

Significance of Rectosigmoid Polyp as a Predictor of Proximal Colonic Polyp

Won Ho Kim, Sung Kun Lee, Jae Hun Chung, Yong Suk Cho, Hyo Min Yoo, and Jin Kyung Kang

Abstract

The association between rectosigmoid polyps and polyps in the more proximal colon is still a matter of debate, and the need for colonoscopy in patients with rectosigmoid polyps that are detected by flexible sigmoidoscopy is controversial. The aim of this study was to determine whether or not certain characteristics of rectosigmoid polyps are associated with the presence and characteristics of proximal colonic polyps. Seven hundred and twenty-eight patients who underwent total colonoscopy between October 1995 and June 1998 and who had colorectal polyps were retrospectively analyzed. Patients with inflammatory bowel diseases, familial adenomatous polyposis, or any advanced cancer were excluded. The odds ratio (OR) and 95% confidence interval (CI) of prevalence of proximal colonic polyps according to the patients age and sex, as well as the characteristics of rectosigmoid polyps, were calculated. Advanced adenoma was defined as an adenoma larger than 10 mm or an adenoma of any size with villous component, high-grade dysplasia or invasive carcinoma. Among 728 patients with colorectal polyps, 356 patients (48.9%) had polyps only in the rectosigmoid region, 193 patients (26.5%) had polyps only in the proximal colon, and 179 patients (24.6%) had polyps in both the rectosigmoid and proximal colon. In 535 patients with rectosigmoid polyps, the prevalence of proximal colonic polyps, neoplastic polyps and advanced adenomas were 33.4%, 27.3% and 2.9%, respectively. The prevalence of proximal colonic polyps in patients with rectosigmoid polyps was found to be significantly related to the male gender and elderly patients, in addition to the neoplastic histology of the rectosigmoid polyps. However, the prevalence of the proximal colonic polyps was not related to the size, number and shape of rectosigmoid polyps. In 179 patients with both rectosigmoid and proximal colonic polyps, the characteristics of proximal colonic polyps such as size, number and shape were similar to those of rectosigmoid polyps. We recommend total colonoscopic examination in all patients with rectosigmoid adenomas, regardless of the size, number, and shape, especially in elderly males.

Key Words: Rectosigmoid polyp, proximal colonic polyp, sigmoidoscopy, colonoscopy

INTRODUCTION

Sigmoidoscopy has been shown to be an effective screening measure for the prevention and early detection of cancer, and thereby should reduce the mortality from cancer of the rectum and distal colon.¹⁻⁶ Therefore, many investigators recommend an annual fecal occult blood test and sigmoidoscopy every 3 years in average-risk individuals over the age of 50 for the screening of colorectal cancer.⁷⁻¹⁰ Sigmoidoscopy used as a screening procedure frequently detects polyps of the rectum and sigmoid colon.

However, the association between rectosigmoid polyps and polyps in the more proximal colon is still a matter of debate, and the need for colonoscopy in patients with rectosigmoid polyps that are detected by flexible sigmoidoscopy is controversial.

It has been generally accepted that rectosigmoid neoplastic polyps are not only premalignant by themselves, but are also associated with an increased risk of more proximal colonic neoplasm.^{5,6,11} One of the commonly recommended indications for total colonoscopy is the presence of polyps in the rectosigmoid region for the detection of more proximal colonic neoplasia.^{8,10,12,13} This is based on studies which indicated that the presence of polyps in the rectosigmoid is, in 20-50% of cases, associated with neoplastic pathologies, including adenoma and carcinoma in the proximal colon.¹⁴⁻¹⁶

It was reported that patients with rectosigmoid polyps showed an odds ratio of 2 : 5 for proximal

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Department of Internal Medicine and Institute of Gastroenterology, Yonsei University College of Medicine, Seoul, Korea.

Address reprint request to Dr. W. H. Kim, Yonsei University College of Medicine, C.P.O. Box 8044, Seoul 120-752, Korea. Tel: 82-2-361-5410, Fax: 82-2-393-6844, E-mail: kimwonho@yumc.yonsei.ac.kr

adenomas compared to subjects without rectosigmoid polyps.¹⁷ This result could be interpreted that total colonoscopy is indicated in all patients with rectosigmoid polyps regardless of their histologic type or size, as has been suggested by some authors.^{14,15,17-22} On the contrary, others have considered that examination of the entire colon is not necessary in asymptomatic patients with hyperplastic polyps or small adenomas found at sigmoidoscopy,^{7,23-27} because those patients had fewer and smaller proximal neoplasms than patients with larger adenomas or invasive carcinoma.^{17,23,26,28,29} Furthermore, the cost and risk of complication, as well as the inability to perform an unlimited number of examinations, discouraged a wide colonoscopic screening.^{8-10,12,30-32}

The present study was designed to address whether certain characteristics of rectosigmoid polyps are associated with the presence and characteristics of more proximal colonic polyps.

MATERIALS AND METHODS

From October 1995 to June 1998, 4,956 total colonoscopic examinations were performed on 4,640 persons at Yonsei University Severance Hospital, Seoul, Korea. Eight hundred and ninety-eight patients (18.1%) had one or more colorectal polyps. One hundred and seventy of these patients were excluded from the analysis because of combined advanced colorectal cancer, inflammatory bowel disease, or familial adenomatous polyposis.

Among 728 patients with colorectal polyps, 356 patients (48.9%) had polyps only in the rectosigmoid, 193 patients (26.5%) had polyps only in the proximal colon, and 179 patients (24.6%) had polyps both in the rectosigmoid and proximal colon. A total of 535 patients with any rectosigmoid polyps comprised the study population.

All colonoscopies were performed with Olympus Model CF 200-L and 200-I colonoscopes by experienced endoscopists. The patients had been prepared by oral administration of balanced electrolyte solution with polyethylene-glycol on the day before the examination.

Proximal colon was defined as the colon proximal to the sigmoid-descending junction. Colorectal polyps were histopathologically classified as non-neoplastic (hyperplastic, inflammatory, hamartoma) and neoplastic

polyps (adenoma with or without villous component).¹⁰

In cases of snare polypectomy, the exact size of the polyp was determined immediately after polyp removal, and in other cases the polyp size was determined by comparing the known width of opened biopsy forceps. The size of polyps was classified into diminutive (≤ 5 mm in diameter), small (6–10 mm) and large (≥ 11 mm).²⁰ The shape of polyps was divided into pedunculated type (Ip), subpedunculated (Isp), sessile (Is) and flat elevated (IIa).³³ A large adenoma or an adenoma of any size with villous component, high-grade dysplasia or invasive carcinoma was defined as an advanced adenoma. In cases with more than one polyp, the polyps with the greatest diameter and the most serious histology were taken into account and that in rectosigmoid was regarded as an index polyp.

The SPSS package was used for data management, development of logistic regression model and assessment of odds ratios (OR) as well as 95% confidence intervals (CI). To compare 2 groups, chi-square test was used. Criterion for statistical significance was $p < 0.05$.

RESULTS

The characteristics of patients and of rectosigmoid and proximal colonic polyps are described in Tables 1 and 2. Adenoma (71.2%) was the most common rectosigmoid index polyp followed by hyperplastic polyp (10.1%), mucosal prolapse (9.3%) and inflammatory polyp (7.1%). Among 535 rectosigmoid index polyps, 9.9% had villous component, 4.9% had high-grade dysplasia or invasive carcinoma and 21.3% were larger than 10 mm. Among 179 proximal colonic polyps, 3.4% had villous component, 1.2% had high-grade dysplasia or invasive carcinoma and 7.3% were larger than 10 mm. The proportion of advanced adenoma among rectosigmoid and proximal colonic polyps was 23.6% (126/535) and 8.9% (16/179), respectively.

In patients with rectosigmoid polyps, the prevalence of proximal colonic polyps, neoplastic polyps and advanced adenomas was 33.4% (179/535), 27.3% (146/535) and 2.9% (16/535), respectively.

The prevalence of proximal colonic polyps or adenomas in patients with rectosigmoid polyps was found to be significantly related to the male gender

adenomas (33.3% vs. 12.3%; OR=3.6; $p < 0.001$), but also for proximal advanced adenomas (3.9% vs. 0.6%; OR=6.3; $p=0.042$). However, the prevalence of proximal colonic polyps or adenomas was not

related to the size, number and shape of rectosigmoid index polyps (Table 3-5).

In patients with polyps both in the rectosigmoid and proximal colon, the characteristics of proxi-

Table 4. Probability of Proximal Colonic Adenomas in Relation to the Characteristics of Patients and of Rectosigmoid Polyps

		No. of patients		(%)	OR	CI	P
		Total	With proximal adenoma				
Sex	Female	184	36	19.6	1.9	1.2-2.8	0.004
	Male	351	110	31.3			
Age	<60 yr	307	64	20.8	2.1	1.4-3.1	<0.001
	≥60 yr	228	82	36.0			
Histology	Non adenoma	154	15	12.3	3.6	2.1-6.0	<0.001
	Adenoma	381	131	33.3			
Size	≤5 mm	182	40	22.0	1.6	1.0-2.4	NS
	6-10 mm	239	73	30.5	1.4	0.8-2.5	NS
	≥11 mm	114	33	28.9			
Number	1	342	86	25.1	1.2	0.7-1.9	NS
	2	114	32	28.1			
	≥3	79	28	35.4			
Shape	Ip	69	18	26.1	1.0	0.6-1.8	NS
	Isp	166	47	28.3			
	Is	274	73	26.6			
	Ila	26	8	30.8			

OR, odds ratio; CI, 95% confidence interval; NS, not significant.

Table 5. Probability of Proximal Colonic Advanced Adenomas in Relation to the Characteristics of Patients and of Rectosigmoid Polyps

		No. of patients		(%)	OR	CI	P
		Total	With proximal advanced adenoma				
Sex	Female	184	4	2.2	1.6	0.5-5.0	NS
	Male	351	12	3.4			
Age	<60 yr	307	5	1.6	3.1	1.0-8.9	0.040
	≥60 yr	228	11	4.8			
Histology	Non adenoma	154	1	0.6	6.3	0.8-47.9	0.042
	Adenoma	381	15	3.9			
Size	≤5 mm	182	3	1.6	2.3	0.6-8.7	NS
	6-10 mm	239	9	3.8			
	≥11 mm	114	4	3.5			
Number	1	342	8	2.3	1.2	0.3-4.3	NS
	2	114	3	2.6			
	≥3	79	5	6.3			
Shape	Ip	69	4	5.8	2.8	0.9-8.9	NS
	Isp	166	6	3.6			
	Is	274	5	1.8			
	Ila	26	1	3.8			

OR, odds ratio; CI, 95% confidence interval; NS, not significant.

Table 6. Characteristics of Proximal Colonic Polyps According to the Histology of Rectosigmoid Polyps in Patients with Polyps Both in the Rectosigmoid and Proximal Colon

Proximal colonic polyps	Histology of rectosigmoid polyps No. of patients (%)		P
	Non adenoma (N=35)	Adenoma (N=144)	
Histology			<0.001
Non adenoma	16 (45.7)	17 (11.8)	
Adenoma	19 (54.3)	127 (88.2)	
Size			0.058*
≤5 mm	19 (54.3)	47 (32.6)	
6-10 mm	14 (40.0)	86 (59.7)	
≥11 mm	2 (5.7)	11 (7.6)	
Number			0.698*
1	19 (54.3)	73 (50.7)	
2	8 (22.9)	28 (19.4)	
≥3	8 (22.9)	43 (29.9)	
Shape			0.443*
Ip	1 (2.9)	15 (10.4)	
Isp	6 (17.1)	31 (21.5)	
Is	25 (71.4)	86 (59.7)	
IIa	3 (8.6)	12 (8.3)	

* p value for trend.

malcolonic polyps such as histology, size, number and shape were similar to those of rectosigmoid polyps (Table 6-9). Neoplastic histology of the rectosigmoid index polyp was highly associated with the proportion of neoplastic histology of proximal polyps, but it was not associated with the number, size and shape of proximal polyps (Table 6). The size of rectosigmoid polyps was associated with the proportion of neoplastic histology, size and number of proximal polyps (Table 7). As the number of rectosigmoid polyps increased, the number of proximal polyps also increased, but the proportion of neoplastic histology, size and shape of proximal polyps was not affected (Table 8). The shape of rectosigmoid polyps was associated with the shape of proximal polyps, but it was not associated with the number and size of proximal polyps (Table 9).

DISCUSSION

Colonoscopy is undoubtedly the most effective and precise diagnostic procedure for colorectal diseases. However, the toll of total colonoscopy, including the financial cost, patient discomfort, requirement of

Table 7. Characteristics of Proximal Colonic Polyps According to the Size of Rectosigmoid Polyps in Patients with Polyps Both in the Rectosigmoid and Proximal Colon

Proximal colonic polyp	Size of rectosigmoid polyps No. of patients (%)			p*
	≤5 mm (N=54)	6-10 mm (N=91)	≥11 mm (N=34)	
Histology				0.023
Non adenoma	14 (25.9)	18 (19.8)	1 (2.9)	
Adenoma	40 (74.1)	73 (80.2)	33 (97.1)	
Size				0.002
≤5 mm	30 (55.6)	30 (33.0)	6 (17.6)	
6-10 mm	20 (37.0)	53 (58.2)	27 (79.4)	
≥11 mm	4 (7.4)	8 (8.8)	1 (2.9)	
Number				0.006
1	31 (57.4)	52 (57.1)	9 (26.5)	
2	12 (22.2)	17 (18.7)	7 (20.6)	
≥3	11 (20.4)	22 (24.2)	18 (52.9)	
Shape				0.633
Ip	3 (5.6)	9 (9.9)	4 (11.8)	
Isp	10 (18.5)	18 (19.8)	9 (26.5)	
Is	37 (68.5)	54 (59.3)	21 (61.8)	
IIa	4 (7.4)	10 (11.0)	1 (2.9)	

* p value for trend.

endoscopist's skill and complication, has discouraged wide colonoscopic screening.^{8-10,12,31,32} Thus, indications for total colonoscopy based on cost-effectiveness and identification of markers for proximal pathology would be helpful in avoiding unnecessarily difficult procedures. As a consequence, we attempted to investigate the risk factors for proximal colonic polyps in patients with rectosigmoid polyps.

We found that the prevalence of proximal colonic polyps, adenomas and advanced adenomas in 535 patients with any rectosigmoid polyp was 33.4% (179/535), 27.3% (146/535) and 3.0% (16/535), respectively. The data from our study are consistent with previous studies demonstrating 20–50% probability of proximal neoplastic pathologies in patients with rectosigmoid polyps or adenomas.^{14-16,18,31,34} The higher probability of proximal polyps (OR=2.0) and adenomas (OR=2.0) in male patients compared to females is in agreement with recent studies.^{17,25} As expected, the risk of proximal polyps and adenomas in patients with rectosigmoid polyps was significantly associated with patient age. In this study, neither the number nor shape of rectosigmoid polyps predicted the probability of proximal colonic polyps. Interestingly, however, in 179 patients with polyps both in the rectosigmoid and proximal colon, the characteristics of proximal colonic polyp such as histology, size, number and shape were similar to those of rectosigmoid polyp.

Neoplastic polyps are difficult to differentiate from non-neoplastic polyps based on gross appearance, site, and size of polyps. Given the relatively low accuracy of 70–80% by experienced endoscopists,^{19,21,28} we included non-neoplastic polyps in addition to neoplastic polyps for this analysis. Most authors agree that rectosigmoid adenomas are associated with an increased prevalence of proximal colonic adenomas.^{12,13,15,18,19} However, controversy still exists on the role of rectosigmoid hyperplastic polyps and small adenomas as a predictor of proximal adenoma. Some studies have reported the association between distal hyperplastic polyp and proximal adenoma,^{14,15,18,19,35,36} whereas others have failed to find such an association.^{17,28,29,37,38} In this study, we were unable to calculate the risk of rectosigmoid hyperplastic polyp as a marker of proximal adenoma because most subjects in this study were symptomatic patients and an internal control group of patients with negative colonoscopy was not included. Our results revealed

that the prevalence of proximal polyps (22.7% vs. 37.8%), adenomas (12.3% vs. 33.3%) and advanced adenomas (0.6% vs. 3.9%) in patients with rectosigmoid non-neoplastic polyps was significantly lower than in patients with rectosigmoid neoplastic index polyps. These data support the opinion that hyperplastic polyps in the rectosigmoid should not be the sole indication for total colonoscopy.

Many studies have addressed the size of the rectosigmoid index polyp as a risk factor of proximal adenoma, but provided conflicting results. Some authors consider that the prevalence of proximal colonic neoplasms is not affected by the size of the rectosigmoid polyp.^{15,18-21,28,37} By contrast, others believe that the prevalence of advanced proximal colonic neoplasms is low in patients with small rectosigmoid adenoma.^{6,8,23,24,26,31,34} Based on the latter studies, a number of experts recommend limiting colonoscopy to patients with large or advanced distal adenomas found on sigmoidoscopy to minimize the need for colonoscopy.^{8,24} In this study, the size of the rectosigmoid index polyp did not affect the prevalence of proximal polyps or adenomas. However, as the size of the rectosigmoid index polyp became larger in 179 patients with polyps both in the rectosigmoid and proximal colon, the proportion of neoplastic polyps as well as the number and size of proximal colonic polyps increased. Therefore, we believe that the size of the rectosigmoid index polyp should be regarded as a substantial risk factor.

A recent large multicenter study reported that patients with an advanced adenoma in the rectosigmoid were found to be twice as likely to have proximal advanced adenomas than patients without a distal advanced adenoma.²² Our results also demonstrated the same risk ratio, although the proportion of advanced adenoma among all adenomas in the rectosigmoid (46.9% vs. 33.1% or 126/381), as well as in the proximal colon (19.9% vs. 11.0% or 16/146), was lower. Of 16 patients who had a proximal advanced adenoma, 15 patients (93.8%) had an adenoma, but only 6 patients (37.5%) had an advanced adenoma in the rectosigmoid. If we did not perform colonoscopy in patients with a non-advanced adenoma in the rectosigmoid, then 62.5% (10/16) of the proximal advanced adenomas would be missed. Screening colonoscopy has been advocated by some because of its ability to detect proximal neoplasm in the absence of rectosigmoid neoplasm.^{11,39,40} The

reported prevalence of proximal neoplasms without rectosigmoid neoplastic polyps ranged from 12%–41%.^{11,17,28,37,40-42} We found that among 728 patients with colorectal polyps, the probability of polyps only in the proximal colon was 26.5% (193/728). Of these patients, 68.4% (132/193) had adenomas, 36.8% (71/193) had multiple polyps and 10.9% (21/193) had a large polyp. The characteristics of polyp as well as age and sex distribution of patients with a polyp only in the proximal colon were not significantly different from those of patients with a proximal colonic polyp associated with a rectosigmoid polyp. Without colonoscopy, we would have missed 51.9% (193/372) of all proximal polyps or 47.8% (132/276) of proximal adenomas. Furthermore, it has been estimated that approximately 30% of colorectal cancers would be missed with a negative sigmoidoscopy^{43,44} because 75% of patients with proximal colon cancer do not have distal adenoma.^{44,45} These results are further encouraging evidence to support the idea that justifies the screening colonoscopy or the widening of the indication for total colonoscopic examination.⁴⁶⁻⁴⁸

Although most of the subjects in this study were symptomatic and selected from a population undergoing diagnostic colonoscopy, our data indicate that total colonoscopic examination is necessary in all patients with a rectosigmoid adenoma, regardless of the size, number and shape, particularly in elderly males.

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