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Analysis of 2222 colorectal polyps in 896 patients: A tertiary referreal hospital study

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Original Article

ABSTRACT

Background/Aims: In Turkey, there are a limited number of studies including the characteristics of colorectal polyps, and the number of patients was too small in most of them. The aim of this study was to evaluate histological characteristics of colorectal polyps that were determined by colonoscopy and clinical features of patients who had removal of the polyp.

Materials and Methods: Patients who underwent colonoscopy were analyzed retrospectively from January 2007 to December 2011. Adult patients (≥18 years) with no history of previous colorectal neoplasms who had removal of colorectal polyp were included.

Results: A total of 2222 colorectal polyps were removed in 896 patients. Of these, 621 were male (69.3%) and 275 were female (30.7%). Most of the patients with polyps presented in the age group of 50-59 years (251 patients, 28%). It was recorded that 1816 (81.7%) of all polyps were adenomas. Of 1816 adenomas, 1577 (86.8%) were tubular adenomas. Of patients with adenomas, 19.7% was younger than 50 years. A total of 337 (37.6%) patients were in the high-risk group. Mean age of the high-risk patients was higher than the others (62±13 years and 58±13 years, respectively, p=0.001).

Conclusion: This study is the largest series of colorectal polyps in Turkey to date. We determined the clinical and histologic characteristics of colorectal polyps and consider that the detection rate of colorectal adenomas in patients under the age of 50 years may be increased by the widespread use of colonoscopy as a diagnostic test.

Keywords: Age, colonoscopy, colorectal polyp, polypectomy

INTRODUCTION

A protuberance into the lumen from the normally flat colonic mucosa is called a polyp (1). Colon polyps are generally asymptomatic; however, they can cause rectal bleeding, tenesmus, and intestinal obstruction when they increase too much in size. The most important property of polyps is their malignant potential to transform into colorectal cancer (CRC) (2). Especially, adenomas are associated with a higher risk of CRC and may progress to CRC. Adenoma-carcinoma sequence has traditionally been characterized as a uniform progression from normal mucosa to adenoma and to carcinoma through an underlying homogenous carcinogenic pathway (3). Studies reporting the average age at presentation of patients with adenomatous polyps versus CRC suggest that the time for development of adenomas to cancer is about 5 to 10 years (2,3). Adenoma-carcinoma sequence is responsible for more than 95% of CRC development (2). In many studies, it was shown that removing adenomas by endoscopic polypectomy or surgical resection decreased cancer risk (4-6). Therefore, screening for CRC after polypectomy has become important. In order to determine the interval to the first follow-up examination, patients with polyps are divided into two groups as low-risk and high-risk (7). Patients with advanced adenomas (high-risk adenomas), which

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conventionally are defined as polyps ≥10 mm, number of adenomas ≥3, or histologically having high-grade dysplasia or significant villous components, are at high risk. It is suggested that patients with advanced adenomas should have their next follow-up colonoscopy in 3 years, and patients with low-risk adenomas should be screened every 5 years until one negative colonoscopy examination; then, surveillance ceases (8). It is suggested that the numbers and size of the adenomas are the most important predictors for adenoma recurrence at the follow-up colonoscopy (9). In Turkey, there are a limited number of studies including the characteristics of colorectal polyps, and the number of patients was too small in most of them. The aim of this study was to evaluate histological characteristics of colorectal polyps that were determined by colonoscopy and clinical features of patients who had removal of polyps.

MATERIALS AND METHODS

All patients aged over 18 years and who had a total colonoscopy for various indications in our endoscopy unit between 2007 and 2011 were retrospectively evaluated. Colonoscopes (CF Type H180AL/I series; Olympus, Tokyo, Japan/EC-450WL5 series; Fujinon, Saitama, Japan) were used in all procedures. Patients with no history of previous colorectal neoplasms who had removal of at least one polyp were included in our study. Information collected on each patient included age, gender, colonoscopic findings, and histological characteristics of polyps. Total number, size, histological feature, and location of each polyp were recorded. A patient with polyps who had any of the criteria below was defined as a high-risk patient (7).

1. Size of adenoma ≥1 cm
2. Total number of adenomas ≥3
3. Significant villous component
4. High-grade dysplasia

Adenomas were classified as tubular, tubulovillous, and villous adenomas and serrated adenomas. In 2000, the World Health Organization (WHO) defined tubular adenomas as having <20% villous component, tubulovillous as 20%-80% villous component, and villous as >80% villous component (10).

Polyps larger than 5 mm were removed by standard snare excision (with monopolar cautery), and those smaller than 5 mm were removed by biopsy forceps.

Data analysis was performed by SPSS for Windows, version 11.5 (SPSS Inc., Chicago, IL, United States). Histological findings of polyps and clinical characteristics of the patients with polyps were analyzed by descriptive statistics (mean, percentage, standard deviation, minimum and maximum values). In the comparison between the variables of the two groups, *student's t*-test was used. All tests of significance were two-tailed, and a p value of 0.05 was considered to indicate statistical significance.

Table 1. Colonoscopy indications of the patients with polyps

Indication	Number of Patients (%)
Chronic constipation	448 (50)
Anemia	152 (17)
Rectal bleeding	116 (13)
Abdominal pain	90 (10)
Chronic diarrhea	72 (8)
Family history of CRC	18 (2)
Total	896 (100)

CRC: colorectal cancer

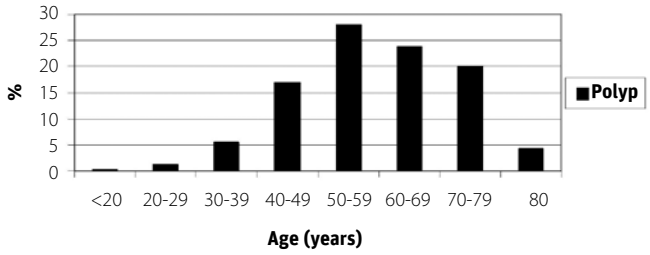

Figure 1. Age distribution of patients with polyps.

RESULTS

Between January 2007 and December 2011, 8033 patients underwent colonoscopy for various indications in our endoscopy unit. The polyps were detected in 896 patients, which resulted in an 11.1% polyp detection rate. It was determined that chronic constipation was the most common indication for performing colonoscopy in patients who had at least one polyp (n=448, 50%). Colonoscopy indications of the patients with polyps are shown in Table 1.

The mean age of the patients with polyps was 59±13 years (18-92). Furthermore, 621 (69.3%) of the patients were male and 275 (30.7%) were female. In total, 251 patients (28%) were aged between 50-59 years. Age distribution of the patients is shown in Figure 1. The percentage of all patients over 50 years was 76.5% (n=684). Of 896 patients, 756 (84.4%) had at least one adenoma, and of them, 19.7% (n=149) was under age 50 years. Also, 473 patients (53%) had single polyps and 423 patients (47%) had multiple polyps. A total of 2222 polyps were identified in 896 patients. The total polyp count per patient was 2.5. Polyps were more commonly found in the rectum (733 polyps; 33%) and sigmoid colon (422 polyps; 19%). Frequency and location of the colorectal polyps are demonstrated in Table 2. The ratio of total number of polyps detected in the left colon (1511 polyps; 68%) to total number of those (711 polyps; 32%) in the right colon was 2:1.

Of the 2222 polyps identified, 1816 (81.7%) were adenomas. Tubular adenomas accounted for 1577 (86.8%), 146 (8.1%) were tubulovillous adenomas, 64 (3.52%) were villous adenomas, and 29 (1.6%) were serrated adenomas. Table 3 shows

Table 2. Anatomic location distribution of colorectal polyps

Location	Number of Polyps (%)
Rectum	733 (33)
Sigmoid colon	422 (19)
Descending colon	267 (12)
Splenic flexure	89 (4)
Transverse colon	311 (14)
Hepatic flexure	111 (5)
Ascending colon	178 (8)
Caecum	111 (5)
Total	2222 (100)

Table 3. Polyps according to histological type and size

	Number (%)		
Polyp Type	<1 cm	1-2.9 cm	>3 cm
Tubular adenoma	1424 (73.6)	150 (54.54)	3 (25)
Tubulovillous adenoma	83 (4.3)	62 (22.54)	1 (8)
Villous adenoma	29 (1.5)	29 (10.54)	6 (50)
Hyperplastic polyp	357 (18.4)	34 (12.38)	2 (17)
Serrated adenoma	29 (1.5)	0 (0)	0 (0)
Inflammatory polyp	8 (0.4)	0 (0)	0 (0)
Juvenile polyp	5 (0.3)	0 (0)	0 (0)
Total (n=2222)	1935 (100)	275 (100)	12 (100)

Table 4. Characteristics of high-risk and low-risk patients

Group	Number of patients (%)	Age (years)	Number (%) Female	Male
High-Risk	337 (37.6)	62±13	104 (30.9)	233 (69.1)
Low-Risk	559 (62.4)	58±13	171 (30.6)	388 (69.4)

the relationship between polyp histology and size. In total, 87% of the polyps were smaller than 1 cm, 6 (50%) polyps that were more than 30 mm in diameter were villous adenomas. Of the 1816 adenomas, 86.2% was smaller than 1 cm in diameter.

Of the 1816 adenomas, 21 (1.2%) was dysplastic. Of these, 29% (6 polyps) contained low-grade dysplasia (LGD). High-grade dysplasia (HGD) was found in 15 polyps (71%). HGD was most frequently found in villous adenomas (8 polyps). One (12.5%) of 8 polyps with HGD was smaller than 1 cm, 6 (75%) of them were 1-2.9, and 1 (12.5%) of them was larger than 3 cm.

A total of 337 (37.6%) patients were in the high-risk group. Mean age of the high-risk patients was higher than that of the low-risk patients (62±13 years and 58±13 years, respectively, p=0.001). There was no significant difference between the high-risk patients and low-risk patients with regard to gender (p>0.5). The characteristics of high-risk and low-risk patients are shown in Table 4.

DISCUSSION

Hyperplastic polyps are the most common type of non-neoplastic polyps, and it is generally assumed that they do not transform into cancer (11-13). They are usually located in the rectum or sigmoid colon and are generally smaller than 5 mm in diameter (14,15). In our study, 17.7% of the polyps were hyperplastic polyps. Overall, 15.8% of all polyps in the Funen Adenoma Follow-up Study (16) and 11.2% of all polyps in the National Polyp Study (17) were hyperplastic.

Adenomatous polyps are neoplastic polyps. Besides, colorectal cancer most commonly develops from adenomatous polyps; but still, the polyp that will transform into cancer can not be predicted (1). Cancer that develops from adenoma is called adenoma-carcinoma sequence, and 95% of all the colorectal cancer develops from adenomatous polyps (2,18). A multicenter randomized controlled trial of screening flexible sigmoidoscopy from the United Kingdom demonstrated not only a reduced mortality from colorectal cancer but also a reduction in the incidence of colorectal cancer (19). The National Polyp Study Workgroup showed that colonoscopic polypectomy decreased the incidence of colorectal cancer by 76%-90% (20). In asymptomatic people, the prevalence of colorectal adenomas is about 25% to 30% at age 50 (21-23). Prevalence of colorectal adenomas increases with age, especially over the age of 50 (24). It has been discovered in autopsies that the prevalence of colorectal adenomas was 50% at age 70 (24). Most polyps are located in the left colon (24). Most of the patients with polyps are male (25,26). Nusko et al. (27) reported that 63.7% of the patients with polyps were male. In our study, 69.3% of the patients with polyps were male, and most polyps were found on the left side of the colon. This last result is in line with the literature data.

In our study, the most common colonoscopy indication was chronic constipation (50%). Besides, the rate of colonoscopy incidence due to anemia was 17%.

We detected adenomas in 81.7% of the patients. Overall, 70%-85% of all adenomas are tubular, 10%-25% is tubulovillous adenomas, and less than 5% is villous (2). In our study, 87% of adenomas were tubular, 8% was tubulovillous, and 3% was villous, which is consistent with the literature data.

The prevalence rate of polyps increases with age, and older patients have an increased risk of having a polyp (25). The National Polyp Study reported adenoma rates of 13% in patients younger than 50 years, 28% in those aged 50 to 59 years, 39% in those aged 60 to 69 years, 18% in those aged 70 to 79 years, and 2% in those aged 80 years or older (5). In our study, polyps were most commonly detected in those patients aged 50 to 59 years. The mean age of the patients was 59±13 years. Similarly,

the mean age in the study of Nusko et al. (27) was 59.74±11.61 years. In our study, 251 (13.8%) of all adenomas were 1 cm or larger in size. Furthermore, dysplasia was detected in 1.2% of all adenomas.

In order to determine a screening interval for patients with colorectal adenomas, a risk classification of polyps was developed by various guidelines. According to this classification, polyps are grouped into two: namely, high-risk and low-risk polyps. According to the American Cancer Society US Multi-Society Task Force on Colorectal Cancer, high-risk colorectal adenomas are those that are greater than 1 cm in diameter and/or with more than 3 adenomas and/or that contain appreciable villous component and/or high-grade dysplasia (8). On the other hand, adenomas with 1 or 2 tubular adenomas that are smaller than 1 cm with no high-grade dysplasia are classified as low-risk adenomas. It is reported that patients with low-risk adenomas should be screened every 5-10 years, and patients with high-risk adenomas should be screened every 3 years (8,28,29). In our study, 337 patients (37.6%) were identified as high-risk patients. The mean age of the high-risk patients was significantly higher than that of the low-risk patients. There was no significant difference between the high-risk and low-risk patients with regard to gender.

There have been limited data about the histological characteristics and distribution of colorectal polyps in Turkey. Our study included a markedly larger number of polyps than did previous studies in Turkey. In 2001, Altıparmak et al. (30) reported a study including 657 colorectal polyps, which was the largest series up to that time for Turkey. In this study, 428 patients with polyps were evaluated, and 76.7% of the polyps were found in the left colon (splenic flexure and distal colon). In 350 cases, 64.8% was adenomatous and 22.7% was hyperplastic polyp. Our adenoma detection rate was higher than this study. But, in this study, there were no data about the age of the patients. Recently, another study was reported in 2011 from Turkey (31). In this study, 894 patients were evaluated retrospectively, and 1379 polyps were removed. A total of 60% patients were male, and 66% of all polyps were found in the left colon, as in our study (31). But, in this study, the adenoma detection rate according to age group under the age of 50 years was not reported. However, in our study, 19.7% of all patients with at least one adenoma were younger than 50 years, and this rate was higher than the data of the National Polyp Study (13%).

In conclusion, in Turkey, the prevalence of adenomas was not determined definitively. In this study, which is the largest series ever done in Turkey, the histological characteristics of polyps and clinical features of patients who had removal of polyps were identified. In total, 19.7% of all patients with at least one adenoma were under the age of 50 years, and this rate was much higher than the data of the National Polyp Study (13%). Due to this finding, we consider that the detection of adenomas in patients under the age of 50 years may be increased by the widespread use of colonoscopy as a diagnostic test. In light of this study, the results of population-based cohort studies about colorectal cancer screening are needed.

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