signs and symptoms of colorectal cancer and to emphasize the importance of guaiac stool testing, routine sigmoidoscopy and other screening methods in order to reduce the mortality of this common cancer. The ideal situation would be to have individuals request the guaiac test and sigmoidoscopy as they do breast and gynecologic examinations.
### Discussion

Educational programs have emphasized lung, breast and uterine cancer, placing less emphasis on colorectal cancer. Colorectal cancer, however, is the most common visceral cancer in humans and is exceeded in mortality only by lung cancer in men and breast cancer in women. The overall results of treatment have not improved over the past several decades because cancer of the large bowel is not being diagnosed in the early stages. The large bowel is often investigated only if such symptoms as bleeding, change in bowel habits, abdominal pain, anemia, or loss of weight are present. Cancer, when found with such symptomatology, is usually advanced and the five-year survival rate is about 40 percent. On the other hand, when cancer is found on routine investigation in asymptomatic or mildly symptomatic patients, the five-year survival rate is increased to 88 percent.8

A pertinent history should be obtained and familiarity with the early and late signs and symptoms of colorectal cancer is essential. A patient should be considered at risk with a previous or familial history of cancer of the large bowel, a history of multiple polyposis (including Gardner's syndrome), a long standing history of ulcerative colitis, the finding of adenomatous polyps, or villous tumors.

Diagnostic studies in evaluation of the colon and rectum include sigmoidoscopy, barium enemas, guaiac stool testing and less frequently, colonoscopy, exfoliative cytology and CEA antigen studies. Recently guaiac stool testing has assumed an important place in the screening for colon cancer.

A series of three Hemoccult tests for occult blood in the stool was advocated by Gregor9 for the early detection of colorectal cancer; a single test is unreliable. Further, he emphasized that the test is not a substitute for sigmoidoscopy. The latter

### Table 2

| Age, Yr. | No. | No. Having Sigmoidoscopic and B.E.* Exam | No. Having Only Sigmoidoscopic |
|----------|-----|-----------------------------------------|--------------------------------|
| 40 - 49  | 372 | 78                                      | 32 |
| 50 - 59  | 360 | 141                                     | 29 |
| 60 - 69  | 177 | 84                                      | 15 |
| 70 - 79  | 70  | 32                                      | 4 |
| 80 - 89  | 21  | 9                                       | 3 |
| Total    | 1000| 344                                     | 83 |

*B.E. indicates Barium Enema
was performed in all patients in his study. He found that when the Hemoccult test was used, fewer patients—one of 20—were referred for barium enema than when sigmoidoscopy was performed. In 900 patients, the Hemoccult test was positive in 5 percent; one of the five positives was discovered to have asymptomatic cancer.

A negative test does not automatically rule out cancer, for an early carcinoma or polyp may not bleed. The Hemoccult test will, however, stimulate more investigations of the lower gastrointestinal tract.

It has been claimed that one-third of cancers of the large bowel are palpable on digital examination; however, the true figure is more likely in the range of 12 or 13 percent.7 Seventy percent are within reach of the 25 cm. sigmoidoscope. In symptomatic patients, sigmoidoscopy is mandatory. In Powers' survey, the incidence of carcinoma was 10 times greater in symptomatic patients than in asymptomatic ones (three percent vs. 0.3 percent).8 Hertz et al.9 found, in a series of 26,126 patients who were mildly symptomatic or asymptomatic, that on routine sigmoidoscopy the incidence of the discovery of cancer was one in 450. Routine sigmoidoscopy led to the diagnosis in 76.5 percent and the tumor was visualized in 60 percent. The operability rate was 100 percent and the resection for cure rate was 96 percent. There was a low incidence of nodal metastases.

Sigmoidoscopy also leads to the discovery of polyps in a significant number of patients. Since new polyps tend to develop after removal of those found initially, these patients require careful yearly examination; the incidence of cancer of the colon is increased in patients having polyps, particularly if the polyps are multiple. In a collected series of 146,027 patients, Rasgon10 found that in sigmoidoscopy of asymptomatic patients, polyps were discovered in an average of 6.75 percent (range of 4.3 to 12.3 percent) and
cancer was found in 1.42 percent (range of 0 to 8.3 percent). Rider et al. studied 9,132 patients; carcinoma of the colon without polyps was present in two percent. When polyps were found, the incidence of carcinoma in the polyps was 5.8 percent.

The relationship between the size of polyps and the finding of carcinoma was reviewed by Grinnel and Lane. The incidence of carcinoma in polyps under 5 mm. was 0.3 percent and in polyps from 0.5 to 1 cm., 0.9 percent. In polyps 1.5 to 2.5 cm., carcinoma was found in 9.3 percent and in polyps over 2.5 cm. the incidence was 13.8 percent.

The relationship of carcinoma to adenomatous polyps is still debated, but accumulating evidence indicates that cancer may arise from preexisting polyps. Morsen and Bussey suggest that at least one-half of colon cancers arise from preexisting adenomatous polyps or villous tumors. They believe that a malignant polyp is only a stage in a progressive neoplastic hyperplasia of a few epithelial tubules to a frank carcinoma.

Detection and removal of benign adenomatous polyps during sigmoidoscopy is a prophylactic measure in reducing the incidence of large bowel cancer. Rider et al. noted a decrease of carcinoma, greater than four times, in patients followed four or more years, who had had removal of polyps. Gilbertsen corroborated this in a study of 18,158 patients (103,645 examinations). Eighty-five percent of anticipated adenocarcinomas (75 to 80) did not develop and each of the 11 that did was found early, while still sharply localized to the bowel wall.

**Summary**

One thousand women were surveyed regarding the frequency of breast, gynecologic, sigmoidoscopic, and barium enema examinations. Approximately 90 percent or more had had breast and gynecologic
examination with Pap smears on a regular basis. Only 42.7 percent of the women had had one or more sigmoidoscopic examinations. Of these, 57.6 percent had had it done only once, and in 33 percent the procedure was performed two to four times. Thirty-eight of 427 patients had had sigmoidoscopy more than four times and 12 of these had had the examination 10 times or more. The majority of patients had had sigmoidoscopy in the investigation of rectal or abdominal complaints, and it was performed as part of a routine physical examination in 98 patients (23 percent). Two hundred thirty-one of 573 patients (40.3 percent) who had not undergone sigmoidoscopy were not familiar with or aware of the procedure. It was noted that many patients who had had a barium enema had not had sigmoidoscopy. Men were more familiar with sigmoidoscopy and were examined more frequently than women. A discussion of colorectal cancer and the importance of sigmoidoscopy and guaiac stool testing in the early detection of colorectal cancer is emphasized.

Conclusion

Women are well informed of the importance of the routine gynecologic and breast examinations in cancer detection. It is evident that not enough women are having sigmoidoscopy. Increased educational efforts are required to have physicians perform this examination on patients over 40 years of age on an annual or biennial basis. With cooperation of the appropriate media, the goal should be to educate the public as to the high incidence of colorectal cancer, its signs and symptoms, and the importance of the sigmoidoscopic examination and the guaiac stool testing even when one is asymptomatic. For women, the ideal is to have them request sigmoidoscopy routinely, as they do breast and gynecologic examinations.
References:

1. Vital statistics of the United States — 1970, Washington, D.C. Public Health Service, United States Department Health, Education and Welfare, 1972.
2. Abramson, D.J.: Letter, Sigmoidealoscopic and complementary cervicovaginal examination. JAMA 235:1423, 1976.
3. Silverberg, E.: Cancer statistics, Ca 28:17-32, 1978.
4. Holleb, A.I.: Editorial: Public awareness of cancer detection tests: Results of a recent Gallup poll. Ca 27:255-256, 1977.
5. Grant, R.N.: Continuing education in cancer for the physicians in the United States — An appraisal. Acta Un. Int. Cancer 19:967-970, 1963.
6. Miller, C.J.; Reeder, L.G., and Manning, H.E.: Every doctor's office - a cancer detection center? J Chronic Dis 19:1211-1219, 1966.
7. Gilbertsen, V.A.: The case for periodic cancer detection examinations. Ca 17:219-225, 1967.
8. Hertz, R.E.L.; Deddish, M.R., and Day, E.: Value of periodic examinations in detecting cancer of the rectum and colon. Postgrad. Med. 27:290-294, 1960.
9. Gregor, D.H.: Occult blood testing for detection of asymptomatic colon cancer. Cancer 28:131-134, 1971.
10. Powers, J.H.: Sigmoidealoscopic examination in private practice. JAMA 231:750-751, 1975.
11. Rason, I.M.: The importance of routine sigmoidoscopic examination in asymptomatic patients. Ca 19:339-343, 1969.
12. Rider, J.A.; Kirnner, J.B., Moeller, H.C., and Palmer, W.L.: Polyps of the colon and rectum: A four year to nine year follow-up study of five hundred and thirty-seven patients. JAMA 197:633-638, 1959.
13. Grinnell, R.S., and Lane, N.: Benign and malignant adenomatous polyps and papillary adenomas of the colon and rectum. An analysis of 1,335 tumors. Surg. Gynec. Obstet. Internat. Abst. 106:519-538, 1958.
14. Morson, B.C., and Bussey, H.J.R.: Pre-disposing causes of gastrointestinal cancer. Curr. Probl. Surg. pp. 1-50, 1970.
15. Gilbertsen, V.A.: Sigmoidealoscopic and polypectomy in reducing the incidence of rectal cancer. Cancer 34:Suppl:936-939, 1974.

Aims of the Conference

It is a bane and a blessing that the discovery of a basic scientific truth is slow in becoming an applied science. This has the advantage of preventing undeveloped and unsupported data from falling into the hands of the uncritical, but there is the disadvantage of withholding a significant advance from widespread usefulness. The essence of the problem appears to lie in determining with precision the significance of the discovery and its application in terms of the larger, already existing picture.

Charles S. Cameron, M.D.
Medical and Scientific Director
American Cancer Society

From: Round Table Conference on the Cytologic Method of Diagnosis in Cancer, Sponsored by American Cancer Society, Inc., April 12 and 13, 1948.