

# Colorectal cancer and polyps in patients aged 40 years and over who consult a GP with rectal bleeding

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**Background.** Rectal bleeding is common in the community and in general practice, but few studies have examined the causes of rectal bleeding in patients presenting to general practitioners.

**Objective.** To determine the frequency of neoplastic conditions in patients with rectal bleeding presenting in general practice and to explain the associations between presenting symptoms and final diagnoses.

**Methods.** We conducted two studies, the first in 1989, the second in 1991, in which we invited Danish general practitioners to register 3–4 patients aged 40 and over presenting with rectal bleeding.

**Results.** In Study 1 among 208 patients aged 40 and over and presenting with a first episode of rectal bleeding, colorectal cancer and polyps were present in 15.4 and 7.7%, respectively. In Study 2 among 209 patients aged 40 and over and presenting with overt rectal bleeding, 156 reported a first bleeding episode or a change in their usual bleeding pattern, and in this group colorectal cancer and polyps were diagnosed in 14.1 and 11.5%, respectively. In the group with unchanged bleeding the cancer polyp prevalence was 6.7% ( $P < 0.05$ ). The patients in both studies were followed through a yearly letter to the GP for at least 32 and 22 months, respectively.

**Conclusions.** A joint analysis of the two study populations showed that only age and change in bowel habit contributed to differentiating the cancer from the non-cancer patients.

**Keywords.** Colorectal cancer, polyps, rectal bleeding.

## Introduction

Goulston *et al.* in Australia examined, mainly through colonoscopy, 145 patients aged 40 years and over who consulted a general practitioner (GP) with overt rectal bleeding of less than six months' duration.<sup>1</sup> Colorectal cancer was found in 15 (10.3%) and intestinal polyps in 11 (7.6%). Haemorrhoids were found in 63% of those patients whose source of bleeding was found in the colon/rectum. There is little recent information concerning patients presenting with rectal bleeding in primary care.

The aim of our first study was, in co-operation with several general practitioners, to establish the prevalence

of colorectal cancer in patients aged 40 years and over who consult a GP with a first episode of overt rectal bleeding of less than six months' duration. At the same time we tried to find out if there was any difference in presenting symptoms between the cancer and non-cancer patients.

The aim of our second study was, in co-operation with a different group of GPs, 1) to compare our results with those of the previous study; and 2) to test the following hypothesis: that the prevalence of colorectal cancer (and polyps) in patients who report a change in bleeding pattern is as high as that of patients who experience a first episode of rectal bleeding.

## Method

### Study 1

In August 1989 we invited every fourth GP registered in the directory of the Danish medical association ( $n = 750$ ) to participate in the study.

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The GPs were to include a maximum of three consecutive patients, 40 years and older, who presented with a first episode of overt rectal bleeding (fresh blood in the stool, blood on the stool, blood in the WC, blood on the toilet paper) within the previous six months.

Exclusion criteria were as follows: known inflammatory bowel disease, colonic polyps, polyposis coli, colorectal cancer, a predisposition to haemorrhage, e.g. a coagulation defect, and melaena stool.

The GPs were free to examine their patients in their usual way, but we introduced them to the Australian results<sup>1</sup> and asked them to arrange, if possible, for either a barium enema of the colon or a colonoscopy at the first consultation.

The participating GPs received a reminder every three months about the prospective collection of data. Inclusion of patients was terminated at the end of 1991.

Each patient was followed, either until a diagnosis of colorectal cancer had been microscopically verified, or through a yearly letter to the GP, in which each GP was asked if within the previous year he or she had been in contact with the patient concerning rectal bleeding, and, if so, what further action had been taken.

The GP was also asked if, during the same period, he or she had been in contact with the patient on account of other symptoms which might have been induced by the underlying condition that had originally

caused the rectal bleeding, and what steps had been taken in the case of a positive answer.

### Study 2

In August 1991, using the same method as in 1989 but omitting the 750 GPs who were previously invited, we invited 450 GPs to participate in a second study.

This study included, after informed consent, all patients who were 40 years and older and who had contacted a GP with rectal bleeding. Exclusion criteria, examination strategies and follow-up procedure were similar to those in the first study, and each GP was to contribute a maximum of four patients.

Both studies were approved by the regional ethics committee and the National Committee for GP-Multicenter Studies.

Mann-Whitney's and chi-square tests and logistic regression were used in the analysis, with a significance level of 5%. A 95% confidence interval is generally shown in connection with statements concerning proportions.

## Results

### Study 1

One hundred and eighty GPs agreed to participate. At the end of 1991, 96 GPs had contributed 208 patients, while the remaining 84 GPs had contributed none.

TABLE 1 Study 1: number of patients, and odds ratios

Factor	Level	Total	Patients		OR Adjusted	95% confidence interval
				Cancer		
Gender <i>P</i> = 19%	Female	111		13	1.00	
	Male	97		19	2.00	0.72-5.57
Age <i>P</i> < 0.01	40-69	141		8	1.00	
	70-79	53		20	9.26	3.32-25.82
	80+	14		4	9.90	2.03-48.36
The bleeding due to cancer? <i>P</i> = 15%	Uncertain	55		7	1.00	
	No	116		14	1.33	0.42-4.18
	Yes	37		11	3.17	0.87-11.58
Weight loss <i>P</i> = 36%	Yes	22		5	1.00	
	No	179		24	0.70	0.16-3.00
	Uncertain	7		3	2.29	0.22-23.55
Abdominal pain <i>P</i> = 64%	Yes	48		10	1.00	
	No	155		21	0.74	0.24-2.25
	Uncertain	5		1	2.02	0.13-30.75
Change in bowel habits <i>P</i> = 1.5%	Yes	60		19	1.00	
	No	138		11	0.25	0.09-0.68
	Uncertain	10		2	0.64	0.09-4.85
Discomfort <i>P</i> = 88%	Yes	56		11	1.00	
	No	136		18	0.77	0.25-2.35
	Uncertain	16		3	0.91	0.14-5.88
Constant		208		32	0.11	0.02-0.68

The odds ratios are adjusted for all other factors in the table. The cited *P*-values are chi-square tests for removal of the specific factor.

The main diagnosis to explain the current bleeding was cancer in 32 cases and polyps in 16 cases

The patients were asked about loss of weight, abdominal pain, change in bowel habits and possible discomfort during the previous six months, and whether they thought their bleeding was due to cancer. Only the parameters of age and a change in bowel habits were predictive of cancer (Tables 1 and 2). On the basis of these figures we have set up three prognostic criteria of cancer (age > 69 years; age > 69 years plus change in bowel habits; patient thought disease was cancer plus change in bowel habits). How they were met is shown in Table 3.

At follow-up 1 September 1994, 12 patients had died for reasons unrelated to colorectal cancer, and the 164 patients in whom no colorectal cancer had been diagnosed initially had been followed for 32–57 months; the mean period of observation was 38.4+/-6.5 months. During the period of follow-up, no additional case of colorectal cancer or polyps was diagnosed.

TABLE 2 Study 1: changes in bowel habits within the previous six months related to +/- colorectal cancer, by age

Change in bowel habits	Age in years			Total
	40–69	70–79	80+	
No	2/99	7/29	2/10	11/138
Yes	5/35	12/22	2/3	19/60
Uncertain	1/7	1/2	0/1	2/10
Total	8/141	20/53	4/14	32/208

TABLE 3 Patients > 69 years in relation to colorectal cancer, partly in study 1, partly among those in study 2 who presented with a first episode of overt rectal bleeding, and, partly among those in study 2 who presented with either a first episode of bleeding or with a change in bleeding pattern. The table also shows the combination of age older than 69 and a change in bowel habits, and the combination of a change in bowel habits and the patients' fear that their bleeding is due to cancer

Age > 69	Study 1	Study 2 New bleeders	Study 2 New or changed
Sensitivity	75% = 24/32	46% = 6/13	45% = 10/22
Specificity	76% = 133/176	72% = 68/95	75% = 101/134
Predictive value of pos.	36% = 24/67	18% = 6/33	23% = 10/43
Predictive value of neg.	94% = 133/141	91% = 68/75	91% = 101/113
Age > 69 and change in bowel habits			
Sensitivity	44% = 14/32	15% = 2/13	23% = 5/22
Specificity	94% = 165/176	88% = 81/95	88% = 118/134
Predictive value of pos.	56% = 14/25	13% = 2/16	24% = 5/21
Predictive value of neg.	90% = 165/183	85% = 81/92	87% = 118/135
Due to cancer and change in bowel habits			
Sensitivity	22% = 7/32	0% = 0/13	5% = 1/22
Specificity	97% = 171/176	95% = 90/95	96% = 128/134
Predictive value of pos.	58% = 7/12	0% = 0/5	14% = 1/7
Predictive value of neg.	87% = 171/196	87% = 90/103	86% = 128/149

### Study 2

One hundred and ninety-two GPs (43%) agreed to participate. At the end of the inclusion period (end of October 1992), 112 GPs (58% of the participants) had contributed 209 patients during the 15 months.

Among the 209 patients, 108 (52%) (13 cancers) reported a first episode of overt rectal bleeding, 48 (23%) (nine cancers) reported that the current bleeding was different from previous bleeding episodes, and 45 (22%) (two cancers) that the current bleeding was similar to previous bleeding episodes. There was no information about the bleeding pattern for the remaining eight patients (4%) (one cancer).

Colorectal cancer or polyps were diagnosed in 25.9% (17.6–34.2%) (28/108) of the 108 patients who presented with a first episode of bleeding. Of 48 patients who reported a change in their bleeding pattern, colorectal cancer or polyps were found in 25% (13.6–39.6%) (12/48), whereas colorectal cancer or polyps were found in 6.7% (1.4–18.3%) (3/45) of the 45 patients who reported an unchanged bleeding pattern ( $P < 0.05$ ). The cancers (2/45) in this last group were of Duke type D.

The diagnoses had been entered after the termination of the examinations in connection with the initial presentation. In one case the diagnosis of "NAD" had been changed half a year later to "cancer", and an initial diagnosis of "tubular rectal adenoma" was changed 18 months later in one patient to "cancer of the caecum".

The patients in this study were asked the same questions about their medical history as the patients in our first study. The answers by the 156 patients who had

either experienced a first episode of overt rectal bleeding (108) or a change in bleeding pattern (48) are shown in Table 4; it appears that only age and abdominal pain showed any indication of an independent association with cancer. The three criteria (Table 3) set up on the basis of the data from the first study were of low prognostic value when applied to the patients in this study (Tables 3 and 5). When we combined the data from the two studies only age and change in bowel habits were associated with cancer (Table 6).

During the follow-up period, colorectal cancer was diagnosed in two patients, and six patients died without having presented to their GPs with any symptoms of colorectal cancer. On 1 September 1994, the remaining 178 patients, in whom no colorectal cancer had been diagnosed, had been followed for 22–36 months; the mean period of observation was 31.5 ± 3.3 months.

## Discussion

This study shows that colorectal cancer was diagnosed in 15% of patients aged 40 years and over who con-

sulted a GP with either a first episode of rectal bleeding or with a change in bleeding pattern. Only age and change in bowel habits were associated with a final diagnosis of cancer.

The long follow-up period makes false negative cancer diagnoses unlikely, but there may still be undiagnosed cases of polyps.

The detection of polyps in elderly people is important because it is presumed that cancers usually develop from them.<sup>2-6</sup> This development probably runs over years.

Fijten *et al.* in The Netherlands included 136 patients aged 40–75 years in two studies from general practice.<sup>7-9</sup> These studies are to a certain degree comparable with the present study. Their material, however, consisted of two kinds of patient: 60% were included because they complained of rectal bleeding, while 40% complained primarily of abdominal pain, though, when asked, they confirmed having observed blood in the stool within the previous six months. They found nine patients with colorectal cancer (6.6%) (2.4–10.8%).<sup>7</sup> Fijten's studies do not state how many of the 136 patients had experienced a first episode of rectal

TABLE 4 Study 2: colorectal cancer in 156 patients who presented with a first episode of rectal bleeding (n = 108) or change in bleeding pattern (n = 48), by age, sex, and certain symptoms

Factor	Level	Total	Patients Cancer	OR adjusted	95% confidence interval
Gender P = 45%	Female	85	12	1.00	
	Male	71	10	1.49	0.53–4.23
Age P = 18%	40–69	113	12	1.00	
	70–79	32	9	2.99	0.98–9.11
	80+	11	1	1.23	0.11–13.67
The bleeding due to cancer? P = 87%	Uncertain	44	7	1.00	
	No	87	11	0.84	0.26–2.73
	Yes	25	4	1.18	0.27–5.12
Weight loss P = 93%	Yes	22	5	1.00	
	No	127	16	0.77	0.19–3.10
	Uncertain	7	1	0.95	0.07–12.83
Abdominal pain P = 19%	Yes	42	11	1.00	
	No	110	10	0.30	0.09–1.05
	Uncertain	4	1	0.71	0.04–12.58
Change in bowel habits P = 70%	Yes	48	10	1.00	
	No	102	10	0.92	0.26–3.22
	Uncertain	6	2	2.62	0.25–27.03
Discomfort P = 61%	Yes	40	5	1.00	
	No	106	14	1.79	0.49–6.54
	Uncertain	10	3	2.33	0.32–16.89
Rectal bleeding P = 46%	New	108	13	1.00	
	Changed	48	9	1.49	0.51–4.33
Constant		156	22	0.11	0.02–0.68

The odds ratios are adjusted for all other factors in the table.  
The cited *P*-values are chi-square tests for removal of the specific factor.

TABLE 5 Study 2: colorectal cancer in 156 patients who presented with a first episode of rectal bleeding (n = 108) or change in bleeding pattern (n = 48), by age and related to the symptom of change in bowel habits

Change in bowel habits	Age in years			Total
	40-69	70-79	80+	
No	6/82	3/13	1/7	10/102
Yes	5/27	5/18	0/3	10/48
Uncertain	1/4	1/1	0/1	2/6
Total	12/113	9/32	1/11	22/156

bleeding. Among 178 patients aged 40-75 who had presented with a first episode of rectal bleeding, we found 22 patients with colorectal cancer (12.4%) (7.6-17.2%), and thus our figures roughly correspond to hers.

Fijten *et al.* also found that the risk of finding a cancer increased with age and that a change in bowel habits represented an increased risk in itself.<sup>8</sup> They included only patients up to the age of 75 years. In our material

of 32 cancer patients, 10 were older than 75 years. They aimed at including everybody between 18 and 75 years who consulted a GP with overt rectal bleeding, and had calculated their design to include about 1200 patients. However, they only succeeded in enlisting 269 patients in their examination. This involves a considerable risk of bias, and it is difficult to assess which patients the study is describing.

It is known from multipractice studies that initially many colleagues respond positively to an invitation to participate in a study, only to abstain from doing anything about it, and an initial drop-out rate of about 50% is often seen without believing that this has led to serious bias.<sup>10</sup>

It is difficult to record patients from general practice in a study of relatively rare conditions, and in order not to scare away the colleagues in advance, it was decided that each GP was to contribute three, and later four patients as a maximum, although for statistical purposes it might have been more ideal to have an unlimited collection of data within a fixed period of time. This restriction should not, however, cause a change in the relative distribution of cancers, polyps, and the group without cancer or polyps.

TABLE 6 Number of patients (with new or changed bleeding) and odds ratios (OR) in the two materials

Factor	Level	Patients		OR Adjusted	95% confidence interval
		Total	Cancer		
Gender P = 10%	Female	196	25	1.00	
	Male	168	29	1.78	0.89-3.55
Age P = 0.01	40-69	254	20	1.00	
	70-79	85	29	5.38	2.67-10.82
	80+	25	5	4.09	1.24-13.51
The bleeding due to cancer? P = 13%	Uncertain	99	14	1.00	
	No	203	25	1.07	0.48-2.38
	Yes	62	15	2.26	0.90-5.68
Weight loss P = 53%	Yes	44	10	1.00	
	No	306	40	0.69	0.27-1.77
	Uncertain	14	4	1.26	0.27-5.82
Abdominal pain P = 28%	Yes	90	21	1.00	
	No	265	31	0.54	0.25-1.17
	Uncertain	9	2	0.79	0.11-5.81
Change in bowel habits P = 5%	Yes	108	29	1.00	
	No	240	21	0.44	0.21-0.93
	Uncertain	16	4	1.32	0.32-5.40
Discomfort P = 81%	Yes	96	16	1.00	
	No	242	32	1.14	0.52-2.50
	Uncertain	26	6	1.50	0.42-5.41
Rectal bleeding P = 29%	New	316	45	1.00	
	Changed	48	9	1.64	0.65-4.10
Constant		364	54	0.14	0.04-0.43

The odds ratios are adjusted for all other factors in the table. The cited P-values are chi-square tests for removal of the specific factor.

We asked the participating GPs to arrange for an examination of the entire colon, but did not make it a condition for inclusion. This gave an initial risk of false negatives, which were supposed to be revealed during the period of follow-up, thus minimizing this bias—especially since the follow-up was complete.

We may conclude that the figures were uniform in the present two studies as to the number of patients aged 40 years and over who consulted a GP with a first episode of overt rectal bleeding, and that the same rate of cancer and polyps was present in the two materials. In the group of patients who reported a change in a known bleeding pattern, we found the same high rate of cancer and polyps as in the group presenting with a first episode of rectal bleeding.

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