IJBPAS, December, 2014, 3(12): 3032-3040

ISSN: 2277–4998

International Journal of Biology, Pharmacy and Allied Sciences (IJBPAS)

'A Bridge Between Laboratory and Reader'

www.ijbpas.com

HIGH RATES OF ADENOMA AND INFLAMMATORY POLYPS

RAHMATOLLAH RAFIEI[1], KAMRAN TAVAKOL[2], MOHAMMAD GOLBAN[3], ZAHRA TORABI[3], LOOTFOLLAH FOULADI[5] AND MEHRSHAD KEBARI[3*]

1: Assistant Professor, Department of Internal Medicine, School of Medicine, Islamic Azad University, Najafabad Branch, Isfahan, Iran

2: Assistant professor of Anesthesiology , School of Medicine, Islamic Azad University, Najafabad Branch, Isfahan, Iran

3: Medical Student, School of Medicine, Islamic Azad University, Najafabad Branch, Isfahan, Iran

4: General practitioner, Isfahan University of medical Sciences, Isfahan, Iran

5: Clinical Anatomical Pathologist, Dr.Fooladi Laboratory, Amadegah St, Isfahan, Iran

***Corresponding Author: E Mail: Mehrshad_m19@yahoo.com; Tel: +989134111215**

ABSTRACT

Getting insight into the behavior of polyps could be very important in setting the preventive strategies on colorectal cancers. The aim of the current study was to evaluate the prevalence of polyps and their characteristics in all colonoscopies performed in an academic hospital over a two-year period.

All colonoscopies carried out in our referral hospital from September 2009 till Sep 2011 were reviewed. 452 patients underwent the procedure due to past or family history of gastrointestinal disorders, abdominal complaints, abnormal physical exams or altered laboratory results. Patients with polyps in colonoscopy report were included in the study. The frequency distributions of polyps according to sex, age, past history of smoking, anatomic location, size and number of polyps in relation to histopathological features of polyps were defined.

Of 452 patients, 24% had normal colonoscopy. 95 patients had 136 polyps in 120 different anatomic locations of colon. 12.6% of patients experienced polyp recurrence and 5.3% had past

history of colorectal cancers. About 50% and 30% of the patients had adenoma and inflammatory polyps, respectively. All types of polyps were more common in males but juvenile polyp. Adenomas were significantly more frequent in males than in females (P<0.0%). 74% of patients with adenoma were older than 50 years. Distribution of adenomas among three age groups were significantly different (P<0.05). 70.2% of all adenomas were tubular type. Chief complaint in two-thirds of patients was either abdominal pain or rectorrhagia. Past history of smoking was recorded in 20% of patients with either adenoma or inflammatory polyps. Two thirds of polyps were found in distal colon. 71.6% of patients had only one polyp, 17.9% had two polyps and 10.5% had >2 polyps.

There was a high probability in finding adenoma or inflammatory polyps in patients with polyp in colonoscopy. Adenomas, mostly tubular, were significantly more common in males >50 years.

Keywords: Polyps, Colorectal Cancer, Colonoscopy

INTRODUCTION

Basic colonoscopic indications cover patients with past or family history of gastrointestinal disorders, abdominal complaints, abnormal physical exams or altered laboratory results in order to find different pathologies such as colorectal cancers **[1]**. Colonoscopic screening has been shown to decrease morbidity and mortality of colorectal cancers **[2]**. The latter causes 50,000 deaths in USA each year **[3]**. It is ranked second after lung cancers in all cancer leading deaths in USA.(4) Although a very small fraction of adenomas develops into colorectal cancers, approximately all colorectal cancers originate from adenomas. The exact time of adenoma-cancer sequence is unknown but two different models proposed the average of 10 and 25 years. This sequence involves a 10-15 year multi-step process **[5]**. Then, on time removal of adenomas breaks the adenoma-cancer sequence **[6]**. Most adenomas are observed in males over age 50 years. Adenomas involve about two-thirds of colonic polyps **[7, 8]**. Polyps' behaviors have been less studied than that of colorectal cancers. Moreover, the prevalence and characteristics of polyps may vary extensively in various populations **[9]**. Thus, understanding the prevalence of polyps in general population in relation to sex, age, chief complaint, past history, family history, size and anatomic location of polyps in different geographical areas is important in recognizing the behavioral pattern of polyps, their tends over time and prevention of colorectal cancer development. This study tried to evaluate the histopathologic

distribution of polyps in relation to the abovementioned factors in all colonoscopies performed in a teaching referral hospital over a two-year period.

METHODOLOGY

In this descriptive study, all colonoscopies carried out in our hospital in two year period of September 2009 till Sep 2011 were retrieved from the database. 452 patients underwent the procedure due to abdominal pain, bowel habit changes (constipation or diarrhea), fecal occult blood (FOB), melena, rectorrhagia, weight loss, anemia, past or family history of colon tumors/carcinoma. All colonoscopies were done by faculty members or gastrointestinal fellows under the supervision of faculties. One videoendoscope (Olympus, Japan) was used to carry out the colonoscopies. To prepare the patients for colonoscopies, they were administered pidrolax and three bisacodyl tablets (Sinadaroo) per day for 3 days before the procedure to cleanse the bowel. They were asked to have special diet (clear liquids), one day before the colonoscopy. All patients with polyps in colonoscopy report were included in the study. The polyps were either resected or biopsied. When the polyps were not resected or biopsied (n=4) or the data were missed or incompatible (n=16), the patients were excluded from the study. The frequency distributions of polyps were determined based on sex and age. For age, the patients were classified into three groups of <30 years, 30-50 years and >50 years. Past history of smoking was extracted from the data bank. All the physical characteristics of polyps including location, size and number of polyps were acquired from the reports of colonoscopies. The anatomic locations of polyps were divided into five categories as follows: cecum and ascending colon, transverse colon, descending colon, sigmoid and rectum. The polyps were grouped according to the size as ≤1 and >1 centimeter. They were also categorized based on number of polyps in three groups as follows: one, two and three or more. Histopathological features of polyps were obtained from the reports of pathologies and five principal types were recognized as adenoma, hyperplastic polyps, inflammatory polyps, juvenile polyps and adenocarcinoma. Chi-square test was applied to evaluate the significance of difference in distribution of adenomas between two genders, two size groups and two age groups of ≤50 and >50 years. P value less than 0.05 was considered significant.

RESULTS

Of 452 patients, 108 patients (24%) had normal report in colonoscopy whereas 95, 62, 58, 58, 19, 17, 17, 16 patients had polyps,

hemorrhoid, inflammatory bowel disease, non-specific colitis, colon cancer/tumors, rectal ulcer, diverticulitis and fissure, respectively. 136 polyps were found in 120 different anatomic locations of colon in 21% of patients. 12 patients had past history of adenomatous polyps. In other words, 12.6% experienced polyp recurrence. Five cases had family history of colorectal cancers. The histopathologies distribution of polyps in relation to sex, age, chief complaint and past history of smoking is demonstrated in Table 1. About 81% of the patients had either adenoma or inflammatory polyps. Adenomas were significantly more frequent in males than in females (P<0.0%). Also, all other types of polyps were more common in males but juvenile polyp which was more common in females. All types of polyps were most frequently observed in patients aged >50 years compared with the other age groups. 74% and 81% of patients with adenoma and hyperplastic polyps were older than 50 years, respectively. Distribution of adenomas between two age groups of ≤50 and >50 years was significantly different (P<0.05). Obviously, all types of polyps were observed least frequently in patients aged <30 years. Interestingly, about 20% of patients with either adenoma or inflammatory polyps had past history of smoking. More than two-thirds of patients with polyps presented with abdominal pain and rectorrhagia as chief complaints. When constipation or anemia was the chief complaint of patients with polyp, the pathologic diagnosis was almost always adenoma. The size and anatomic distribution of polyps in relation to their histopathologies are demonstrated in Table 2. 55 percent of all polyps were adenomas. 70.2% of all adenomas were tubular type, 19.2% were tubulovillous adenoma and the rest (10.6%) were villous type. 73 percent of adenomas were found in distal colon (rectosigmoid and descending colons) and 45 percent of adenomas were larger than 1 centimeter. Interestingly, 78% of all polyps >1 centimeter were adenomas whereas 45% of those ≤1 centimeter were adenomas (P<0.05). There was no significant relationship between size of polyps and age groups of patients. 68 patients (71.6%) had only one polyp, 17 ones (17.9%) had two polyps and 10 cases (10.5%) had >2 polyps. In two patients with >1 polyp, more than one histopathologic type was reported.

Table 1: Histopathologic distribution of polyps according to sex, age, chief complaint and past history of smoking

Characteristics of Patients		Frequency Distribution of Polyps (percent)					
		Adenoma	Inflammatory	Hyperplastic	Juvenile	Adenocarcinoma	Total
Sex of Patients	Female	16 (16.8%)	14 (14.7%)	3 (3.2%)	3 (3.2%)	1 (1%)	37 (39%)
	Male	31 (32.6%)	16 (16.8%)	8 (8.4%)	1 (1%)	2 (2.1%)	58 (61%)
Age of Patients	<30 years	1 (1%)	4 (4.2%)	0	1 (1%)	0	6 (6.3%)
	30-50 years	11 (11.6%)	11 (11.6%)	2 (2.1%)	1 (1%)	1 (1%)	26 (27.3%)
	>50 years	35 (36.8%)	15 (15.8%)	9 (9.5%)	2 (2.1%)	2 (2.1%)	63 (66.3%)
Positive Past History of Smoking in Patients		9 (9.5%)	6 (6.3%)	1 (1%)	1 (1%)	0	17 (17.9%)
Chief Complaint	Abdominal Pain	17 (17.9%)	11 (11.6%)	4 (4.2%)	1 (1%)	0	33 (34.7%)
	Rectorrhagia	13 (13.7%)	10 (10.5%)	4 (4.2%)	3 (3.2%)	1 (1%)	31 (32.6%)
	Anemia	8 (8.4%)	1 (1%)	0	0	0	9 (9.5%)
	Diarrhea	1 (1%)	7 (7.4%)	1 (1%)	0	0	9 (9.5%)
	Constipation	6 (6.3%)	0	0	0	1 (1%)	7 (7.4%)
	FOB	2 (2.1%)	1 (1%)	0	0	0	3 (3.2%)
	Melena	0	0	2 (2.1%)	0	0	2 (2.1%)
	Weight Loss	0	0	0	0	1 (1%)	1 (1%)

Table 2: Size and anatomic distribution of polyps according to their histopathologic reports

Characteristics of Polyps		Frequency Distribution of Polyps (percent)					
		Adenoma	Inflammatory	Hyperplastic	Juvenile	Adenocarcinoma	Total
Anatomic Location of Polyps	Rectum	18 (15%)	19 (15.8%)	5 (4.2%)	3 (2.5%)	1 (0.8%)	46 (38.3%)
	Sigmoid	24 (20%)	5 (4.2%)	2 (1.7%)	1 (0.8%)	1 (0.8%)	33 (27.5%)
	Descending Colon	6 (5%)	5 (4.2%)	0	0	0	11 (9.2%)
	Transverse Colon	12 (10%)	4 (3.3%)	2 (1.7%)	0	1 (0.8%)	19 (15.8%)
	Ascending Colon	6 (5%)	3 (2.5%)	2 (1.7%)	0	0	11 (9.2%)
Size of Polyps	≤ 1 centimeter	42 (30.9%)	33 (24.3%)	12 (8.8%)	3 (2.2%)	1 (0.7%)	91 (66.9%)
	> 1 centimeter	35 (25.7%)	6 (4.4%)	1 (0.7%)	1 (0.7%)	2 (1.5%)	45 (33.1%)

DISCUSSION

Around 76% and 10% of 452 reviewed patients with colonoscopy in the current study had a pathologic finding and adenoma, respectively. Histopathologic characteristics, number and size of adenomas are important determinants of potential malignancy of adenomas **[7, 8]**. 34% of all polyps were tubular adenomas and 31.5% of the polyps were inflammatory. Inflammatory polyps are usually associated with inflammatory bowel disease and ischemic colitis **[10]**. Then, early detection of inflammatory polyps may prevent appearance of inflammatory bowel disease. These high rates of tubular adenoma and inflammatory polyps in colonoscopy have been demonstrated by other studies too **[11-13]**. The probability of development of

adenocarcinoma has direct relationship with size and number of adenomas **[14-16]**. About one-fourth of patients had adenomas >1 centimeter and/or ≥2 polyps and then carried high risk adenomas. Like some other studies, **[11, 15-18]** the current study showed that polyps were mainly located in the distal colon (rectosigmoid and descending colons); i.e., two thirds of all polyps, 73 percent of adenomas and 80 percent of inflammatory polyps. Interestingly, no juvenile polyp was observed out of the rectosigmoid area. The most common presenting symptoms in patients with adenoma were abdominal pain and rectorrhagia. These two plus anemia and change of bowel habits accounted for 98% of presenting symptoms in patients with adenomas.

More than 55% of patients with polyp aged >50 years and 37.5% of those with polyp aged ≤50 years had adenoma. In other words, the older the patient, the higher the possibility of having adenoma. Similar trend was observed for adenocarcinoma and hyperplatic polyps whereas a reverse relationship was seen for inflammatory polyps in the current study. Also, two-thirds of patients with adenoma were male. Age and male gender as two important risk factors in development of colon adenomas have been confirmed by other studies **[16, 19, 20]**. Given that all colorectal cancers arise from adenomas, one screening colonoscopy carried out at the age of 55 years may reduce the colorectal cancer mortality by 30-50% **[6, 21]**.

This study was carried out in a referral academic hospital. Then, the variability in anatomic distribution could be secondary to variation in indications of colonoscopy. About 18% of the patients in the current study had medium risk of colorectal cancers because they had either past history or family history of colorectal cancer/adenomatous polyp in one family member. These patients were advised to do more frequent screening depending on size, number and pathology of polyps found on prior colonoscopy. Although high rate of adenoma in this study shows the adoption of Western lifestyle, the retrospective nature of the current study led to some limitations such as inability to evaluate certain risk factors like dietary pattern and alcohol intake.

ACKNOWLEDGMENTS

The authors gratefully acknowledge authorities at the Islamic Azad University Najafabad branch for financial support of this study.

REFERENCES

[1] Winawer SJ, Zauber AG, Fletcher RH, Stillman JS, O'brien MJ, Levin B et al. Guidelines for colonoscopy

surveillance after polypectomy: a consensus update by the US Multi-Society Task Force on Colorectal Cancer and the American Cancer Society. CA Cancer J Clin 2006;56:143-59.

[2] Screening for colorectal cancer: recommendation and rationale. Ann Intern Med 2002;137:129-31.

[3] Maciosek MV, Solberg LI, Coffield AB, Edwards NM, Goodman MJ. Colorectal cancer screening: health impact and cost effectiveness. Am J Prev Med 2006; 31: 80-89.

[4] ACOG Committee Opinion No. 384 November 2007: colonoscopy and colorectal cancer screening and prevention. Obstet Gynecol 2007;110:1199-202.

[5] Winawer SJ. Natural history of colorectal cancer. Am J Med 1999;106:3S-6S.

[6] Vogelaar I, van BM, Schrag D, Boer R, Winawer SJ, Habbema JD et al. How much can current interventions reduce colorectal cancer mortality in the U.S.? Mortality projections for scenarios of risk-factor modification, screening, and treatment. Cancer 2006; 107: 1624-33.

[7] Farraye FA, Wallace M. Clinical significance of small polyps found during screening with flexible sigmoidoscopy. Gastrointest Endosc Clin N Am 2002; 12: 41-51.

[8] Levin B, Lieberman DA, McFarland B, Andrews KS, Brooks D, Bond J et al. Screening and surveillance for the early detection of colorectal cancer and adenomatous polyps, 2008: a joint guideline from the American Cancer Society, the US Multi-Society Task Force on Colorectal Cancer, and the American College of Radiology. Gastroenterology 2008;134:1570-1595.

[9] Cronstedt J, Carling L, Willen R, Ericsson J, Svedberg LE. Geographic differences in the prevalence and distribution of large-bowel polyps--colonoscopic findings. Endoscopy 1987; 19:110-113.

[10] Pidala MJ, Slezak FA, Hlivko TJ. Delayed presentation of an inflammatory polyp following colonic ischemia. Am Surg 1993; 59: 315-18.

[11] Bafandeh Y, Daghestani D, Esmaili H. Demographic and anatomical survey of colorectal polyps in an

Iranian population. Asian Pac J Cancer Prev 2005; 6: 537-40.

[12] Kadakia SC, Wrobleski CS, Kadakia AS, Meier NJ. Prevalence of proximal colonic polyps in average-risk asymptomatic patients with negative fecal occult blood tests and flexible sigmoidoscopy. Gastrointest Endosc 1996; 44: 112-17.

[13] Van Stolk RU, Beck GJ, Baron JA, Haile R, Summers R. Adenoma characteristics at first colonoscopy as predictors of adenoma recurrence and characteristics at follow-up. The Polyp Prevention Study Group. Gastroenterology 1998; 115: 13-18.

[14] Jass JR, Young PJ, Robinson EM. Predictors of presence, multiplicity, size and dysplasia of colorectal adenomas. A necropsy study in New Zealand. Gut 1992; 33: 1508-14.

[15] Lewis JD, Ng K, Hung KE, Bilker WB, Berlin JA, Brensinger C et al. Detection of proximal adenomatous polyps with screening sigmoidoscopy: a systematic review and meta-analysis of screening colonoscopy. Arch Intern Med 2003; 163: 413-20.

[16] O'brien MJ, Winawer SJ, Zauber AG, Gottlieb LS, Sternberg SS, Diaz B et al. The National Polyp Study. Patient and polyp characteristics associated with high-grade dysplasia in colorectal adenomas. Gastroenterology 1990; 98: 371-79.

[17] Lam TJ, Wong BC, Mulder CJ, Pena AS, Hui WM, Lam SK *et al*. Increasing prevalence of advanced colonic polyps in young patients undergoing colonoscopy in a referral academic hospital in Hong Kong. World J Gastroenterol 2007; 13: 3873-77.

[18] Tony J, Harish K, Ramachandran TM, Sunilkumar K, Thomas V. Profile of colonic polyps in a southern Indian population. Indian J Gastroenterol 2007; 26: 127-29.

[19] Rundle AG, Lebwohl B, Vogel R, Levine S, Neugut AI. Colonoscopic screening in average-risk individuals ages 40 to 49 vs 50 to 59 years. Gastroenterology 2008; 134: 1311-15.

[20] Soon MS, Kozarek RA, Ayub K, Soon A, Lin TY, Lin OS. Screening colonoscopy in Chinese and Western patients: a comparative study. Am J Gastroenterol., 2005; 100: 2749-55.

[21] Pignone M, Rich M, Teutsch SM, Berg AO, Lohr KN. Screening for colorectal cancer in adults at average risk: a summary of the evidence for the U.S. Preventive Services Task Force. Ann Intern Med 2002; 137: 132-41.