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Short Article

Characteristics of Diminutive Colorectal Polyps in Patients Undergoing Colonoscopy in an Educational, Therapeutic Hospital in Western Iran

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A B S T R A C T

Background and Aims: Limited information is available on the frequency of advanced adenomas in diminutive colon polyps. Thus, this study aimed to investigate the pathological characteristics and the frequency of high-grade dysplasia in diminutive colorectal polyps in individuals referred to colonoscopy examination in Kermanshah, Iran.
Materials and Methods: Demographics characteristics, location and diameter of the polyp, histological assessment of the polyps, grade, and others were retrieved from colonoscopy reports.
Results and Conclusions: During the study period, 250 diminutive colorectal polyps were detected. The histological assessment showed that 36.4% were adenomatous, 32.8% were hyperplastic, and 30.8% were inflammatory polyps. Only two diminutive polyps (0.8%) had high-grade dysplasia, and the frequency of adenocarcinoma in our study was 0.4%. Besides, the frequency of adenomatous polyps was higher in the proximal versus the distal colon. These findings emphasize the urgent need for a colorectal cancer screening plan in the Iranian population to improve therapeutic outcomes.

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Introduction

Colorectal polyps are lesions that grow on the surface of the intestinal mucosa. They can be categorized based on their size as diminutive (≤ 5 mm), small (6-9 mm), sub-centimeter (< 10 mm), or large (≥ 10 mm). Based on the presence or absence of dysplastic features, colorectal polyps are categorized into non-neoplastic and neoplastic (adenomas) [1]. Adenomas display a spectrum of dysplasia ranging from high grade to low grade. Over the past few years, much research has shown that most colorectal cancers develop from pre-existing adenomatous polyps [2]. Therefore, early detection and removal of adenomatous polyps provide an opportunity to prevent colorectal cancer (CRC). CRC is usually an adenocarcinoma that occurs in the colon or rectum. It is the third most common cancer in the Iranian population, and it is incidence and prevalence slightly has risen in recent years due to lifestyle changes, reduced physical activity, obesity, and diet [3]. In some countries, colonoscopic screening for asymptomatic elderly people has been added to the National Colorectal Cancer Prevention Program (CRCCP) [4]. There is no routine screening program for colorectal cancer prevention by identifying and removing pre-cancerous lesions in Iran. Screening, detection of malignant tumors early, and removal of precursor lesions have key values in reducing colorectal cancer mortality. Cancer risk in diminutive colorectal polyps remains a significant health problem as over 80% of polyps found during colonoscopy are diminutive [5]. So, this study aimed to evaluate the pathological characteristics and the frequency of high-grade dysplasia in diminutive colorectal polyps in patients referred to our hospital for a colonoscopy.

Materials and Methods

The present study investigated the pathological characteristics and the frequency of high-grade dysplasia in diminutive colorectal polyps in individuals referred for a colonoscopy examination. In this retrospective cross-sectional study, all colonoscopy reports of individuals referred to Imam Reza University Hospital, Kermanshah, in the west of Iran from January 2017 to December 2018 to evaluate the pathological characteristics and the frequency of high-grade dysplasia in diminutive colorectal polyps. The protocol was approved by the Ethics Committee of Kermanshah University of Medical Sciences (No. IR.KUMS.REC.1399. 784), and the requirement for informed consent was waived for retrospective review of patient records. Exclusion criteria were a history of inflammatory bowel disease, colorectal cancer or colectomy, incomplete colonoscopy examination or clinical information, and poor bowel preparation. The following data were retrieved from each colonoscopy report: age, sex, cause of colonoscopy, family history of colon cancer or colorectal polyp, location and diameter of the polyp, and histopathological characteristics of the colonoscopically resected polyp specimens.

Statistical analysis

Statistical analysis was done using SPSS 22.0 (SPSS, Chicago, IL, USA). Continuous

variables are presented as mean and standard deviation (SD), and categorical variables are expressed as the frequency with percentage. The chi-square test was applied to evaluate the correlation of the frequency of adenomatous polyps with other variables. A P value < 0.05 was considered to be statistically significant.

Results and Discussion

Overall, 250 patients who underwent colonoscopy had at least one biopsy specimen that showed diminutive colorectal polyps. Age ranged between 22 and 78 years, with a mean age (SD) of 56.8 (18.4). Of the 250 patients referred to the examination, 156 (62.4%) were male, and 94 (37.6%) were female. Adenomatous polyps were the most common pathological finding (n = 91; 36.4%), followed by hyperplastic polyps (n = 82; 32.8%). Also, 0.8% of neoplastic polyps had high-grade dysplasia. The rectum was the most common location for diminutive polyps, followed by the sigmoid and ascending colon. The frequency of adenocarcinoma in our study was 1/250 (0.4%); this patient was male and in the ≥ 60 age group. Adenocarcinoma was detected in the screening for colorectal cancer and is located in the sigmoid colon. Table 1 shows the characteristics and clinical features of the 250 individuals with diminutive colorectal polyps.

Table 2 compares demographic characteristics and anatomical locations of adenomatous polyps vs. non-adenomatous polyps. The percentage of adenomatous polyps by group age was 13.2% for 20-40 years, 67% for polyps 40-60 years, and 19.8% for polyps ≥ 60 years. A significant difference was observed among age groups between the two adenomatous and non-adenomatous polyps groups (P = 0.02). No significant differences in gender and location of the polyp were observed between the two groups (P=0.95). In this study, abdominal pain was the most common symptom of patients with polyps, with a frequency of 66.4% (278/513), while 19.6% had no symptoms. Long et al. found that 37.4% and 62.6% of symptomatic patients with polyps presented with abdominal pain and bowel habit alteration, respectively [6]. The authors also reported that 54.0% of 1,234 cases were asymptomatic. The presence of asymptomatic polyps may be explained by the fact that polyps can cause clinical symptoms only when they grow to a certain size.

In our research, the frequency of adenomatous polyps measuring < 5 mm was 36.4%. High-grade dysplasia was found in only 1.9% of small polyps. In addition, in our study, the frequency of adenocarcinoma in 250 polyps ≤5 mm was 1/250 (0.4%). The frequency of < 5 mm adenomatous polyps in other countries ranges between 0.08% and 0.3% [7, 8]. Both genetic and environmental factors may be associated with differences in results between the countries. However, adenomatous polyps with high-grade dysplasia have a high risk of developing into adenocarcinoma; therefore, it should not be ignored. The frequency of adenomatous polyps was higher in the proximal versus distal colon, consistent with most studies [9,10].

The high frequency of adenomas in the proximal colon may associate with obesity and lifestyle-related factors. Although it was not possible to assess the risk factors associated with colonic adenomatous polyps due to our study's retrospective nature, several studies have reported that obesity, metabolic syndrome, smoking, and alcohol are risk factors for colonic neoplasia [11]. It is still unclear whether or not the remaining polyps are a risk factor for progression to CRC.

Table 1. Characteristics of the study participants

	Number	Percent
Gender		
Male	156	62.4
Female	94	37.6
Age group (yr)		
20-40	51	20.4
40-60	140	56
≥60	59	23.6
Polyp size		
2	56	22.4
3	116	46.4
4	41	16.4
5	37	14.8
Polyp location		
Cecum	33	13.2
Ascending colon	24	9.6
Hepatic flexure	5	2.0
Transverse colon	28	11.2
Splenic flexure	10	4.0
Descending colon	27	10.8
Sigmoid colon	63	25.2
Rectum	60	24.0
Histopathology		
Adenomas	91	36.4
Hyperplastic polyp	82	32.8
Inflammatory polyp	77	30.8
Grade dysplasia		
Non- dysplasia	159	63.6
Low	46	18.4
Mild	6	2.4
Moderate	32	12.8
Moderate to severe	4	1.6
Severe	2	0.8
Adenocarcinoma	1	0.4
Family history of the polyp or colorectal cancer		
Yes	157	62.8
No	65	26
I do not know	28	11.2
Reason of referral		
Abdominal pain	162	64.8
Chronic constipation	36	14.4
Bleeding per rectum	34	13.6
Colonic dilation and obstruction	19	7.6
Screening	49	19.6

Table 2. Demographic details and anatomical locations of polyps in adenomatous and non- adenomatous polyps

	Adenomatous polyps (91) n (%)	Non-adenomatous polyps (159) n (%)	P value
Gender			
Male	57 (62.6)	99 (62.3)	0.953
Female	34 (37.4)	60 (37.7)	
Age group (yr)			
20-40	12 (13.2)	39 (24.5)	0.022
40-60	61 (67.0)	79 (49.7)	
≥60	18 (19.8)	41 (25.8)	
Location of polyp			
Cecum	11 (12.1)	22 (13.8)	0.152
Ascending colon	12 (13.2)	12 (7.5)	
Hepatic flexure	0	5 (3.1)	
Transverse colon	13 (14.3)	15 (9.4)	
Splenic flexure	1 (1.1)	9 (5.7)	
Descending colon	7 (7.7)	20 (12.7)	
Sigmoid colon	25 (27.5)	38 (23.9)	
Rectum	22 (24.2)	38 (23.9)	

A recent systematic review of 9 studies with 721 patients found that of 1,034 adenomas sized 1 to 9 mm, 6% progressed to advanced adenomas over time [12]. Only one polyp among polyps measuring 1-9 mm progressed to cancer during 2-3 years follow-up.

Nevertheless, their study had some limitations, including 1. a short mean follow-up of all studies included in this review, 2. a small sample size, 3. interobserver variation in interpreting the results, 4. re-detecting the unreliability of the primary polyp as well as partial or even total removal of the polyp can alter its normal growth. However, further studies are needed to clarify whether colonoscopy should be performed in patients with polyps < 5 mm in size.

A major limitation of the present study was its retrospective nature; therefore, risk factors such as smoking, diet, drug medications, and physical activity levels were not studied. The research findings were limited to a single hospital in Iran.

Conclusion

Our results showed that about one-third of diminutive colorectal polyps are adenomatous, which was more frequent in elderly and male patients. The frequency of high-grade dysplasia was very low in diminutive polyps; nevertheless, one patient had adenocarcinoma. These findings emphasize the urgent need for a CRC screening plan in the Iranian population to improve therapeutic outcomes.

Conflicts of Interest

There is no conflict of interest to declare.

Acknowledgments

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