Proctosigmoidoscopy—
Age Criteria for Examination
in the Asymptomatic Patient

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Curability of colon and rectal cancer is clearly related to early detection and treatment. The average five-year survival rate after treatment of colorectal cancer is approximately 50 percent; if cancer has not extended beyond the bowel wall (Duke's Stage A), the survival rate is nearly 100 percent.1

Unfortunately, diagnosis early in the manifestation of symptoms is not necessarily diagnosis early in the course of disease. A number of investigators advocate routine proctosigmoidoscopy for early diagnosis,2-9 but others question the need for this procedure on an annual basis.10-12 The American Cancer Society encourages physicians to search for colorectal cancer before the onset of symptoms and recommends annual proctosigmoidoscopic examination for all patients 40 years and older. With approximately 80 million such persons in the United States, this is indeed an awesome task. Is it necessary to screen so large a population?

At the Lahey Clinic, proctosigmoidoscopy is considered an essential component of the complete physical examination, and more than 15,000 are performed annually. A prospective study was undertaken to assess the value of this procedure in screening for colorectal cancer.

Methods
A total of 2,500 consecutive, asymptomatic patients underwent proctosigmoidoscopy as part of a general examination. Excluded from the study were symptomatic patients or those with a prior history of colorectal disorders. The proctoscope was inserted to a mean height of 20 cm.

Polypoid lesions that were less than one cm. in diameter and showed no gross morphologic characteristics suggestive of cancer were generally destroyed by fulguration without pathologic examination. Lesions one cm. or more in diameter were excised locally and if proved malignant were treated by appropriate surgery.

Results
Of the 2,500 patients, 1,834 were men (mean age: 51 years) and 666 were women (mean age: 55 years). The age distribution is listed in Table 1.

A total of 432 lesions was found in 228 patients (9.1 percent). Most were small and treated by fulguration without
biopsy. (Table 2.) The mean age of patients with benign polypoid lesions was 56 years, not appreciably different from the mean age of the total population, which was 53 years.

Eight patients had adenocarcinomas; in two of these patients, carcinoma developed in a polypoid adenoma. (Table 3.) While most of the benign lesions were discovered in patients more than 40 years old, all the carcinomas occurred in patients more than 50 years of age. (Table 4.) Two of the 18 patients more than 79 years of age had asymptomatic cancers, an incidence of 11.1 percent. The treatment of the eight patients with carcinoma is summarized in Table 5.

Discussion

The possibility of cancer developing in a polypoid lesion is often cited as a rationale for performing routine proctosigmoidoscopic examinations on asymptomatic patients more than 40 years old. In our study, lesions found in patients less than 40 years old were benign and did not represent an immediate threat. No cancers were detected before the sixth decade of life. (Table 4.) Our finding of a low cancer incidence in patients less than 40 years old is supported by a survey of the United States Department of Health, Education, and Welfare which showed that less than five percent of 11,515 rectal carcinomas occurred in patients less than 45 years old.13

Obviously, carcinoma of the colon and rectum can develop at any age. Had this study been carried out on 5,000 or 50,000 patients, the probability is greater that an asymptomatic cancer would have been discovered in a younger patient. However, because of time, space and manpower limitations, we suggest that routine proctosigmoidoscopic examinations be performed in those age groups most likely to benefit from the procedure—patients 50 years and older. The effects of raising the age level for proctosigmoidoscopic screening from 40 to 50 years is demonstrated in Table 6. If this criteria were used, 30 percent fewer examinations would have been performed, and no cancers would have been missed.

| Table 1. Age Distribution |
| Age, No. of Patients, Percent of Total |
| Age, Years | No. of Patients | Percent of Total |
| < 30 | 69 | 2.8 |
| 30-39 | 300 | 12.0 |
| 40-49 | 652 | 26.1 |
| 50-59 | 729 | 29.2 |
| 60-69 | 543 | 21.7 |
| 70-79 | 189 | 7.6 |
| > 79 | 18 | 0.7 |

| Table 2. Treatment of 228 Patients with 432 Lesions |
| No. of Patients | Treatment |
| 139 | Single polypoid lesion fulgurated |
| 58 | Multiple polypoid lesions fulgurated |
| 31 | Lesion excised or biopsied |

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Another concern of deferring proctosigmoidoscopic screening until the age of 50 is that some benign premalignant lesions may be overlooked, and if not excised, these lesions may undergo malignant degeneration. Furthermore, detection of a rectal polyp often leads to a barium enema examination, which may identify additional synchronous benign and malignant lesions. However, as carcinomas tend to arise after the age of 50 years, the fact that patients may harbor benign rectal tumors is perhaps academic—unless cancer supervenes.

Finally, too much emphasis may have been placed on proctosigmoidoscopy as a screening procedure. We and other investigators are seeing a decreased percentage of distal bowel lesions. It might be argued that our population is selected, but recent reports indicate that cancers of the colon are developing with greater frequency in proximal locations. Five years ago, 75 percent of tumors were believed to be within range of the sigmoidoscope; today, the incidence is probably closer to 66 percent.

Other screening techniques, such as...
the guaiac or orthotoluidine testing of the stool, may be of greater value in patients less than 50 years old. Positive results would necessitate further gastrointestinal investigation, including proctosigmoidoscopy. Such methods of testing the stool for occult blood can provide mass screening at a minimal cost and without physician manpower. Indeed, manpower is the limiting factor, as Gilbertsen has shown that a proctosigmoidoscopic examination can be performed for only $11.73.9

Recommendations
A suitable program for the early detection of colorectal cancer could include:

- Annual guaiac or orthotoluidine testing of the patient until the age of 50 years;
- Proctosigmoidoscopy and gastroin-
testinal investigations when the test is positive:
- Stool testing for occult blood supplemented by proctosigmoidoscopy after the age of 50 years;
- Proctoscopy every two years thereafter—according to Spratt, doubling times for carcinoma of the colon are in excess of 600 days, implying that annual routine examinations are not indicated; 19
- Proctoscopy annually for any patient who has a history of rectal polyps or carcinoma and is, therefore, at a higher risk.

Summary
Our study suggests that the age criteria for routine proctosigmoidoscopic examination in the asymptomatic patient should be reconsidered. We recommend that the age for initial proctoscopy be changed from 40 years to 50 years and that examination of the asymptomatic patient be repeated every two years.

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