A Progress Report

Detection of Colorectal Cancer Using Guaiac Slides

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The guaiac-impregnated slide technique* as an aid in the detection of asymptomatic colorectal cancer was first described in September, 1971. To facilitate a simple, inexpensive and esthetically acceptable method of performing multiple stool examinations, patients were given guaiac-impregnated slides and asked to prepare their own stool smears and mail them to the office for evaluation. In the November/December, 1969 issue of Ca—A Cancer Journal for Clinicians, we reported that the accuracy of the procedure was increased by requiring examinees to remain on a meat-free, high-bulk diet during the four-day period of stool collection.  

Prior to 1971, all studies on the use of the guaiac slide technique in the detection of silent colorectal cancer were reported by one physician. To further verify this method, other physicians' experiences with the slides were necessary.

Test material and instructions were offered to the medical profession in January, 1971. Two thousand physicians elected to use the test routinely in their practices. Six months later, they were asked to report on the effectiveness of the guaiac-impregnated slide technique, complete a questionnaire and provide case summaries in all instances of proven colorectal cancer. Physicians who did not detect colorectal cancer during this six-month period were not required to submit a report.

*Guaiac-impregnated slides are commercially available as Hemoccult® slides from Smith, Kline & French Laboratories, Philadelphia, Pennsylvania.

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The questionnaire mailed to all participating physicians specifically asked:
(1) The age and sex of the patient;
(2) The symptoms or findings (other than guaiac results) which led the physician to suspect colorectal cancer;
(3) The results of the three-day guaiac slide tests;
(4) The type of diet followed during the test period;
(5) The location of the colorectal cancer;
(6) The extent of the cancer (depth of penetration into the bowel wall and the presence or absence of metastases).

Results
One hundred and three physicians reported a total of 139 cases. Of the remaining 1,897 physicians, approximately 100 said they did not detect a case of colorectal cancer using the guaiac slides. It is important to remember that we did not request any data unless a proven case of colorectal cancer was detected in the physician's practice. This, therefore, is not a large statistical study but rather a report on the experience of a small group of physicians who used the guaiac slide technique.

An analysis of the responses to the questionnaire is as follows:
(1) Age and sex of the patient. Of the 139 reported cases, 75 occurred in males and 64 in females. The average age was 62 years for males and 64 years for females.
(2) Significant symptoms or findings which led physician to suspect colorectal pathology. A variety of suspicious symptoms and findings were noted. (Table 1.) Some cancers presented three or more symptoms and/or findings.
(3) The results of the three-day guaiac slide test. Of the 139 cancers detected during this six-month period, 135 were guaiac positive. Of the four patients with guaiac negative results, one followed the prescribed meat-free, high-residue diet, two were on a liquid diet and one was on a bland diet.

To further evaluate the effectiveness of this technique, the 139 submitted cases were classified as follows:
Silent: Forty-seven cases in which there were no symptoms or findings (except the guaiac slide results) suspicious of colorectal pathology were classified as silent. (Table 2.)
Semi-silent: Forty-six borderline diagnostic cases in which the guaiac slide test played an important part in the diagnosis but where there were other symptoms or findings suspicious of colorectal pathology (increasing constipation, mild anemia, etc.) were classified as semi-silent. (Table 2.)
Symptomatic: Forty-three cases with highly suspicious findings or symptoms (abdominal mass, bloody diarrhea, profound anemia, etc.) directing the physician to the correct diagnosis and in which the guaiac slides merely added supportive evidence were placed in the symptomatic group. (Table 2.)
Three cases were unclassified. (Table 2.)

(4) *Type of diet followed during the test period.* Eighteen patients followed the prescribed meat-free, high-bulk diet. Twenty-eight were on meat-free diets only. Ninety-three followed a regular or light diet—not a meat-free diet.

(5) *Location of the cancer.* Table 3 lists the locations for 125 of the 139 colorectal cancers reported. Fourteen physicians omitted a description of the location in their reports.

(6) *Extent of colorectal cancer.* Table 4 shows the depth of penetration into the bowel wall by localized cancer. Table 2 demonstrates that 42 cancers had metastasized—26 to regional nodes, 15 to regional nodes and the liver and one to the nodes, liver and brain. As Table 2 indicates, only 15 percent of the silent cancers had metastasized by the time of surgery. When the cancer reached the semi-silent stage, the percentage of those which had metastasized was more than doubled to 33 percent and in the symptomatic group almost half the cancers had already metastasized.

**Sigmoidoscopy**

How many of these cancers would have been detected by routine sigmoidoscopy? Since 14 physicians omitted information regarding the exact site of the cancer, only 125 cases can be evaluated. Sixteen cancers were certainly within sigmoidoscopic range and some in the proximal sigmoid could probably have been detected by full 25 cm. scopeing. Among the 47 cases in the silent group detected by the guaiac slide technique, only four were within sigmoidoscopic range. However, guaiac screening is not a substitute for sigmoidoscopy. The high incidence of cancer of the rectum and sigmoid demands direct observation as part of a routine physical examination. The fact that in this series the proximal sigmoid contained approximately four times as many cancers as did the distal sigmoid (Table 3) indicates the need for a full 25 cm. sigmoidoscopic examination whenever possible.

**Test Failures**

The report leaves unanswered one very important question: In the practices of the cooperating physicians, how many patients with negative guaiac screening results had silent colon cancers which remained undetected? Only time can answer this. However, in over 10 years of personal experience with the test, plus four years at the Columbus Cancer Clinic (Columbus, Ohio), no “false negatives” have been revealed. And, to date, only one of the 103 reporting physicians using the prescribed screening technique (i.e., mul-
The high-bulk diet has been used in over 1,300 office patients in my practice without any significant complications.

### Conclusions

1. From our limited data it would appear that any colorectal cancer detected in its silent stage is probably localized and offers an excellent prognosis; once symptoms appear, the prognosis is considerably worse.

2. Of the 139 cases of cancer detected, four were guaiac negative and only one of these four negatives occurred in a patient who had followed the prescribed diet. Therefore, our experience to date indicates that almost all colorectal cancers bleed, even in early, localized stages, and that a screening test based on this capability to bleed is worthy of continued investigation.

3. Occult blood can be detected with guaiac-impregnated slides provided the test is used on bowel movements over at least a three-day period and provided the subject uses a bulk diet to encourage bleeding.

4. If guaiac screening plus digital rectal examination and sigmoidoscopy were included in all annual physical examinations, many more cases of colorectal cancer could be detected in a stage amenable to cure.

### References

1. Greegor, D. H.: Diagnosis of large-bowel cancer in the asymptomatic patient. J.A.M.A. 201: 943-945, 1967.
2. Greegor, D. H.: Detection of silent colon cancer in routine examination. Ca 19: 330-337, 1969.