

Original Article

Abdominal pain, diarrhea, constipation-which symptom is more indispensable to have a colonoscopy?

Jia Cai¹, Zhe Yuan², Shujun Zhang³

Infectious Disease Division, The First Affiliated Hospital of Chongqing Medical University, Chongqing 400016, P.R. China

Received November 6, 2014; Accepted December 23, 2014; Epub January 1, 2015; Published January 15, 2015

Abstract: Background: Doctors perform colonoscopies when presented with various symptoms, including unexplained weight loss, rectal bleeding, changes in bowel habits, however many other symptoms such as abdominal pain, diarrhea and constipation may be more popular in outpatient department. As a result, we want to evaluate the three symptoms which is more need to have a colonoscopy. Abdominal pain, diarrhea and constipation are the main reasons for patients to visit the outpatient department of gastroenterology. And the colonoscopy is regularly recommended for outpatients with the above symptoms in China. The aim of this study was to evaluate the value of colonoscopy on the diagnosis of each single symptom of the three above and answer the question of my title-which symptom is more indispensable to have a colonoscopy? Methods: Colonoscopic findings of 580 outpatients with a single of these three common lower gastrointestinal symptoms were systematically analyzed in retrospect. Results: In this study, no significant difference was found in the positive rate of colon polyps, cancer and ulcerative colitis among these three groups divided by symptoms. The incidence of colon polyps, cancer and colitis for the chronic abdominal pain, chronic diarrhea and constipation group are 20.8%, 57.1%, 42.9% respectively. The incidence of colon polyps and cancer increases with age. Among the age groups 13-39 years old, 40-59 years and > 60 years, the incidence is 7.9%, 13.6%, 22.4% respectively. There is no significant difference in the incidence of colon polyps and colon cancer in our groups of symptoms. Conclusion: The results show the prevailing opinion that the indications of colonoscopy just refer to symptom and physical sign nowadays in China is inappropriate and it is best to take a full consideration of patient's age, auxiliary examinations, family diseases history and other factors.

Keywords: Abdominal pain, diarrhea, constipation, colonoscopy

Introduction

Abdominal pain, diarrhea and constipation are the most common symptoms complaint by patients attending a gastroenterology outpatient clinic. These symptoms are usually considered as indications that call for colonoscopy to detect or rule out colon cancer or polyps or ulcerative colitis in China. The aim of this study was to investigate the colonoscopic findings of 580 outpatients who underwent colonoscopy due to a common lower gastrointestinal symptom as mentioned above and their incidence of colon cancer, polyps and ulcerative colitis in retrospect, so as to evaluate the diagnostic value of colonoscopy for a single symptom.

Materials and methods

From 2006 to 2012, there were 580 outpatients who underwent colonoscopy due to a

common lower gastrointestinal symptom in gastroenterology clinic at the First Affiliated Hospital of Chongqing Medical University, a teaching hospital in southwest China. There were 320 males and 260 females ranged from 13 to 77 years old, who were divided into three groups according to the following lower gastrointestinal symptoms: chronic abdominal pain (Group A) chronic diarrhea (Group B) and constipation (Group C). To investigate the diagnostic value of colonoscopy in single symptom and avoid confuse statistics, outpatients who had more than one kind of the above symptoms were excluded, so were the one who had a history of colonoscopy or colon lesion indicated by other examinations before. The average age of Group A was 50.4 years old, while Group B was 61 and Group C was 56. Comparison between groups was tested by χ^2 test.

Gastrointestinal symptoms and colonoscopy

Table 1. The colonoscopic findings in different groups

Group	Normal	Inflam- mation	Polyp	Ulcerative colitis	Colon cancer	Diver- ticulum	Behcet's disease	Intestinal parasites	Melano- sis coli	Others	Total
A	103	79	15	2	17	0	2	0	0	2	220
B	65	127	22	5	9	0	0	1	0	1	230
C	56	52	11	0	2	2	0	1	6	0	130
Total	224	258	48	7	28	2	2	2	6	3	580
Perce- ntages	38.6	44.5	8.3	1.2	5	0.3	0.3	0.3	1.0	0.5	

Table 2. The colonoscopic findings in outpatients with physical signs

Group	Total	Normal	Inflam- mation	Polyp	Ulcerative colitis	Colon cancer	Diver- ticulum	Behcet's disease	Intestinal parasites	Melano- sis coli
A	83	26	37	7	2	10	0	1	0	0
B	30	13	9	2	1	5	0	0	0	0
C	21	4	14	1	0	1	0	0	0	1
Total	134	43	60	10	3	16	0	1	0	1

Results

All of 580 outpatients successfully completed colonoscopy operation without serious complications and accidents.

The analysis of colonoscopic findings in different groups

The colonoscopic findings of three different symptoms are shown in **Table 1**. In Group A, the incidence of colon polyps, cancer and ulcerative colitis was 15.4%, and colitis accounted for 35.9%, while 46.8% was normal. In Group B, the incidence of colon polyps, cancer and ulcerative colitis was 15.7%, as 55.2% was colitis and 28.3% was normal. In Group C, colon cancer, polyps, ulcerative colitis accounted for 10.0%, with 40.0% colitis and 43.1% normal. No significant difference was shown in the positive rate of colon polyps, cancer and ulcerative colitis among these three groups of different symptoms.

The analysis of colonoscopic findings in outpatients with physical sign

In the 220 cases of Group A, there were 83 outpatients with physical sign in the lower abdomen, such as abdominal tenderness, mass, intestinal form and anemia appearance among whom 10 cases had palpable abdominal mass, and colon cancer was confirmed in 5 cases. Compared to Group B, there were 30 cases with abdominal signs, and 21 cases in Group C.

Besides, for all the outpatients who had abdominal symptoms and signs, the indication of colon polyps, cancer and ulcerative colitis for Group A-C were 20.8%, 57.1%, 42.9% respectively, as shown in **Table 2**.

The incidence of colon cancer and polyps of all ages

The incidence of colon polyps and cancer increases with age. Among the age groups 13-39 years old, 40-59 years and > 60 years, the incidence was 7.9%, 13.6%, 22.4% respectively. We found no significant difference between the age groups 13-39 and 40-59 years old, but the incidence of the age group > 60 years old was the highest ($\chi^2 = 17.4$, $P < 0.005$), as shown in **Table 3**.

The incidence of colon cancer and polyps of symptom

In total, 70 colon polyps were diagnosed and removed in 35 cases, including 45 adenomatous polyps (only one became malignant) and 25 hyperplastic polyps. Meanwhile, the incidence of colon cancer was 4.8% (28 cases) in total, seen from **Table 1**.

In Group A-C of different symptoms mentioned above, there was no significant difference between the incidence of colon polyps and cancer ($\chi^2 = 1.79$, $P > 0.5$), as shown in **Table 4**: The positive rates of colon polyps and cancer of three groups were 6.8%, 9.6%, 6.9%, and 7.7%, 3.5%, 2.3%, respectively.

Gastrointestinal symptoms and colonoscopy

Table 3. The distribution of cancer and polyps of all ages

Age group	Total	Cecum	Ascending colon	Transverse colon	Descending colon	Sigmoid colon	Rectum	Total	χ^2	P
13-	240	4	1	1	0	6	7	19	17.4	< 0.005
40-	242	2	5	3	5	9	9	33		
> 60	98	0	4	2	4	7	5	22		
Total	580	6	10	6	9	22	21	74		

Table 4. The distribution of cancer and polyps of groups

Group	Total	Cecum		Ascending colon		Transverse colon		Descending colon		Sigmoid colon		Rectum		Total		χ^2	P
		Can-cer	Polyp	Can-cer	Polyp	Can-cer	Polyp	Can-cer	Polyp	Can-cer	Polyp	Can-cer	Polyp	Can-cer	Polyp		
A	220	0	2	4	1	2	0	0	1	10	6	1	5	17	15	1.798	> 0.5
B	230	0	3	1	3	0	3	2	3	1	5	4	5	8	22		
C	130	0	1	0	1	0	1	2	1	0	0	1	5	3	9		
Total	580	0	6	5	5	2	4	4	5	11	11	6	15	28	46		

Discussion

At present, the benefit-cost ratio in the medical and health fields has attracted more and more attention, which should be especially concerned by a physician. Although the colonoscopy could be helpful for the diagnosis and treatment of any patient with lower gastrointestinal symptoms, it is difficult to apply colonoscopy to every patient in China, considering the cost and compliance of colonoscopy. Hence, it is particularly important for a physician to select appropriate patient for the colonoscopy. For these patients with gastrointestinal symptoms, to diagnose intestinal lesions as accurately as possible is as important as to reduce patients' suffering and economic burden as less as possible [1, 2].

For all the 580 cases, the positive rates of colon polyps and cancer were respectively 8.3% and 4.8% in all. While as for each group of different symptoms, the positive rates of colon polyps and cancer were respectively 6.8%, 7.7% of Group A (220 cases), and 3.9%, 9.6% of Group B (230 cases), and 1.5%, 8.5% of Group C (130 cases). Therefore, we can tell the positive rates of colon cancer and polyps have no significant difference ($\chi^2 = 2.9$, $P > 0.25$; $\chi^2 = 6.96$, $P > 0.05$). Some domestic physicians considered simple diarrhea had less correlation with colon cancer [3]. In our study, outpatients with abdominal pain, diarrhea and constipation showed no difference in the incidence of colon cancer, which indicates that the colo-

noscopy cannot be determined only by simply symptom.

In addition to colonoscopy, it is essential for outpatients with lower gastrointestinal symptoms to have physical and auxiliary examinations. Experienced physicians could take both of careful physical examinations and effective auxiliary examinations at lower cost into consideration for the diagnosis. In Group A (220 cases), B (230 cases), C (130 cases), there were 83, 30, 21 cases in all with physical signs such as abdominal tenderness, mass, intestinal form and anemia appearance in the lower abdomen, respectively. Besides, the incidence of colon polyps, cancer and ulcerative colitis for Group A-C were 20.8%, 57.1%, 42.9% respectively. Therefore, physical signs (mainly refers to abdominal tenderness) cannot be considered as a direct indication for the colonoscopy, except some special symptoms such as abdominal mass. The most common auxiliary examinations for outpatients are digital rectal examination, fecal occult blood test (FOBT), barium enema, and serum carcinoembryonic antigen (CEA), but each of them has its own limitations: Digital rectal examination can only reveal part of rectal lesions; the specificity and sensitivity of CEA is very poor; FOBT allows 70% of colorectal cancer and 90% of polyps misdiagnosed [4], even so, the population of colon cancer mortality can be reduced by 33% if the positive FOBT undergo further examination [5]. Hence, the auxiliary examinations are very important for the selection of patients to do colonoscopy.

Domestic research declared that it was common to find polyps in the left colon, of which 37.8-40%, 29.3-30% and 6.5-9.6% located in the rectum, the sigmoid and descending colon, respectively. 67.4% of polyps in our cases located under the splenic flexure, mainly in the left colon. Wood analyzed the anatomic location of the 7463 cases of colon adenocarcinoma, in which 80.5% were under the splenic flexure in all, while 80% were under the splenic flexure reported by domestic research [6]. The colon cancer under the splenic flexure accounted for 75% in all of our cases, a little lower than the reported. Of all the three groups, colon cancer and polyps under the splenic flexure accounted for 70.6% and 76.9% in Group A, and 77.8% and 59.1% in Group B, while 0% and 72.7% in Group C respectively. Regarding that colon cancer and polyps mainly occurred under the splenic flexure, some physicians proposed the sigmoidoscopy should be considered as primary screening test for patients with colon lesion, especially the one with limited financial support [7]. Keneth D. Fine reported diagnostic accuracy rate of the 60cm long sigmoidoscopy was up to 99.8% in 809 cases with chronic diarrhea [8]. But in our cases of Group C, 40.9% of polyps and 22.2% of colon cancer occurred in the right colon, so the misdiagnosis rate would be unacceptable if only the sigmoidoscopy was performed.

Regarding in our cases, the positive rate of colon cancer and polyps was the highest in the above 60 years old, much higher than 13~39 years and 40-59 years old. Therefore, colonoscopy could be in a stronger demand of the elderly, and it was suggested that colonoscopy should be used as routine screening for the elderly [9], which become widely recognized today. At the same time, colon cancer cannot be ignored in patients of young people. In our cases, there were 2 cases with colon cancer under 30 year old accounting for 7.1% of all the colon cancer. In this country, there are more and more youth diagnosed with colon cancer in recent years, accounting for about 3.5% to 12.7% of all colon cancer in the same period as reported, much higher than abroad (1% to 4%) with a higher degree of malignancy [10, 11]. Colonoscopy for the patient with a lower gastrointestinal symptom should not be determined only by certain age as for the asymptomatic population. Moreover, the positive rate of polyps and cancer (as shown in **Table 4**) shows no

significant difference in three different ages of patients with abdominal pain, diarrhea and constipation. As a consequence, judgment of the necessity of colonoscopy for young, middle-aged or elderly patients based on symptoms is not appropriate.

In summary, for the outpatient with a lower gastrointestinal symptom, regardless of ages, it is inappropriate to recommend the colonoscopy just according to symptom and physical sign, and all the factors such as patient's age, auxiliary examinations results, and family diseases history should be taken into full considerations. Moreover, once if the colonoscopy is recommended, it is best to check the entire colon instead of the left colon, so as to do more accurate diagnosis and less cost at the same time for patients.

Disclosure of conflict of interest

None.

Address correspondence to: Jia Cai, Infectious Disease Division, The First Affiliated Hospital of Chongqing Medical University, Chongqing, You Yi Road 1#, Yu Zhong District, Chongqing 400016, P. R. China. Tel: +86 13647628823; E-mail: soccercaijia@hotmail.com

References

- [1] Donnellan F, Harewood GC, Cagney D, Basri F, Patchett SE, Murray FE. Economic impact of prescreening on gastroenterology outpatient clinic practice. *J Clin Gastroenterol* 2010; 44: e76-9.
- [2] Sewitch MJ, Gong S, Dube C, Barkun A, Hilsden R, Armstrong D. A literature review of quality in lower gastrointestinal endoscopy from the patient perspective. *Can J Gastroenterol* 2011; 25: 681-5.
- [3] Jia Y, Wang QM, Zheng BH. Clinical analysis of the diagnostic methods of chronic diarrhea. *Journal of Clinical Healthcare* 2003; 01: 40-42.
- [4] Ahlquist DA, Wieand HS, Moertel CG, McGill DB, Loprinzi CL, O'Connell MJ, Mailliard JA, Gerstner JB, Pandya K, Ellefson RD. Accuracy of fecal occult blood screening for colorectal neoplasia. *JAMA* 1993; 369: 1262-1267.
- [5] Walsh JM, Terdiman JP. Colorectal cancer screening: scientific review. *JAMA* 2003; 289: 1288-96.
- [6] Li SR, Tian SL, Wu ZT. Application of sequential fecal occult blood test in consecutive screening of colorectal carcinoma for natural popula-

Gastrointestinal symptoms and colonoscopy

- tion. *World Chinese Journal of Digestology*-2004; 12: 137-139.
- [7] Kassa E. Colonoscopy in the investigation of colonic disease. *East Afr Med J* 1996; 73: 741-745.
- [8] Fine KD, Seidel RH, Do K. The prevalence, anatomic distribution and diagnosis of colonic causes of chronic diarrhea. *Gastrointestinal Endoscopy* 2000; 51: 318-326.
- [9] Liu Y, Xiao LH, Liu DQ. A follow-up analysis of colonoscopic data in 272 elderly patients. *Chinese Journal of Digestive Endoscopy* 2001; 18: 118.
- [10] Zhang YL, Nie J, Zhou J. Incidence and geographical features of colorectal cancer in patients under 30 years of age in China. *Chinese Journal of Digestive Endoscopy* 1997; 14: 11-14.
- [11] Rao BN, Pratt CB, Fleming ID, Green AA, Austin BA. Colon carcinoma in children and adolescents: a review of 30 cases. *Cancer* 1985; 55: 1322-1326.