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RAPID COMMUNICATION

Colonoscopic evaluation of minimal rectal bleeding in average-risk patients for colorectal cancer

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Abstract

AIM: To assess the prevalence of clinically significant lesions in patients with minimal bright red bleeding per rectum (BRBPR).

METHODS: Consecutive outpatients prospectively underwent colonoscopy at Loghman Hakim Hospital, Tehran. Minimal BRBPR was defined as small amounts of red blood after wiping or in the toilet bowl. Patients with the following alarm signs were excluded: Positive personal history of colorectal neoplasms or inflammatory bowel disease (IBD), positive first degree family history of colorectal neoplasms, history of altered bowel habits, recent significant weight loss, and presence of iron deficiency anemia. Neoplastic polyps, colorectal carcinoma, and IBD were defined as significant lesions.

RESULTS: A total of 402 patients (183 female and 219 male, aged 43.6 ± 15.7 years) were studied. Hemorrhoids (54.2%), anal fissures (14.2%) and ulcerative colitis (14.2%) were the most common lesions and colonoscopy was normal in 8.0%. Significant lesions were found in 121 (30.1%) patients, including 26 patients (6.5%) with adenocarcinoma and 30 (7.5%) with adenomatous polyps. Almost all patients with significant lesions had at least one lesion in the distal colon; an adenocarcinoma and an adenomatous polyp in the proximal colon were found in 2 patients with hemorrhoids.

CONCLUSION: Flexible sigmoidoscopy appears to be sufficient for the evaluation of average risk patients with minimal BRBPR. Rigid sigmoidoscopy may be used as an alternative in patients less than 40 years of age in settings where the former is not available. The choice of colonoscopy over flexible sigmoidoscopy in patients aged over 50 years should be individualized.

Key words: Gastrointestinal hemorrhage; Colonoscopy; Colorectal neoplasms; Inflammatory bowel disease

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INTRODUCTION

Minimal bright red bleeding per rectum (BRBPR) is a clinical problem frequently found in adults of all ages. The problem may be even more common in younger adults because of under-reporting to physicians[1]. For example, a community-based study of 1643 adults ages 20 to 64 found that 13 percent reported blood on wiping. The prevalence of any rectal bleeding was significantly higher in younger people. Only 14 percent of those with any rectal bleeding had seen a physician for bowel problems in the prior year[2].

The etiology of bleeding is highly variable and depends upon the nature of the population studied. The etiology of minimal BRBPR is often difficult to determine because individual patients may have multiple potentially culpable lesions found at endoscopy[3]. In addition, colorectal neoplasms (mostly adenomas) have been found in 16 percent of patients who were concurrently diagnosed with an anorectal source of bleeding[4]. Benign anorectal pathologies appear to account for 90 percent or more of all episodes of minimal BRBPR[3]. The true proportion of benign etiologies may be even higher since many young people with minimal BRBPR never present for care. The appropriate evaluation of a patient presenting with minimal BRBPR must be guided by the risk of underlying serious pathology.

There are relatively few studies that have addressed issues relevant to the appropriate evaluation of patients

with minimal BRBPR and most studies have not been performed in patients with strictly minimal BRBPR. It is a source of controversy as to whether minimal BRBPR necessitates total colonoscopy as a first-line procedure or a 60 cm flexible sigmoidoscopy[5]. Some authors have recommended colonoscopy in all patients with rectal bleeding[4,6,7], while others prefer colonoscopy for patients over 50 years of age and recommend sigmoidoscopy only if a potential source of bleeding is not identified on physical examination or anoscopy/proctoscopy[3].

Medical resources are limited in developing countries and a total colonoscopy may not be easily accessible for all patients with minimal BRBPR in Iran. Our aim was to determine the type and prevalence of colonoscopic findings in patients with minimal BRBPR in order to establish which patients need total colonoscopy.

MATERIALS AND METHODS

The study was performed prospectively on consecutive out-patients undergoing colonoscopy during a three-year period (October, 2004-August, 2007) at the "open access" Unit of Gastrointestinal Endoscopy at Loghman Hakim Hospital of Shaheed Beheshti University of medical sciences, in Tehran-Iran.

Minimal BRBPR was defined as small amounts of red blood after wiping or a few drops of blood in the toilet bowl after defecation. Small amounts of blood on the surface of the stool were also considered minimal BRBPR, but red blood intermixed with stool was not. Exclusion criteria were age below 12 years, positive personal history of colorectal neoplasms or inflammatory bowel disease (IBD), positive first degree family history of colorectal neoplasms, history of altered bowel habits, recent significant weight loss, presence of iron deficiency anemia, those who had already had a colonoscopy within the previous year, and those who did not consent or refused colonoscopy. Patients less than 40 years of age who refused to participate in the study underwent flexible sigmoidoscopy according to the current recommendations[3]. These patients are excluded from the main data analysis, but their results are presented as a separate group.

All patients were interviewed and examined by a gastroenterologist. Informed written consent was obtained from each patient before interview according to the guidelines of the institute. After clinical evaluation, all patients underwent anal inspection and digital rectal examination. Regardless of any anal pathologies detected, all patients underwent total colonoscopy.

Endoscopy was performed by an expert endoscopist in patients after the ingestion of 4 to 6 liters of polyethylene glycol solution. Any abnormal lesion was biopsied and sent for histology. IBD was diagnosed based on colonoscopy features and histopathological findings. Patients with poor bowel preparation were scheduled for repeat colonoscopy and the results of a satisfactory examination are reported. Colonoscopy was supplemented with double contrast barium enema if the colon was examined to at least the hepatic flexure, but the cecum could not be reached.

Patients less than 40 years of age are referred to as 'young' patients. The part of colon, situated between the rectum and the splenic flexure, was defined as distal colon. Neoplastic polyps, colorectal carcinoma, and IBD were defined as "significant lesions".

The study was approved by the institutional review board of the Loghman Hakim research unit of Shaheed Beheshti University of Medical Sciences, according to the declaration of Helsinki. Informed written consent was obtained from each patient before interview and procedures according to the guidelines of the institute.

Quantitative variables are presented with mean ± SD. The qualitative variables are expressed with number and percent. The two groups of values were compared using the chi-square test and the Fisher's exact test, a value of $P < 0.05$ was considered statistically significant.

RESULTS

Patient population

During the study period, 402 patients with minimal BRBPR were enrolled. This study group was composed of 219 males (54.5%) and 183 females (45.5%). Their ages ranged from 13 to 86 years (mean 43.6 ± 15.7 years). Of these, 177 (44.0%) were in the young age group.

There were another 94 young patients (41 male, 53 female; aged 27.6 ± 5.8 years), who met the eligibility criteria, but did not agree to participate and undergo colonoscopy.

Endoscopic lesions

Endoscopy was performed up to the cecum in 389 patients (96.8%). There were no complications attributed to the procedure. The 13 (3.2%) incomplete examinations showed distal lesions in 11 patients and 2 normal results. All barium enemas were normal.

Endoscopic findings are presented in Table 1. Hemorrhoids, anal fissures and IBD were the most common diagnoses.

Location of lesions in patients with abnormal findings

At least one distal lesion was found in all patients with abnormal findings (370 patients), but a concomitant proximal significant lesion was found in 15 patients (4.1%). The concomitant proximal lesion was in the same diagnostic category (e.g. distal and proximal polyps) in 13 patients; a 53 year-old woman with hemorrhoids was found to have adenocarcinoma in the transverse colon and one adenomatous polyp was found in the transverse colon of a 62 year-old woman with hemorrhoids.

At least one anorectal lesion was found in 359 patients (97.0%). In patients with anorectal source of bleeding, a different distal lesion was found in 31 (8.6%). A statistically significant difference in the frequency of concomitant lesions could not be found between young and older patients (5.8% *vs* 10.2%, $P = 0.14$).

Table 1 Colonoscopic findings in 402 patients with minimal bright red bleeding per rectum at Loghman Hakim hospital by age group[1]

		Total		Age < 40 yr		Age ⩾ 40 yr		*P*
		Number	Percent	Number	Percent	Number	Percent	
Significant lesions	Carcinomas	26	6.5	4	2.3	22	9.8	0.002
	Polyps	30	7.5	8	4.5	22	9.8	0.046
	UC	57	14.2	37	20.9	20	8.9	0.001
	CD	10	2.5	5	2.8	5	2.2	0.700
Insignificant lesions	Hemorrhoids	218	54.2	62	35.0	156	69.3	7.2 e-012
	Anal fissures	57	14.2	38	21.5	19	8.4	0.000
	Diverticulosis	1	0.2	0	0.0	1	0.4	0.560
	SRUS	33	8.2	23	13.0	10	4.4	0.020
	AD	1	0.2	0	0.0	1	0.4	0.560
	Normal	32	8.0	23	13.0	9	4.0	0.001

UC: Ulcerative colitis; CD: Crohn's disease; SRUS: Solitary rectal ulcer syndrome; AD: Angiodysplasia. [1]Some patients with more than one lesion were presented in more than one diagnostic category.

Table 2 Location of significant lesions according to the reach of different diagnostic procedures[1] in patients with minimal bright red bleeding per rectum at Loghman Hakim hospital

Distance from anal verge[2]	Carcinomas	Polyps	UC	CD
Age < 40 yr				
10 cm	3/4	2/8	36/37	3/5
30 cm	4/4	8/8	37/37	5/5
60 cm	4/4	8/8	37/37	5/5
Entire colon	4/4	8/8	37/37	5/5
Age ⩾ 40 yr				
10 cm	12/22	10/22	20/20	0/5
30 cm	17/22	13/22	20/20	4/5
60 cm	21/22	21/22	20/20	5/5
Entire colon	22/22	22/22	20/20	5/5

UC: Ulcerative colitis; CD: Crohn's disease. [1]The length of evaluation was considered 10 cm for anoscopy/rectoscopy, 30 cm for rigid sigmoidoscopy and 60 cm for flexible sigmoidoscopy; [2]In patients with multiple lesions of the same type, the nearest lesion to the anal verge has been considered.

Significant lesions

Significant lesions were found in 54 young patients (30.5%) and 67 patients (29.8%) in the older group ($P > 0.5$). The potential diagnostic yields of different approaches (based on the location of the lesions) for the diagnosis of significant lesions are compared in Table 2.

Findings in young patients who underwent flexible sigmoidoscopy

There were 94 young patients (41 male, 53 female; aged 27.6 ± 5.8 years), who met the eligibility criteria, but did not agree to undergo colonoscopy. Evaluation of these patients revealed hemorrhoids in 46 (48.9%), anal fissures in 20 (21.3%), IBD in 7 (7.4%), solitary rectal ulcer syndrome in 6 (6.4%), and diverticulosis in 1 (1.1%). There were no cases of carcinoma, polyps or angiodysplasia. Normal results were found in 21 patients (22.3%).

DISCUSSION

Our study showed that significant lesions in the proximal colon are infrequent in patients with minimal BRBPR. Colonoscopy is recommended for the evaluation of rectal bleeding in patients who are at increased risk for colorectal neoplasms ('red flags')[3], but there are no specific recommendations for the appropriate evaluation of the majority of patients who lack these risk factors. The decision about the extent of the evaluation of these patients should be based on the prevalence of clinically significant lesions, potential need for a repeat procedure, costs and availability of the facility. Some experts recommend that young patients do not require further evaluation, if the presentation and history do not suggest an increased risk of cancer and a potential source of bleeding (such as hemorrhoids or an anal fissure) is identified in the clinical evaluation[3]. Several studies have concluded that flexible sigmoidoscopy is initially appropriate[5,8-10], while others have recommended colonoscopy in this age group[7]. Contrasting opinions are also expressed in the guidelines prepared by the American Society for Gastrointestinal Endoscopy (ASGE) and the European Panel for Appropriateness of Gastrointestinal Endoscopy (EPAGE): While the former specify that middle-aged or older individuals must always undergo a total colonoscopy, even in the presence of an anal lesion that could justify the hematochezia[11], the latter consider total colonoscopy inappropriate when the source of bleeding has been ascertained by ano- or sigmoidoscopy[12].

IBD was found in 16.4% of our patients. Other studies have reported lower rates of IBD in their patients[5,7,9-10]. Detection of ulcerative colitis is not a problem, because the rectum is almost always involved. Our 10 patients with Crohn's disease also had distal colonic involvement (less than 30 cm from the anal verge). Thus, our results show that IBD can be readily diagnosed in patients with minimal BRBPR with any of the available procedures.

Colorectal cancer has been reported as low as 0%-4% and adenomatous polyps in 9.9%-30% in patients with minimal BRBPR from Western countries[5,7-10]. Some of the differences in these results may be explained by the differences in their study populations. In a recent study from Iran, Sotoudehmanesh *et al*[13] found no cancer and

4 adenomatous polyps (3%) in 134 average-risk patients with minimal bright red bleeding from midline anal fissures. We found colorectal carcinoma in 6.5% of our patients and adenomatous polyps in 7.5%. Our findings may be overestimated, because we excluded 94 patients from analysis who underwent only flexible sigmoidoscopy and there were no neoplastic lesions in this group. Nevertheless, minimal BRBPR should be regarded as an 'alarm symptom' for neoplastic colorectal lesions.

Patients with minimal BRBPR from colorectal cancer are likely to have left-sided lesions[3]. Almost all of neoplastic lesions in our patients were located in the distal colon. There was one patient with hemorrhoids and an adenocarcinoma in the transverse colon, but we believe that the bleeding may have been caused by the hemorrhoids and the tumor was incidentally found during colonoscopy. The distribution of polyps was similar to colorectal cancer in our patients. Thus, we conclude that average risk patients with minimal BRBPR of any age may not be at an increased risk for proximal neoplastic colonic lesions.

The choice of the appropriate diagnostic evaluation depends mainly on the age of the patient. According to our results in Table 2, young patients should at least be evaluated up to the distal 30 cm of the colon. Physical examination (including digital rectal examination), anoscopy and rectoscopy are simple and low cost maneuvers that do not require bowel preparation. In fact, anoscopy has a higher sensitivity for the detection of hemorrhoids than flexible video endoscopy[9]. However, these approaches would fail to diagnose most neoplastic lesions in our young patients, even if a potential anorectal source of bleeding was identified. Rigid sigmoidoscopy is a widely used modality as a preliminary investigation to exclude colorectal pathology and is usually done in outpatient clinics on unprepared bowel[14]. All significant lesions of our young patients were in the reach of rigid sigmoidoscopy; however, flexible sigmoidoscopy has been shown to be superior in terms of diagnostic value and patient discomfort[14]. Thus, we suggest flexible sigmoidoscopy for young patients with minimal BRBPR regardless of identified anorectal pathologies and rigid sigmoidoscopy may be an appropriate alternative in settings, where flexible sigmoidoscopy is not accessible.

Colorectal cancer screening recommendations should be considered, when deciding about the evaluation of middle-aged or older individuals with minimal BRBPR. Both flexible sigmoidoscopy and colonoscopy have been recommended for this purpose and the decision about which option to select should be made between the patient and physician[15]. Although, clinically significant lesions of 97% of our older patients were in the reach of flexible sigmoidoscopy; colonoscopy is also an appropriate option for patients over 50 years willing to undergo screening for colorectal cancer simultaneously. Therefore, patients should be informed that minimal BRBPR does not place them at an increased risk for proximal neoplastic colonic lesions and the costs and availability of the facility should also be considered. Another important factor is the need for a repeat procedure. About 30% of patients who undergo initial flexible sigmoidoscopy will eventually require colonoscopy.

Our findings should be interpreted in the context of the limitations of our study. First, not all patients with minimal BRBPR are referred to gastroenterologists for evaluation, and this is particularly true for younger patients[10]. Second, any recommendation about the appropriate extent of evaluation of patients with minimal BRBPR should be made from randomized clinical trials with follow-up data.

We suggest flexible sigmoidoscopy for the evaluation of average risk patients for colorectal cancer with minimal BRBPR. Rigid sigmoidoscopy may be used as an alternative in patients less than 40 years of age in settings where the former is not available. The choice of colonoscopy over flexible sigmoidoscopy in patients aged over 50 years should be individualized.

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COMMENTS

Background

Minimal bright red bleeding per rectum (BRBPR) is a clinical problem frequently found in adults of all ages. The etiology of bleeding is highly variable and depends upon the nature of the population studied.

Research frontiers

It is a source of controversy as to whether minimal BRBPR necessitates total colonoscopy as a first-line procedure or a 60 cm flexible sigmoidoscopy. We performed this study to investigate the prevalence of clinically significant lesions in patients with minimal BRBPR.

Innovations and breakthroughs

Hemorrhoids, anal fissures and ulcerative colitis were the most common lesions. Almost all patients with clinically significant lesions had at least one lesion in the distal colon, which can be examined by flexible sigmoidoscopy.

Applications

We suggest flexible sigmoidoscopy for the evaluation of patients with minimal BRBPR who are at average risk for colorectal cancer. Rigid sigmoidoscopy may be used as an alternative in patients less than 40 years of age in settings where the former is not available. The choice of colonoscopy over flexible sigmoidoscopy in patients aged over 50 years should be individualized.

Terminology

Patients less than 40 years of age are referred to as 'young' patients. The part of colon situated between the rectum and the splenic flexure was defined as distal colon. Neoplastic polyps, colorectal carcinoma, and inflammatory bowel disease were defined as "significant lesions".

Peer review

They assess the prevalence of clinically significant lesions in patients with minimal bright red bleeding per rectum. It is a very interested topic for the readers of WJG, it is written in correct English, with valuable results and conclusions.

REFERENCES

1 **Dent OF**, Goulston KJ, Zubrzycki J, Chapuis PH. Bowel symptoms in an apparently well population. *Dis Colon Rectum* 1986; **29**: 243-247

2 **Talley NJ**, Jones M. Self-reported rectal bleeding in a United States community: prevalence, risk factors, and health care seeking. *Am J Gastroenterol* 1998; **93**: 2179-2183

3 **Penner RM**, Majumdar SR. Approach to minimal bright red bleeding per rectum. In: Rose BD (ed). Waltham: UpToDate,

2007
4 **Helfand M**, Marton KI, Zimmer-Gembeck MJ, Sox HC Jr. History of visible rectal bleeding in a primary care population. Initial assessment and 10-year follow-up. *JAMA* 1997; **277**: 44-48
5 **Carlo P**, Paolo RF, Carmelo B, Salvatore I, Giuseppe A, Giacomo B, Antonio R. Colonoscopic evaluation of hematochezia in low and average risk patients for colorectal cancer: A prospective study. *World J Gastroenterol* 2006; **12**: 7304-7308
6 **Goulston KJ**, Cook I, Dent OF. How important is rectal bleeding in the diagnosis of bowel cancer and polyps? *Lancet* 1986; **2**: 261-265
7 **Wong RF**, Khosla R, Moore JH, Kuwada SK. Consider colonoscopy for young patients with hematochezia. *J Fam Pract* 2004; **53**: 879-884
8 **Church JM**. Analysis of the colonoscopic findings in patients with rectal bleeding according to the pattern of their presenting symptoms. *Dis Colon Rectum* 1991; **34**: 391-395
9 **Korkis AM**, McDougall CJ. Rectal bleeding in patients less than 50 years of age. *Dig Dis Sci* 1995; **40**: 1520-1523
10 **Spinzi G**, Fante MD, Masci E, Buffoli F, Colombo E, Fiori G, Ravelli P, Ceretti E, Minoli G. Lack of colonic neoplastic lesions in patients under 50 yr of age with hematochezia: a multicenter prospective study. *Am J Gastroenterol* 2007; **102**: 2011-2015
11 **The role of endoscopy in the patient with lower gastrointestinal bleeding**. American Society for Gastrointestinal Endoscopy. *Gastrointest Endosc* 1998; **48**: 685-688
12 **Gonvers JJ**, De Bosset V, Froehlich F, Dubois RW, Burnand B, Vader JP. 8. Appropriateness of colonoscopy: hematochezia. *Endoscopy* 1999; **31**: 631-636
13 **Sotoudehmanesh R**, Ainechi S, Asgari AA, Kolahdoozan S. Endoscopic lesions in low-to average-risk patients with minimal bright red bleeding from midline anal fissures. How much should we go in? *Tech Coloproctol* 2007; **11**: 340-342
14 **Rao VS**, Ahmad N, Al-Mukhtar A, Stojkovic S, Moore PJ, Ahmad SM. Comparison of rigid vs flexible sigmoidoscopy in detection of significant anorectal lesions. *Colorectal Dis* 2005; **7**: 61-64
15 **Winawer S**, Fletcher R, Rex D, Bond J, Burt R, Ferrucci J, Ganiats T, Levin T, Woolf S, Johnson D, Kirk L, Litin S, Simmang C. Colorectal cancer screening and surveillance: clinical guidelines and rationale-Update based on new evidence. *Gastroenterology* 2003; **124**: 544-560

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