

Polyp Detection Rate in Performed Colonoscopies in Afzalipour and Mehregan Hospitals of Kerman

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ABSTRACT

Background: The results reported on the prevalence of colorectal cancer are very disturbing. This study aimed to address the polyps' detection rate and their prevalence. In addition, we analyzed some related variables among the patients referred to Afzalipour and Mehregan Hospitals of Kerman in 2015-2016.

Methods: Data concerning colonoscopy and pathologic samples of patients aged over 40 years who referred for colonoscopy were collected and analyzed. The polyps' detection rate and some related variables were assessed.

Results: A total of 469 patients older than 40 who underwent colonoscopy were enrolled in this study. One hundred and two cases of polyps were found in which 45.3% of them had adenoma. The bowel preparation (0.03), higher age (0.007) and male gender (0.013) had significant relationship with the detection of polyps.

Conclusion: The detection of the polyp / adenoma in this study is comparable with the results of the research carried out in other parts of the world with a high prevalence of colon cancer. Our findings are consistent with other studies in Iran as well.

Keywords: Detection of polyps, Colonoscopy

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Introduction

Colorectal cancer is the third most common cancer in the world and Iran with an estimated rate of more than 1200000 new cases annually (1,2). The number of new cases since 1975 (500000 new cases annually) has been increasing and these cancers include %4.9 and 1.1% of total cancers among men and women around the world (3). Colorectal cancer has the fifth place among the lost years due to premature death or disability per thousand (DALY / 1000) in Iran as well as the global average (4). Adenocarcinoma forms more than 85% of all colorectal cancers which is caused by adenomatous polyps. It takes about 10 years for adenomatous polyps to become carcinoma and they are recognizable during this period (5).

Since colorectal cancer has a prolonged asymptomatic period, if it is diagnosed in this period, it is mostly treatable. Screening can reduce the rate of deaths from it. The proposed colorectal cancer screening methods include: annual fecal occult blood test-FOBT, flexible sigmoidoscopy, combined annual FOBT and flexible sigmoidoscopy, double-contrast barium enema and colonoscopy (6). It seems that the most reliable method for the screening of colorectal cancer is colonoscopy. Also, this method can be a good choice for patients as only one type of test is required and it is only repeated once or twice as needed (7).

In this regard, checking the quality of colonoscopy (as one of the most effective screening methods) and its associated factors is very important for colorectal cancer. Among several factors, including bowel preparation, cecal intubation, patient comfort and use of sedatives, the adenoma detection rate (ADR) is used as a major criterion for the quality of colonoscopy. This factor is defined as the number of procedures in which at least one polyp – adenoma is detected and divided by the total number of performed procedures. It has been shown that the increase in ADR is associated with the decrease of colorectal cancer (8). Since there are no routine screening methods for colorectal cancers in Iran and according to the economic, social and cultural conditions many occult colorectal malignancies remain unknown,

colonoscopy can be very important in addition to other methods of screening to detect polyps and colorectal adenomas with potential malignancy. Also, due to the rising costs of health care and the need for reasonable expenditures in this regard and the importance of avoiding repeated tests in case of failed colonoscopies, an estimate of finding adenomas not only can be used for future planning but also can increase the accuracy of the physician to diagnose the type of polyps. Considering the above-mentioned issues, the purpose of this study was to determine the prevalence of colon polyps performed in Afzalipour and Mehregan Hospitals of Kerman in 2015-2016.

Materials and Methods

In this analytical cross-sectional study, samples were enrolled using census method. In this regard, patients admitted to Afzalipour and Mehregan Hospitals of Kerman in 2015-2016 for colonoscopy (with olympus-240 Made in Japan) entered the study based on this inclusion criteria: patients over 40 years of age. The exclusion criteria encompassed any colorectal surgery in the past, IBD and any underlying diseases that made tolerating colonoscopy impossible.

Adenoma features were determined based on their morphological characteristics in colonoscopy as well as biopsy pathologic characteristics. The check list including: polyps' features (polyp size, polyp location, type of polyp, etc.), family history of colon polyps, history of cancer, colonoscopy and withdrawal duration and demographic variables such as age and gender were obtained. In colonoscopy, polyps may be sessile or pedunculated. All required data were collected and analyzed with SPSS V.21.

Results

In this study, a total of 469 patients underwent colonoscopy in which 268 (57%) were males and 201 (43%) were females. In terms of education, the highest frequency was related to diploma with 280 patients (38%), followed by a master's degree or higher with 150 patients (31.7%).

Table 1. The frequency of patients in terms of smoking and being addicted to opium

	Frequency	percent
Smoking	50	10.7
Opium addicts	71	15.1
Both	37	7.4

The overall frequency of polyps in the population under study was reported as 102 patients (21.7%). Twenty nine patients (5.8%)

had more than a single polyp and the polyp detection rate was calculated as 14.7%.

Table 2. A family history of polyps and colon cancer as well as the history of any cancer

	Frequency	percent
Family history of colon polyps	35	7.5
Family history of colon cancer	55	11.7
History of any cancer	59	12.6

In terms of bowel preparation, 37 (7.9%) patients had average preparation, 366 (81.1%) patients had proper preparation and 66 patients (14.2%) had a clean colon. Two hundred and seventy six patients (55.5%) received preoperative sedation while 193 cases (36.5%) did not need sedation.

In terms of the time of colonoscopy duration, the average time to reach cecum was 8 minutes and the average time to return from the cecum to the anus was reported as 4.5 minutes. In all cases, colonoscopy was completed.

Table 3. The frequency of studied individuals in terms of complaint

	Frequency	percent
Gastrointestinal bleeding	175	36.8
Abdominal pain	171	33.2
Anemia	42	9.7
Constipation	30	8.6
Screening	30	8.6
Chronic diarrhea	21	4.9

Table 4. Frequency of polyps found in terms of region

	Frequency	Percent
Rectosigmoid	40	39.3
Descending colon	24	23.6
Transverse colon	12	11.8
Ascending colon	6	6
Cecum	8	7.9
Rectosigmoid and descending colon	3	3
Transverse colon, descending colon	3	3
Rectosigmoid, transverse colon and descending and ascending colon	2	1.9
Rectosigmoid and transverse colon	1	0.9
Descending and ascending colon and cecum	1	0.9
Descending colon and cecum	1	0.9
Rectosigmoid and ascending colon	1	0.9

In terms of size, a largest number of polyps were smaller than 10mm with a frequency of 69 (67.7 %). The most frequent type of polyp was pedunculated with a frequency of 63 (61.8 %), then there was sessile polyps with a frequency of 35 (34.3%) and there were three cases of both types.

Concerning the pathologic report, the highest frequency was associated with adenoma with 46 (45.3%) and hyperplastic with a frequency of 38 (37.2 %). Cancer pathology was reported in 15.6% of the polyp masses. Regarding adenoma polyps in colonoscopy, this amount was in tubular and villous forms with the frequencies of

21 and 17 that formed 45.7 and 39.1% respectively. Seven (15.2%) polyps were tubulovillous. The overall rate of adenoma was 46 cases in the population under study that formed 9.8% of the population.

The relationship between the detection rate of polyps and some variables was analyzed(tab5). Accordingly, the polyp detection rate had a significant relationship with age, gender and bowel preparation ($P_v = 0.007, 0.013, 0.03$). It signifies that the detection rate was higher in older male subjects with better bowel preparation.

Table 5. The frequency of polyp detection rate in terms of some variables

	40-50	>50
Age	26 (25.5 %)	76(74.5%)
Gender	Male	Female
	78 (76.4 %)	24 (23.6 %)
Family history of colon cancer	Positive	Negative
	12 (21.8 %)	43 (78.2 %)

Discussion

The overall frequency of polyps in the population under study was reported as 102 patients (21.7%). Most polyps were found in people older than 50 years (74.5%) and male patients (76.4%)(tab5). In terms of family history, 35 (7.4%) of those surveyed had positive family history of colon polyps and 55 (11/7%) had positive history of colon cancer(tab2). The most common reasons for referral to perform colonoscopy were gastrointestinal bleeding with a frequency of 175 (36.8 %) cases and abdominal pain with 171 (33.2%) cases(tab3). In terms of polyp region, the highest percentage was associated with rectosigmoid with a frequency of 40 (39.3%) patients and then the descending and transverse colons with frequencies of 24 (23.6%) and 12 (11.8%) cases(tab4). Pathologically adenoma polyp of 46 (45.3%) cases and hyperplastic with 38 (37.2%) cases had maximum frequencies. The overall rate of adenoma in subjects was 9.8% (among 46 cases of the total population). The relationship between the polyps' detection and the variables under study was analyzed. Accordingly, the detection rate of polyps had a significant relationship with age, gender and bowel preparation. This highlights that the detection rate of polyps was higher in older male subjects with better bowel preparation.

In this study ,as said above,the frequency of polyps in the population under study was reported as 102 patients (21.7%). Studies conducted in other parts of the world have had different results. A study on 651 patients in the USA in 2013-2015 showed that among patients referred for colonoscopy, 49.8% had polyps (7). In a similar study conducted in the UK on over 9223 patients, the prevalence of polyps was reported as 22.5% (14). In the study conducted by Betes et al. on 2210 patients over the age of 40 who underwent colonoscopy for the purpose of screening and although none of them had any known risk factors, neoplastic lesions were observed in 27.9% of samples (15). In addition, in another study by Huppe et al. in Germany on 1117 subjects who were screened with colonoscopy, 12.4% of them had polypoid lesions (16). The variations in the number of polyps in different studies may be due to racial differences or differences in indications under which these patients underwent colonoscopy.

The most common pathological type of polyps in this study was adenoma. In the study conducted by Sharifi and Akhlaghi in Mashhad, the most common colorectal polyps were juvenile (52.7%), inflammatory (12.7%), hyperplastic (10%) and adenomatous (5.4%) polyps (17). These findings are consistent with our results. The differences may be due to the demographic conditions of the area, the

skillfulness of the physician performing the colonoscopy, pathologists and other factors affecting colonoscopy as well as the bowel preparation. The high prevalence of adenomatous polyps is a warning sign in our region, Kerman. On the other hand, the fact that most of them were smaller than 1cm at the time of diagnosis could be due to the timely detection and inhibiting adenoma-carcinoma sequence at the right time.

Different studies have been conducted in Iran regarding the variety of adenomatous polyps. In a study by Rahbar et al. in Tehran the tubular type was the most common type followed by tubulovillous and villous types (18). In our study the tubular, villous and tubulovillous types had the frequencies of 45, 39 and 14% respectively. In a study by Patel and Hoffman in Australia, adenomatous (65%) was the most common type of polyps (19) which is in line with our result. In another study in Tabriz, Iran most polyps were adenomatous (63%) and among the adenomatous polyps, the tubular type was the most common and the tubulovillous and villous types were in the next places (21). In a study conducted by Khodadoustan et al. in Tehran 85% of polyps was adenomatous in which 58, 25 and 17% were tubular, tubulovillous and villous respectively (22). Taghipour et al. found that adenomatous polyps (57%) were the most common type. Among adenomatous polyps, the tubular type was the most common and the villous type (3.3%) was the rarest one (23).

In our study concerning the regions of colorectal polyps, the most frequent places were related to the rectum, sigmoid and the descending colon. Transverse colon and cecum were in the next places. In a study by Rahbar et al. findings showed that the highest frequency of polyps was located in descending colon and rectum (18) which is not consistent with the results of our study. Other studies show that the highest frequency of polyps was observed in sigmoid colon (25). Also, in another study the highest frequency of polyps was observed in rectum, sigmoid and descending colon. Transverse and ascending colons were in the next places (20). The study undertaken by Khodadoustan et al. in Tehran showed that most of polyps were located in the ascending colon, cecum, descending colon and the sigmoid followed by transverse colon and rectum which is significantly different with our study (22). In the study by Torres Rocha and Arcieri, the most involved regions with polyps were rectum and

sigmoid (24). Research findings also indicate that the largest number of polyps was observed in the sigmoid and descending colon (26).

In the present study, the average time to arrival to cecum was 8 minutes and the average return time from the cecum to the anus (withdrawal time) was 4.5 minutes. This shows less withdrawal time in comparison to other studies and had no significant correlation with the detection rate of adenoma. A study conducted on 2467 patients in the USA showed that in the group with longer withdrawal (8 ± 3 min) the success rate of intubation of the cecum and finding adenomas was higher (compared with 6 ± 3 min in the control group). Also, the rate of detecting proximal and flat adenoma with a diameter less than 5mm was higher (29). In addition, a study in Japan showed that the withdrawal duration more than 6 minutes was considered as a quality feature for colonoscopy assessment (30). Similar to previous studies, in the present study the prevalence of polyps increased with age.

The study conducted by Kim et al. in Korea showed that the highest incidence of adenomas was observed in the population aged 70. Also, the prevalence of colon adenomas increased with age (9). Evidence shows that age over 50 is associated with the incidence of adenoma. This confirms the results of our study (7). In a study by Torres Rocha and Arcieri, the average age of patients was 64 (24). A reason for these results could be the fact that with an increase in patients' age, the referral followed by gastrointestinal symptoms is higher.

Similar to most epidemiological studies, in this study most patients were males (76/4%) and the rest were females (23/6%). The study conducted by Kim et al. in Korea showed that the male gender, occult blood, positive H.pylori and high triglyceride are factors associated with colon adenoma (9). In the study by Sharifi and Akhlaghi, the number of men was more than women (17). Rahbar et al. found that among all studied adenomatous polyps 53.8% were males and 46.2% were females (18). In the study by Agah et al. the frequency of polyps in men and women was 63.4 and 36.6% respectively (25). As it can be observed, the incidence of polyps was higher in men in the present and other studies. However, this could be less likely due to symptomatic polyps in men.

In the present study 7/5% of patients had a family history of colon polyps, 11/7% had a family history of colon cancer and 12/6% had a

positive family history of cancer (tab2). In a study by Exbrayat et al. in France, 6% of patients had a positive family history of cancer (27). In the study by Gupta et al., patients with and without a family history of colon adenomas were compared. The results of this study showed that the prevalence of adenoma in the groups without a family history of colon adenomas was 26.7 and 13.5% but the difference was not statistically significant. Researchers concluded that more prospective studies are required to determine the prevalence of colonic adenoma (16). Most polyps detected in this study had a diameter of less than 10mm. This is similar to most studies in Iran and around the world and indicates that colonoscopy has a good accuracy in finding polyps in the colon.

The most common reason for referral to colonoscopy was gastrointestinal bleeding with a frequency of 175 (35%) cases followed by abdominal pain with 163 patients (33.2%), constipation with 30 patients (8/6%) and iron deficiency anemia with 48 patients (9/7%)(tab3). This indicates that specialists should pay particular attention to these symptoms and consider colonoscopy regardless of other diagnosis methods.(tab3)

Finally, the Polyp Detection Rate (PDR) in this study was 14.7 which is slightly lower than other studies. A study was conducted in the USA to evaluate the effectiveness of ADR between 2006 and 2011. In this study, 345 patients within the age range of 50-75 underwent colonoscopy. The good bowel preparation, cecum intubation, the right size of colonoscopy cuff to analyze bowel folds, reposition and position of patients for a maximum dilation of the colon and skilled colonoscopy team focused on finding the superficial lesions were among the effective factors on better detection of colonoscopic adenomas (11). Racial differences and type of diet may also be effective.

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Also in Tehran, Iran in order to assess the quality of colonoscopy in a screening program, all colonoscopies and pathology reports of asymptomatic adults over the age of 50 were analyzed between 2007 and 2013. Among 713 cases, 33% ADR and 13% advanced ADR were identified. Higher cecal intubation, better bowel preparation, the age over 60 and male gender were associated with higher rates of adenoma detection (12). Another study was conducted on patients over the age of 50 in Northern California residents in 1998-2010 in which 314,872 colonoscopies were conducted by 316 gastroenterologists to evaluate ADR and colorectal cancer risk. ADR varied between 7.4 and 52.5%. It was found that 1% increase in ADR was associated with 3% reduction in cancer risk so that an inverse relationship was reported between ADR and risk of CRC (28).

This study has its own limitations. First, incomplete data can have an effect on our final analysis. Lack of more colonoscopies under screening conditions is another limitation of this study. One of the strengths of this study was the acceptable sample size that increases the accuracy of the study.

Conclusion

The overall frequency of polyps in the population under study was 21.7% which presents its highest frequency in Kerman, Iran. Give the risk of developing malignance adenomatous polyps, colonoscopy should be considered as a screening tool. On the other hand, taking into account that the majority of polyps found had a diameter less than 10 mm, colonoscopy can be considered as a tool to detect early gastrointestinal polyps. We recommend including details such as time of arrival to cecum, withdrawal of colonoscope from colon and bowel preparation in colonoscopy reports to increase its quality.

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