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Disparities in Evaluation of Patients With Rectal Bleeding 40 Years and Older

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Abstract

BACKGROUND & AIMS—Rectal bleeding is associated with colorectal cancer. We characterized the evaluation of patients aged 40 years and older with rectal bleeding and identified characteristics associated with inadequate evaluation.

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Conflicts of interest

The authors disclose no conflicts.

METHODS—We conducted a retrospective review of records of outpatient visits that contained reports of rectal bleeding for patients aged 40 years and older ($N = 480$). We studied whether patient characteristics affected whether or not they received a colonoscopy examination within 90 days of presentation with rectal bleeding. Patient characteristics included demographics; family history of colon cancer and polyps; and histories of screening colonoscopies, physical examinations, referrals to specialists at the index visit, and communication of laboratory results. Data were collected from medical records, and patient income levels were estimated based on Zip codes.

RESULTS—Nearly half of the patients presenting with rectal bleeding received colonoscopies (48.1%); 81.7% received the procedure within 90 days. A history of a colonoscopy examination was more likely to be reported in white patients compared with Hispanic or Asian patients ($P = .012$ and $P = .006$, respectively), and in high-income compared with low-income patients ($P = .022$). A family history was more likely to be documented among patients with private insurance than those with Medicaid or Medicare ($P = .004$). A rectal examination was performed more often for patients who were white or Asian, male, and with high or middle incomes, compared with those who were black, Hispanic, female, or with low incomes ($P = .027$). White patients were more likely to have their laboratory results communicated to them than black patients ($P = .001$).

CONCLUSIONS—Sex, race, ethnicity, patient income, and insurance status were associated with disparities in evaluation of rectal bleeding. There is a need to standardize the evaluation of patients with rectal bleeding.

Keywords

Early Detection; Colorectal Cancer; Age; Patient Management

We performed a systematic study of the disparities related to the work-up of rectal bleeding.^{1,2} The complete evaluation of this important alarm symptom is associated with an increased likelihood of a diagnosis of colon cancer.^{3–17} The objective of this study was to examine whether patient characteristics affected the rate of compliance with guidelines for the work-up of patients with rectal bleeding during a 2-year period.^{8,18}

Methods

The Colorectal Advisory Committee of the Risk Management Foundation's revised guidelines for primary care physicians were distributed to primary care physicians in 2006 and are reprinted verbatim here.⁸

For patients age 40 to 50 years with rectal bleeding, the following guidelines were distributed.

- If family history is negative for colorectal cancer or adenomas, consider colonoscopy for visualization of the colon;
- At a minimum, perform a flexible sigmoidoscopy;
- If family history is positive for colorectal cancer or adenomas, order and schedule colonoscopy.

For patients age 50 years and older with rectal bleeding, the following guidelines were distributed.

- Review family history and check the date (and success) of the patient's most recent screening;
- If the patient has not had a colonoscopy within the past 3 years, order and schedule a colonoscopy;
- If the patient has had a negative colonoscopy within the past 2 years, order a flexible sigmoidoscopy.

In these guidelines, "success" refers to visualizing the base of the cecum and a good quality preparation.

Patients who presented to their primary care physician from July 1, 2006, to June 30, 2008, with a new complaint of rectal bleeding at this initial visit (index visit) and who were 40 years and older were eligible for inclusion in this study. Patients with rectal bleeding who were seen in the emergency room for this complaint first, had a known diagnosis of ulcerative colitis or Crohn's disease, or who had a history of colon cancer were excluded from the study.

With approval from the Institutional Review Board of the Dana-Farber/Harvard Cancer Center, a retrospective chart review was performed at 10 sites: 3 academic hospitals and 7 affiliated community-based practice sites. Trained nurse reviewers from each of the hospitals and affiliated clinics entered data from patient charts into a specially modified online data entry form that collected and stored the data (Datstat; Illume, Seattle, WA). Data entered into Datstat was imported into a standard SPSS (IBM SPSS Data Collection, version 20, Armonk, NY) software program for statistical analyses using bivariate and multivariate analyses.

Rectal bleeding patients were identified using the following International Classification of Diseases, 9th revision, Clinical Modification codes 569.3 (rectal bleeding), 578.1 (blood in the stool), and 455.0, 455.1, 455.2, or 455.3 (hemorrhoids). A delay was classified as longer than 90 days to completion of a procedure to visualize the colon with either a sigmoidoscopy (if the patient was between ages 40 and 49 years with no family history of colon cancer or adenomas) or a colonoscopy if the patient was age 50 or older or between ages 40 and 49 and with a family history of colon cancer or polyps. Patients who had undergone a colonoscopy with an adequate preparation performed within the prior 2 years were excluded from being considered as delayed. Patients who had undergone a colonoscopy more than 2 years previously were expected to be considered for a repeat procedure given the symptom of rectal bleeding and recent studies showing the incidence of interval cancers.^{19–21}

Zip code data were used as a proxy for patient income. Census data were used for each of the Zip codes to ascertain annual income. Patient income was divided by Zip code into low (0–49th percentile), medium (50–74th percentile), and high (>75th percentile) levels.^{22,23} Multivariate statistical analyses were performed using SPSS.

Multivariable logistic regression analysis was used to ascertain the probability that race or ethnicity, income, sex, health insurance status, age, and need for an interpreter predicted lack of colonoscopy completion timeliness, lack of proper physical examinations at the index visit, nonreferral to a gastroenterologist for colonoscopy or consultation, and failure to have laboratory results reported. We used a .05 *P* value criterion for significance and forward stepwise selection.

When all multivariable logistic regression analysis tests were completed, all independent variables tested had odds ratios that were not significantly different from zero. Thus, we found no statistically significant predictors of outcome.

The results reported later are based on bivariate analyses, including the chi-square test and the Z test of proportions.

Results

Demographics

The demographic characteristics of the 480 subjects are shown in Table 1. The majority of our patients were white, of non-Hispanic ethnicity, younger than age 60, privately insured, English speaking, did not require an interpreter, and were in middle- and high-income areas by Zip code.

Colonoscopy Completion Rate for Symptom of Rectal Bleeding

Nearly half (48.1%) of the patients presenting with the complaint of rectal bleeding underwent a colonoscopy or flexible sigmoidoscopy (9 patients; 1.875%). In the 169 patients ages 40 to 49, flexible sigmoidoscopy was performed in 4 (2.37%). Of those who underwent colonoscopy, 81.7% had the procedure within 90 days of their index visit. Table 2 lists the variety of tests performed in patients with rectal bleeding. A significant minority, 156 patients, (32.5%) were categorized as not having had a colonoscopy performed within the 90-day expected time period. Table 3 lists the reasons. The 2 most common reasons were a prior colonoscopy in 59 patients and refusal or cancellation of the procedure in 25 patients.

History of Colonoscopy Before Index Visit

Analysis indicated that 47.5% of our rectal bleeding study group had undergone a colonoscopy as part of a colon cancer screening program before the index visit. Prior history of colonoscopy screening varied by household income and race/ ethnicity (Figure 1).

Income Level

A screening colonoscopy before the patient's index visit was associated with income as imputed by Zip code. Patients in the high-income group had significantly more prior screening colonoscopies than did those in the low-income group (57.7% compared with 46.8%; *P* = .022). Middle-income patients had nearly the same rate of prior screening colonoscopies (52.2%) as the high-income group (Figure 1).

Race and Ethnicity

Non-Hispanic white patients had the highest rate of prior screening colonoscopies (59.1%) and non-Hispanic black patients had a rate (50.7%) nearly as high. Whites had significantly higher rates of prior screening colonoscopies compared with Hispanic patients (41.7%; $P = .012$) or Asian patients (31.8%; $P = .006$). There were no significant differences in reported prior screening colonoscopies between white and black patients, black and Asian patients, and black and Hispanic patients (Figure 1).

Family History

More than two thirds of the patients (72.5%) had a general family history documented in the initial note at the time of their first visit with the primary care physician or index visit note at the time of the complaint of rectal bleeding. Private patients were more likely than Medicare/Medicaid patients to have their family history documented ($P = .004$).

One fourth of the patients (25.2%) had a targeted family history asking about colon cancer or polyps in their family at the time of the index visit. No significant differences were noted in race, ethnicity, sex, income, or insurance status for the targeted family history at the time of the rectal bleeding complaint.

Physical Examination

Three quarters of the patients (77.1%) had an abdominal examination documented at the time of their index visit. No significant difference was noted by race, sex, ethnicity, insurance, or income.

Two thirds of patients (68.5%) had a rectal examination at their index visit. White patients (72.6%) were significantly more likely than black (63.3%, $P = .016$) and Hispanic (54.2%, $P = .005$) patients, but no more likely than Asian patients (72.7%) to have a rectal examination at the index visit (Figure 2). High-income (73.9%) and middle-income (69.6%) patients were more likely than low-income patients (56.7%) ($P < .001$ and $P = .026$, respectively) to have a rectal examination (Figure 2). Men (76.6%) were also more likely than women (62.5%) to have a rectal examination at the index visit ($P < .001$) (Figure 2). Nurse reviewers made note of the patient's refusal of a rectal examination. Patient refusal rarely was noted.

Referral to a Specialist

More than half (58.3%) of the patients were referred to a gastroenterologist for a colonoscopy or consultation at the time of their index visit. There were no significant differences among patients of differing race/ethnicity, income category, or insurance status.

Communication of Laboratory Results to Patient

Overall, 59.0% of patients with laboratory studies ordered (244) had laboratory results documented as reported to them (144). Black patients (42.9%) were significantly less likely than white patients (69.2%) to have laboratory results communicated to them ($P = .001$), whereas Asian patients (75%) were significantly more likely to have results communicated to them compared with black patients ($P = .025$). White patients had a borderline higher

likelihood of having laboratory results communicated to them compared with Hispanic patients ($P = .054$) (Figure 3).

Neoplastic Diagnoses Resulting From Examination of 231 Patients by Colonoscopy

Six colon cancers (2.6%) and 44 adenomas (19.0%) were detected in the 231 patients who underwent colonoscopy. This group of 50 patients with new colon cancers and adenomas did not differ in their demographics from the group as a whole. We calculated the adenoma detection rate based on the 44 adenomas noted earlier plus 2 additional adenomas in 2 of the colon cancer patients, for a total adenoma count of 46. The adenoma detection rate for males was 27 of 99 (27.3%) and for females was 19 of 132 (14.4%).

Two of the 6 cancer patients had undergone relatively recent colonoscopies. In the first case, a patient with sigmoid cancer had undergone a colonoscopy 16 months previously and, in the second case, a patient with rectal cancer had undergone a colonoscopy 27 months earlier.

Differences Across Sites

Significant differences across the 10 sites were noted for performance of rectal examination, communication of laboratory results to patients, and for taking a full family history. However, when the 3 academic sites were compared with the 7 community sites, no significant differences were noted between these 2 types of sites overall for rectal examinations, communication of laboratory test results, and for taking a full family history.

Comment

The alarm symptom of rectal bleeding and its association with a higher rate of detection of colon cancer when the colon is visualized has been well publicized.³⁻⁶ Physicians have been exhorted to perform a complete work-up in the patient with rectal bleeding older than age 40 so as not to delay the diagnosis of colon cancer.^{13,14} This study specifically documented disparities in patients with the symptom of rectal bleeding in the area of family history, rectal examination, and communication of laboratory results. No difference was noted between academic medical centers as a group compared with the community sites as a group, although significant differences were recorded across individual sites. We also noted disparities related to income, ethnicity, and race for the history of having had a prior screening colonoscopy as noted by other investigators previously.^{1,2}

Our retrospective chart review data show that race, sex, ethnicity, income, and insurance status did not appear to affect a patient's likelihood of receiving a colonoscopy within 90 days.²⁴⁻²⁷ Our percentage of 48.1% of our patients receiving a colonoscopy was almost identical to the results of the study by Heintze et al.²⁸ However, we found significant disparities in parts of the work-up for rectal bleeding. Although we documented a history of at least one prior screening colonoscopy in almost half the patients older than age 40 years (47.5%), we noted a significant variability by race and ethnicity with Hispanic patients and Asian patients having a significantly lower percentage than white or black patients for prior screening colonoscopy, an important procedure to detect cancer and remove precancerous polyps.²⁹ Miller et al,³⁰ Gorin and Heck,³¹ and Klabunde et al^{1,2} noted similar lower colon cancer screening rates among Hispanic and Asian patients. Patient navigators have been

shown to help improve colonoscopy completion rates.³² Chen et al³³ defined a patient navigator as “someone who is trained to guide patients through the health care system to receive appropriate services such as assisting with scheduling appointments, providing appointment reminders, assisting with transportation needs and following up with patients after the procedure.”

Income level also factored significantly into the history of a prior colonoscopy screening. The recent study by Klabunde et al² highlighted low-income status as a risk factor for diminished colon cancer screening in a patient recall study.

Documentation of a general family history was more frequent in patients with private insurance for unclear reasons, but may be related to older age in Medicare patients, with less focus on family history in this age group. A family history of colon cancer or polyps is an important independent risk factor for colon cancer and adenomas.^{34,35} However, rectal bleeding patients with a family history of colon cancer are not more likely to have colon cancer.^{36–38}

We documented a significantly lower rate of rectal examinations being performed in the lower-income group, women, blacks, and Hispanics, and conjectured that the physician did not take the time to perform the rectal examination because he/ she had ordered the colonoscopy where a rectal examination is performed routinely. Hispanic patients were overly represented in the no-rectal-examination group. A study from George Washington University Medical Center³⁹ that evaluated colorectal cancer screening of black and white patients by internal medicine residents found that only 41% of patients seen in their clinics had rectal examinations performed but no difference was noted between black and white patients.

Communicating laboratory data is one way for physicians to share evidence for participatory decision making with the patient.⁴⁰ Black patients were significantly less likely to enjoy this benefit compared with white patients and Asian patients. Hispanic patients were less likely to have laboratory results communicated to them compared with white patients, although this was of borderline statistical significance. Prior research has shown that physicians’ discussions with patients about laboratory data and procedures are often incomplete.⁴¹

Our rate of colorectal cancer detection was 2.6% despite having a relatively high proportion of younger patients and of prior screening colonoscopy studies. These data are similar to other studies showing a rate of 1.8% to 3.0% of colon cancer detection in patients with rectal bleeding.^{4–7} Our group of 50 patients with new colon cancers and adenomas did not differ in their demographics from the group as a whole, indicating again that with the alarm symptom of rectal bleeding, visualization of the colon was ordered without regard for demographics. Two of the 6 cancer patients were probable examples of interval cancers given that colonoscopies were performed 16 and 27 months before the diagnosis of sigmoid or rectal cancer was made when another colonoscopy was performed for rectal bleeding.^{20,21} The percentage of adenomas detected was approximately that expected for both men and women (25% expected for men, 27.3% observed; and 15% expected for women, 14.4% observed) despite the high rate of recent colonoscopic examinations.^{42,43}

Decision aids and checklists have been found to improve patient participation in decisions that involve risks and benefits discussions and increase the quality of care that physicians provide.^{44–48}

The strengths of our study were the 10 patient care sites consisting of academic and community sites, highly trained nurse reviewers, and the use of a standardized online data collection tool.

The study potentially was limited by the relative homogeneity of the patients, reflecting the communities from which they were drawn. The study also was limited by the use of retrospective medical chart review, which depends on the quality of medical documentation. Although our data are from 2006 to 2008, medical malpractice lawsuits filed in the past 6 years with the Risk Management Foundation still show a physician's failure to diagnose the cause of rectal bleeding as a leading reason for lawsuits.

Conclusions

Our results call for standardization of the physician's approach to the patient with rectal bleeding with point-of-care physician decision support tools and checklist reminders to increase physicians' knowledge of the correct approach to all patients with rectal bleeding.^{44,45}

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Figure 1.
History of prior screening colonoscopy by (A) income and (B) race and ethnicity.

Figure 2.
Rectal examination performed at the index visit by (A) income, (B) sex, and (C) race and ethnicity.

Figure 3.
Communication of laboratory results to patients by race and ethnicity.

Table 1

Patient Characteristics (N = 480)

Demographics	n (%)
Sex	
Male	205 (42.7)
Female	275 (57.3)
Age, y	
40–49	169 (35.2)
50–59	124 (25.8)
60–69	71 (14.8)
70–79	63 (13.1)
80	24 (5.0)
Unknown	29 (6.0)
Race	
White	303 (63.1)
Black/African American	71 (14.8)
Asian	22 (4.6)
American Indian	1 (0.20)
Unknown	83 (17.3)
Ethnicity	
Hispanic	48 (10)
Non-Hispanic	408 (85)
Unknown	24 (5.0)
English speaking	
Yes	401 (83.5)
No	44 (9.2)
Unknown	35 (7.3)
Interpreter required	
Yes	42 (8.8)
No	400 (83.3)
Unknown	38 (8.0)
Insurance status	
Medicare/Medicaid	139 (29)
Private insurance	319 (66.5)
Not insured	14 (2.9)
Unknown	8 (1.7)
Income level by Zip code	
Low (1st–49th percentile)	127 (26.5)
Medium (50th–74th percentile)	92 (19.2)
High (75th percentile)	261 (54.4)

Table 2

Tests Patients Received After Index Visit (N = 480)

Test	n (%)
Colonoscopy only	188 (39.2)
Colonoscopy and second colonoscopy	4 (0.8)
Colonoscopy and flexible sigmoidoscopy	1 (0.2)
Colonoscopy and rectal examination at index visit	4 (0.8)
Colonoscopy and rectal examination by specialist	3 (0.6)
Colonoscopy and stool occult blood test at index visit	3 (0.6)
Colonoscopy and stool occult blood test by specialist	1 (0.2)
Colonoscopy and upper endoscopy	12 (2.5)
Colonoscopy and virtual colonoscopy	1 (0.2)
Colonoscopy and computed tomography scan of abdomen	1 (0.2)
Colonoscopy, rectal examination at index visit, stool occult blood test at index	5 (1.0)
Colonoscopy, stool occult blood test at index visit, computed tomography scan of abdomen	1 (0.2)
Colonoscopy, rectal examination by specialist, stool occult blood test by specialist	2 (0.4)
Colonoscopy, rectal examination at index visit, stool occult blood test at index visit, anoscopy	1 (0.2)
Colonoscopy, rectal examination at index visit, upper endoscopy, anoscopy	2 (0.4)
Colonoscopy, rectal examination at index visit, rectal examination by specialist, stool occult blood test by specialist	1 (0.2)
Colonoscopy, rectal examination at index visit, rectal examination by specialist, stool occult blood test at index visit, upper endoscopy	1 (0.2)
Flexible sigmoidoscopy only	7 (1.5)
Flexible sigmoidoscopy, rectal examination at index visit, rectal examination by specialist, stool occult blood test at index visit, stool occult blood test by specialist	1 (0.2)
Rectal examination at index visit only	2 (0.4)
Rectal examination at index visit and rectal examination by specialist	1 (0.2)
Rectal examination by specialist and stool occult blood test by specialist	1 (0.2)
Rectal examination at index and stool occult blood test at index	11 (2.3)
Rectal examination at index and anoscopy	3 (0.6)
Rectal examination at index, stool occult blood test at index, anoscopy	2 (0.4)
Computed tomography scan of abdomen only	8 (1.7)
Stool occult blood test for blood at index visit only	4 (0.8)
Upper endoscopy only	4 (0.8)
No recorded tests	173 (36.0)
Unable to determine	32 (6.7)

Table 3**Reasons for Patients Not Having Received Colonoscopy Within 90 Days**

	n (%)
History of prior colonoscopy	59 (34.3) ^a
Patient never went for procedure or canceled procedure	25 (14.5)
No tests ordered or performed	17 (9.9)
Inadequate documentation of follow-up evaluation	13 (8.3)
Colonoscopy performed beyond 90 days	10 (5.8)
Laboratory and/or stool occult blood test only ordered	10 (5.8)
Refused procedure	9 (5.2)
Age or illness interfered with ordering colonoscopy	8 (4.6)
Anoscopy performed	3 (1.7)
Flexible sigmoidoscopy performed	1 (0.6)
Colonoscopy performed at outside hospital	1 (0.6)

NOTE. Total patients = 156.

^aOf the 59 patients with a prior colonoscopy, 41 (69.5) completed the colonoscopy 2 weeks to 3 years before the index visit.