Incidence and causes of rectal bleeding in general practice as detected by colonoscopy

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SUMMARY

Background. *Rectal bleeding is common, but it is still unclear which patients require investigation to exclude serious pathology, although it is known that colectoral cancer is very rare under the age of 40 years. Few studies have examined all patients presenting to their primary health physician rather than screening whole populations.*
Aim. *The aim of this study was to investigate the view that all patients over the age of 40 who present to their general practitioner with rectal bleeding should undergo investigation by colonoscopy to rule out serious pathology, regardless of symptomatology.*
Method. *A prospective study was carried out of 99 consecutive patients over 40 years presenting with rectal bleeding to 17 general practices in Newcastle upon Tyne.*
Results. *Serious pathology was detected by colonoscopy in 44.4% of patients. The diagnoses were: colorectal carcinoma, eight cases (two Dukes' grade A, two Dukes' grade B, four Dukes' grade C); one or more polyps, 25 cases (in 17 cases at least one polyp was 5 mm or greater in diameter); inflammatory bowel disease, 11 cases. In the remaining 55 patients, bleeding was associated with diverticular disease (16 cases) and haemorrhoids (28 cases). No cause was found in 11 patients.This high rate of pathology may be partly caused by selection of cases for referral by the general practitioner, despite efforts to minimize this. Three symptoms as elicited by the colonoscopist were found to be significantly associated with serious disease: blood mixed with stool (P<0.001); change in bowel habit (P<0.005); and the presence of abdominal pain (P<0.025). However, symptoms elicited on primary presentation were less helpful and symptoms changed significantly between consultation with the general practitioner and colonoscopy.*
Conclusion. *All patients over the age of 40 years presenting with rectal bleeding should be referred for flexible sigmoidoscopy or colonoscopy. Symptoms are unhelpful in deciding who requires investigation.*

Keywords: rectal bleeding; digestive system diseases; causal factors; morbidity; differential diagnosis; colonoscopy.

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Introduction

RECTAL bleeding is a common condition. Of 915 patients from eight practices in the Northern Region completing a symptom questionnaire, 77 (8.4%) admitted to rectal bleeding in the previous year.[1] In most cases, rectal bleeding is not associated with any serious disease process. A survey of industrial employees in the UK aged over 40 years found that 11.8% of 916 persons completing symptom questionnaires admitted to recent rectal bleeding.[2] Investigation by flexible sigmoidoscopy and barium enema found adenomas in six patients and no carcinomas. In a study of Australian veterans aged over 50 years living in Sydney, flexible sigmoidoscopy to 30 cm or more revealed only four polyps in the 15.0% admitting to rectal bleeding.[3] However, seven subjects with polyps and one with carcinoma were found among those without rectal bleeding.

Investigation of those patients who present to their general practitioner with rectal bleeding may be more rewarding.[4] Thus, of 145 consecutive patients over 40 years seeking consultations because of bleeding of less than 6 months' duration, investigations showed colorectal cancer in 15 (10.3%) and polyps in 11 (7.6%). A colorectal source of bleeding was found in 39 (26.9%).[4]

Currently, there is no consensus as to the need for invasive investigation of all patients presenting with rectal bleeding. A survey of 600 general practitioners in the Northern Region found that more than 80% saw between one and five patients complaining of rectal bleeding each month. Only one-third of respondents felt that rectal examination was essential for diagnosis. Referral for colonoscopy was most likely in patients over 40 years with bleeding in association with other colonic symptoms,[5] although previous work suggests that bowel symptoms and clinical features are unhelpful in diagnosis.[6]

We aimed to investigate by colonoscopy 100 consecutive patients over the age of 40 years presenting to their general practitioners with a first presentation of rectal bleeding of less than one year's duration. Patients with known colorectal disease or melaena were excluded. All patients were questioned about other gastrointestinal symptoms and family history of bowel disease.

Method

A pilot study was carried out (in the month before the main study) in one general practice with a population of 12 000 patients. A short questionnaire was handed out to all patients over 40 years attending their general practitioner in order to establish the average number of consultations and the number of consultations for rectal bleeding in patients over 40 years. General practices were approached by one of us (J M) initially by phone and then by personal visit to explain the study aims and methods. The agreements of all practice partners was sought to refer all patients over 40 years presenting with rectal bleeding of recent onset (less than one year). During the first month of involvement, all patients over 40 years attending the surgery completed the short questionnaire and handed it to the general practitioner. If the primary reason for the consultation was rectal bleeding, a more detailed questionnaire was administered by the general practitioner, who then recorded a provisional diagnosis. On this detailed questionnaire, the general practitioner recorded the presence or absence of the following

symptoms: duration of bleeding, bright red blood only, dark blood, just on toilet paper, mixed with stool, diarrhoea, associated slime, constipation, change in bowel habit, abdominal pain, weight loss, melaena and family history of bowel disease. Possible provisional diagnosis were haemorrhoids, colitis, polyp/carcinoma, or other. The patient was then asked to attend for colonoscopy under sedation as a day patient or overnight if indicated. Practices wishing to continue the study beyond one month stopped using the short questionnaire but otherwise continued as before. Ethical approval was obtained from Newcastle Ethics Committee.

All colonoscopies were undertaken by JM, the main researcher. The questionnaire was readministered by the colonoscopist before the procedure. The main limitations of the study were reliance on the general practitioner to refer all cases of rectal bleeding in over-40-year-olds without prior selection and also notification of any declining investigation. These areas were impossible to verify.

Necessary therapeutic and diagnostic procedures including polypectomy were undertaken at colonoscopy. Any patient in whom a satisfactory colonoscopy was not completed underwent barium enema. Treatment or referral for surgery was undertaken as clinically indicated. Patients under the age of 40 years, those denying rectal bleeding and those refusing colonoscopy were excluded.

Statistical analysis

Neither the age distribution nor the duration of bleeding was normally distributed, and therefore, median values and ranges were calculated. Differences in patients' responses to questionnaires administered by the general practitioner and colonoscopist were compared using McNemar's test. The significance of differences in symptomatology between patients with serious pathology and those without was assessed by the chi-square test.

Results

The pilot study in a single practice of 12 000 patients showed that, over a 2-week period, there were 1397 consultations, of which 525 were with patients over 40 years. There were three consultations for rectal bleeding among these. Therefore, it was estimated that there would be approximately six patients over 40 years with rectal bleeding per 1000 consultations or 12 000 population each month.

Seventeen out of 34 practices approached agreed to participate in the study and continued to do so for between 1 and 9 months (median 2 months). The mean list size was 10 100 (range 3000–17 000). We would have expected approximately 205 (95% confidence interval 53–615) patients with rectal bleeding to have been referred, calculated from the number of expected consultations per month for each practice, and adjusted for length of time in study and list size. The number of patients who were entered into the study was 119, of whom 108 met the inclusion criteria (see below).

Of these 119 referred patients, eight refused colonoscopy, and therefore, were withdrawn from the study. None is known to have subsequently developed serious lower gastrointestinal disease. One patient vehemently denied ever having lower gastrointestinal symptoms on arrival (fully prepared!) for colonoscopy and 11 who were under 40 years at the time of referral were also excluded, leaving 99 patients for analysis. (Age under 40 years was an exclusion criterion, but if general practitioners sent patients under 40 years then they were investigated but not included in the survey results. None had pathology.)

In one case, a satisfactory colonoscopic examination was not possible owing to stricture formation from severe diverticular disease, diagnosed by barium enema. This patient was included in the analysis.

The 99 patients included in the analysis comprised 42 (42.4%) men and 57 (57.6%) women, with a median age of 58 (range 40–86) years. The median duration of bleeding was 12 (range 1–52) weeks.

Table 1 shows the main diagnoses and associated symptoms (as elicited by the colonoscopist).

Diagnoses

Carcinomas. Eight adenocarcinomas were diagnosed during this study (two Dukes' grade A, two Dukes' grade B and four Dukes' grade C). One lesion was in the caecum and the rectal bleeding was presumably incidental rather than a symptom of the tumour. All of the others were in the rectosigmoid colon 3–25 cm from the anal margin.

Polyps. A high proportion (25/99, 25.2%) of the patients were found to have polyps. A solitary polyp was found in 16 patients and multiple polyps in the remaining nine patients. In 17 patients, at least one polyp was found to be more than 5 mm in diameter. Histology was available in 20 cases: 14 were classed as

Table 1. Main diagnoses and symptoms.

	Carcinoma	Polyp (s)	Inflammatory bowel disease	Diverticular disease	Haemorrhoids	No abnomality detected
No. of cases	8	25	11	16	28	11
Median (range) age (years)	67.5 (52–75)	68 (40–85)	58 (41–80)	67.5 (44–86)	50 (41–77)	52.5 (40–72)
Median (range) length of bleeding (weeks)	12 (3–52)	14 (4–52)	8 (3–52)	4 (1–52)	14 (2–52)	11 (1–52)
No. of patients experiencing						
Bright red blood loss	6	6	8	14	26	10
Dark red blood loss	3	10	5	3	5	5
Blood only on paper	2	6	1	6	7	2
Blood mixed with stool	5	16	9	2	12	2
Diarrhoea	2	5	8	2	7	3
Associated slime	3	8	4	0	8	5
Constipation	1	10	5	7	14	2
Change in bowel habit	4	12	9	3	8	3
Abdominal pain	3	4	6	4	18	7
Weight loss	2	4	3	2	2	2

tubulovillous or tubular adenomas, three as villous adenomas and two as metaplastic.

Inflammatory bowel disease. Eleven cases of previously undiagnosed colitis were detected during the study: one of Crohn's disease and 10 of ulcerative colitis (one fulminant). The majority had symptoms suggestive of the diagnosis, i.e. blood mixed with stool and diarrhoea.

Diverticular disease. In 16 cases, the main diagnosis was diverticular disease; fewer than half of these patients complained of constipation and only a quarter reported abdominal pain.

Haemorrhoids/normal. In 28 cases, the principal diagnosis was haemorrhoids, and in 11 patients, colonoscopy was normal. None of these patients is known to have subsequently been diagnosed as having other colorectal disorders.

Family history. Eight patients reported a family history of bowel carcinoma; of these, three had polyps and the remainder haemorrhoids.

Symptoms

A comparison of symptoms (as elicited by the colonoscopist) between those with serious disease (carcinoma, polyps and inflammatory bowel disease) and those without (diverticular disease, haemorrhoids or normal colonoscopy) showed that the following positive symptoms were clinically significant: blood mixed with stool ($P < 0.001$); change in bowel habit ($P < 0.01$); and the presence of abdominal pain ($P < 0.05$). However the sensitivity and specificity of these symptoms was very low (sensitivity 25–68%, specificity 25–53%).

Fewer than half of the general practitioners administered the questionnaire (42.2%) and their responses were significantly different from those elicited by the colonoscopist, both for those symptoms associated with serious disease and for those suggesting a benign lesion.

Diagnosis was offered in 46 cases (46.5%), but fewer than half of these (20/46, 43.4%) were correct. Of the 33 cases of polyps or malignancy, the general practitioner offered a clinical diagnosis in 16, with the correct diagnosis being given in eight cases. In the remainder, the general practitioners' clinical diagnoses were haemorrhoids or diverticular disease. The colonoscopist's clinical diagnosis was correct in 45.5% of cases, although in the 33 cases of malignancy or polyps, she was correct in 24 (72.7%). The discrepancy in symptomatology elicited by the general practitioner and colonoscopist may well account for this.

Complications

There was only one complication from the procedures: one patient with extensive ulcerative colitis bled from a biopsy site. Repeat colonoscopy and injection of adrenaline into the bleeding site successfully arrested the haemorrhage.

Discussion

Our estimate of the number of cases expected from the pilot study is similar to that reported in other studies.[1,7] However, there is a large discrepancy between the expected number of cases and the number of patients actually referred, although the numbers were still within the 95% confidence interval. All general practitioners were asked to complete a referral form for any patients presenting with rectal bleeding but refusing investigation, but only two such forms were received – the other six patients refusing colonoscopy had initially agreed to take part in the study and subsequently refused after receiving their colonoscopy appointment. It is likely that we did not receive

details of all patients declining colonoscopy. The other possibility is that general practitioners exhibited selection bias, referring only those patients in whom they believed that investigation was warranted. This is difficult to prove or disprove, but the number of general practitioner diagnoses of haemorrhoids as the source of bleeding (72.5% of diagnoses made) would indicate that this is only part of the explanation.

There was a remarkably high rate of serious disease in this series of patients (44.9%). Other similar studies have suggested a diagnostic yield of about 22% (excluding diverticular disease) from a combination of flexible sigmoidoscopy and barium enema in patients over 40 years with rectal bleeding.[8] However, this method would miss many of the smaller polyps. A diagnostic yield of 37% was found in a study involving colonoscopy in outpatients referred to a gastroenterology clinic.[9]

There is no known increased prevalence of colorectal carcinomas in this area and no patients with carcinoma had a family history of bowel malignancies. Of the carcinomas diagnosed, 50% had a reasonably good prognosis, suggesting a benefit in early diagnosis. According to the widely accepted theory of the malignant transformation of large polyps, it is almost certain that the three largest tubulovillous adenomas (one of which required partial colectomy and two of which were removed after repeated colonoscopy) would have become malignant if left undiagnosed. At least 15 further cases had moderate to high malignant potential according to the criteria of Atkin *et al*[10] of size (> 10 mm) and histology (tubulovillous or villous adenoma).

There was also a high incidence of inflammatory bowel disease. The majority of these cases were correctly diagnosed by the general practitioner and would presumably have been referred for investigation regardless of our study.

Of the 16 patients in whom the primary diagnosis was diverticular disease, a surprisingly small proportion had symptoms suggestive of active disease, although in one patient with abdominal pain and bleeding of dark blood, there was evidence, both macroscopically and on histology, of acute diverticulitis. It is possible that the diverticular disease was not the cause of bleeding in some of these patients, although no other cause was found.

In 28 cases, the diagnosis was of haemorrhoids, and it seems likely that some of the 11 patients in whom no diagnosis was made at colonoscopy might have had internal haemorrhoids that would have been seen on proctoscopy. Another cause of rectal bleeding in this group may have been anal fissures, and two out of 11 of these patients had had symptoms suggestive of anal fissures.

In this study of patients aged over 40 years presenting to their general practitioner with rectal bleeding, we diagnosed either malignancy, polyps or inflammatory bowel disease in 44.4% of cases. Clinically significant colorectal disease is common among patients who present to their general practitioner with rectal bleeding.

Elucidation of symptoms associated with serious pathology is of limited value because of the low sensitivity and specificity and poor reproducibility of the symptoms. Most disease was located in the descending colon. We believe that all patients over the age of 40 years presenting in general practice with rectal bleeding should be referred for flexible sigmoidoscopy or colonoscopy.

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