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Original Article

Impact of Lowering the Screening Age for Colorectal Cancer on Early Diagnosis and Treatment: A Retrospective Study in a Turkish Cohort

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ABSTRACT

Objective: This study was planned in line with the American Cancer Society's recommendation to lower the colorectal cancer (CRC) screening age from 50 to 45. The study aims to evaluate the results of colonoscopic polypectomy in patients aged 45-49 in Türkiye, examining the prevalence and characteristics of colorectal polyps and malignancies, with the goal of establishing a database for Türkiye.

Methods: Colonoscopies in the endoscopy unit of our hospital between September 2020 and September 2023 were retrospectively examined. Patients aged 45-49 diagnosed with polyps or malignancies were included. Exclusions were made for patients who were unreachable, unable to complete a full colonoscopy, underwent the procedure for screening purposes, had a history of malignancy, suffered from polyp syndromes, or were under surveillance following a prior colonoscopy. We analyzed demographic information, indications for colonoscopy, and pathological findings. Statistical analyses were carried out using SPSS version 25.0, with a p-value of <0.05 considered statistically significant.

Results: From 748 patients, 106 with detected polyps or malignancy were included. Most patients were male (56.6%), with an average age of 47.07±1.52. Key colonoscopy indications were benign perianal diseases (34%), changes in bowel habits (27.4%), and anemia (12.3%). The majority of polyps were located in the left colon and rectum, predominantly low-grade dysplasia adenomas (68.9%) and high-grade dysplasia adenomas (9.4%). The polyp detection rate was 14.2%, and the malignancy rate was 2.8%.

Conclusion: According to the literature, the rate of polyp and malignancy detection in colonoscopies performed as part of the screening program for people aged 50 and over is similar to the rates found in our study. Based on this similarity, it may be appropriate to consider including patients in the 45-50 age group in the screening scope.

INTRODUCTION

Colorectal cancer (CRC) is the third most common cancer in men and the second in women worldwide. According to data reported by the International Agency for Research on Cancer (IARC) in 2018, there are annually 1.8 million new cases of CRC and 0.8 million deaths globally.[1,2] In the United States, CRC is the fourth most commonly diagnosed cancer and is second in cancer-related deaths.[3] In Türkiye, CRC is the third most common cancer type in both sexes and ranks fourth in cancer-related mortality.[4] The most common pathway in the development of CRC is known as the adenoma-carcinoma sequence, first described by Fearon and Vogelstein in 1990.[5] This pathway progresses from the development of an adenoma in normal colon mucosa, through dysplastic changes, to carcinoma.[6] Colonoscopy plays a crucial role in interrupting this process and has advantages such as direct assessment of the colon mucosa, biopsy during the procedure, and excision of polyps and local tumors.[7] Colonoscopy is considered the gold standard in the diagnosis and screening of CRC.[8] In recent years, there have been significant changes in colon and rectum cancer screening guidelines. The American Cancer Society (ACS) recommended lowering the CRC screening start age from 50 to 45, marking a significant shift in this domain.[3] Studies have shown that from 1994 to 2014, there

was a 51% increase in CRC incidence in individuals under 55, and from 2005 to 2015, there was an 11% increase in mortality.[9,10] This change indicates that screening for CRC at a younger age is a critical step for early diagnosis and intervention. Despite the widespread adoption of CRC screening in Western countries, participation in Türkiye remains low. Our study aims to examine the indications and outcomes of colonoscopic polypectomy procedures performed in patients aged 45-49. With this approach, by evaluating the group between the screening age recommended by the ACS and the starting screening age in Türkiye, we aim to establish a foundation for changes in the screening age in our country and for future research.

MATERIALS AND METHODS

We retrospectively analyzed colonoscopies performed by general surgeons in the endoscopy unit of a tertiary reference hospital between September 2020 and September 2023. Patients aged between 45 and 50 were included in the study. Approval for this study was obtained from the local ethics committee (No: 2023/233; Date: November 10, 2023). It was conducted in accordance with the Declaration of Helsinki.

Patients diagnosed with polyps or malignancy were included in the study. Data from patients who were unreachable, those who could not undergo a total colonoscopy, those who underwent colonoscopy for screening purposes, those with a history of malignancy, those with polyp syndromes such as FAP-Attenuated FAP, and patients previously monitored following a colonoscopy were excluded from the study.

In patients undergoing colonoscopy, bowel preparation was achieved with two oral laxatives taken one day before the procedure and two rectal enemas administered on the morning of the procedure. A standard colonoscopy device (Fujifilm, EC-600WM, Tokyo, Japan) was used. During the procedure, patients were administered 1 mg/kg of midazolam and 0.5 mg/kg of meperidine. Patients who could proceed to the cecum during colonoscopy and whose lumen could be evaluated completely were included in the study.

Patients in whom lumen evaluation was not complete and in whom passage from one area to a more proximal area could not be achieved due to solid stool or angulation were considered as having an insufficient colonoscopic examination and were not included in the study. The evaluation parameters for patients were categorized into seven distinct domains: gender, age, indication for colonoscopy, polyp size, number of polyps excised, localization of polyps within the colonic tract, and the histopathological findings.

The colonic anatomy was divided into three regions for the purpose of this study: the right colon, spanning from the cecum to two-thirds of the way along the transverse colon; the left colon, from the last third of the transverse colon to the rectosigmoid junction (up to 15 cm from the anal verge); and the rectum, defined as the section within 15 cm of the anal canal.

Moreover, patients who were undergoing colonoscopy for conditions associated with benign perianal diseases, such as hemorrhoids, anal fissures, or perianal fistulas, were carefully documented and included under the category of benign perianal diseases.

Statistical Analyses

All statistical analyses were performed using SPSS (Statistical Package for the Social Sciences) for Windows version 25.0 (SPSS Inc., Chicago, IL, USA). Normality was tested using the Kolmogorov-Smirnov and Shapiro-Wilk tests, along with graphical methods. If the data were normally distributed, the mean and standard deviation (±) were used; if not, the median and minimum (min)-maximum (max) values were used. Additionally, the data were expressed numerically (n) and as a percentage (%).

RESULTS

Data from 748 patients who met the study criteria within the last three years were examined. Of these, 106 patients with detected polyps and malignancy were included in the study. 56.6% (n=60) of the patients were male, and 43.4% (n=46) were female. Age was found to be normally distributed with an average of 47.07±1.52 (Table 1). Of the 106 patients, 34% (n=36) underwent colonoscopy due to benign perianal diseases, 27.4% (n=29) due to changes in bowel habits, 12.3% (n=13) due to anemia, 8.5% (n=9) due to macroscopic bleeding, 7.5% (n=8) due to nonspecific symptoms, 7.5% (n=8) due to a positive fecal occult blood test (FOBT), and 2.8% (n=3) due to weight loss (Table 2). The size and number of polyps were not normally distrib-

Table 1. The age and gender distribution of patients

	All patients	
	n	%
Sex		
Male	60	56.6%
Female	46	43.4%
Age	47.07±1.52	

Table 2. Indications for Colonoscopy

	Number	n %
Indication		
Bleeding	9	8.5%
Change in bowel habits	29	27.4%
Non- specific	8	7.5%
Fecal occult blood test (FOBT)	8	7.5%
Perianal benign diseases	36	34.0%
Anemia	13	12.3%
Weight loss	3	2.8%

FOBT: Fecal Occult Blood Test

Table 3. Polyp Locations

	Number	n %
Localization		
Rectum	15	14.2%
Left	48	45.3%
Right	23	21.7%
Multiple	20	18.9%

Table 4. Polyp Histopathologies

	Number	n %
Patoloji		
Hyperplastic	20	18.9%
Low Grade Dysplasia	73	68.9%
High Grade Dysplasia	10	9.4%
Malignant	3	2.8%

uted. The average polyp size was found to be 5 mm (min: 1-max: 30). The average number of detected polyps was 1 (min:1 - max:6). 14.2% (n=15) of the polyps were located in the rectum, 45.3% (n=48) in the left colon, 21.7% (n=23) in the right colon, and 18.9% (n=20) had multiple locations (Table 3). In our study, 68.9% (n=73) of the patients had low-grade dysplasia adenomas, 18.9% (n=20) had hyperplastic polyps, 9.4% (n=10) had high-grade dysplasia adenomas, and 2.8% (n=3) had malignancies on pathology (Table 4). During the procedure, endoclips were applied to 3 patients (2.8%) in our study. Two of these were due to bleeding, and one was applied as a precaution against the possibility of perforation due to a very large polyp base. While the rate of malignancy detection was 2.8%, the polyp detection rate was found to be 14.2%.

DISCUSSION

According to World Health Organization data, approximately 1.9 million new cases of CRC and 935,000 deaths from CRC are detected annually.[11] In developing countries, factors such as an aging population, suboptimal dietary habits, consumption of processed foods, obesity, a decrease in physical activity, and smoking are increasing the incidence of CRC.[12] Colonoscopy is considered the gold standard for early diagnosis of CRC. It offers the ability to determine the location of polyps, take biopsies, and perform polypectomies.[13] Given these features, colonoscopy is used as a fundamental tool in cancer screening programs in many countries. In Türkiye, since 2014, it is recommended to perform a colonoscopy every 10 years and a fecal occult blood test every 2 years for screening purposes in individuals over the age of 50.[14]

In our study, we observed that colorectal polyps tend to occur more frequently in males, predominantly located in the left colon and rectum. A significant finding in our study is that many patients between 45-50 years old showed early signs of potentially precancerous adenomatous polyps or even malignancies. The most common reasons for undergoing a colonoscopy in this group were benign perianal diseases, changes in bowel habits, and anemia. This data strongly suggests that lowering the CRC screening age from 50 to 45 in Türkiye could be a significant step towards early detection and intervention in the adenoma-cancer sequence.

In our study, the frequency of polyps in the age range of 45-50 years was determined to be 14.2%. Within the patients with polyps, the rate of malignancy was observed to be 2.8%. Upon examination of the entire patient group, the rate of high-grade dysplasia and malignancy was found to be 1.7%. These rates appear to be consistent with data in the literature. For instance, The National Polyp Study group has reported an adenoma frequency of 13% in patients under the age of 50.[15] We hypothesize that the higher detection rate of polyps in our study may be associated with the inclusion of patients over the age of 45 and a smaller patient count. While Aydemir and Yamak's study [16] found a polyp detection rate of 15% and a malignancy rate of 2%, Kızıltoprak et al.[17] reported these rates as 25.8% and 3.1% respectively. We attribute the higher rates in these studies compared to ours to the increase in CRC incidence with age and the fact that these studies examined patients over the age of 50. In a study conducted by Lieberman et al.,[18] the polyp detection rate was 37.5%, the high-grade dysplasia detection rate was 1.6%, and the malignancy detection rate was 1%; however, in this study, the average age of patients was 62, and 97% of them were male.

Studies on indications for colonoscopy in individuals under the age of 50 are limited in the literature. In the study conducted by Yalçın et al.,[19] indications for colonoscopy were reported as constipation in 35.7% of cases, rectal bleeding in 16.1%, anemia in 12.9%, and fecal occult blood test (FOBT) positivity in 7.5%. In our study, the indications were identified as benign perianal diseases in 34%, changes in bowel habits in 27.4%, anemia in 12.3%, rectal bleeding in 8.5%, and FOBT positivity in 7.5%. Unlike the literature, the lower rate of rectal bleeding indication in our study is attributed to the classification of diseases that can cause bleeding, such as hemorrhoids, anal fissures, and perianal fistulas, as a separate category of benign perianal diseases. For other indications, our study's findings are consistent with those reported in the literature.

In the studies conducted, it has been observed that the frequency of polyp and malignancy localization in the left colon ranges from 66.3% to 69.3%. Moreover, it has been reported that the proportion of male patients varies between 59.3% and 76.4%.[13,20] The results of our study are in line with this trend in the literature; polyps and malignancies were detected in the left colon and rectum in 59.5% of patients, with males constituting 56.6% of this patient group.

In the study conducted by Coşkun et al.,[13] the rate of adenomatous polyps was established at 82.5%. Similarly, Yalçın et al.[19] reported an adenomatous polyp rate of 77.2% in their research. In these studies, adenomatous polyps were classified as tubular, tubulovillous, and villous adenomas. In our study, the adenomatous polyp rate was found to be

78.3%. Taking into consideration the risk of malignancy, we examined adenomatous polyps in two categories: those with low-grade dysplasia and those with high-grade dysplasia. Low-grade dysplasia was detected in 68.9% of patients, while high-grade dysplasia was observed in 9.4%.

However, our study is not without limitations. The primary one is the lack of colonoscopies performed mainly for screening purposes, which is likely due to the initiation of CRC screening programs at the age of 50 in our country. Another limitation is the small patient sample and the absence of follow-up data. Since we do not have a control group to compare with, our study contains epidemiological information and a comparison had to be made with literature data.

Conclusion

In conclusion, considering the studies mentioned above, the rate of polyp and malignancy detection in colonoscopy performed according to the screening program for people aged 50 and over is similar to the rates found in our study. Based on this similarity, it may be appropriate to include patients in the 45-50 age group within the scope of screening. However, it is obvious that randomized controlled studies with a large patient population are needed to decide this.

Ethics Committee Approval

This study approved by the Sehit Prof. Dr. İlhan Varank Training And Research Hospital Ethics Committee (Date: 08.11.2023, Decision No: 2023/233).

Informed Consent

Retrospective study.

Peer-review

Externally peer-reviewed.

Authorship Contributions

Concept: C.B.O., F.M., A.Ç., M.M.A.; Design: C.B.O., F.M., M.M.A., A.Ç.; Supervision: C.B.O., F.M., M.M.A., A.Ç.; Materials: F.M., C.B.O.; Data: C.B.O.; Analysis: F.M.; Literature search: A.Ç.; Writing: C.B.O.; Critical revision: M.M.A.

Conflict of Interest

None declared.

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Kolorektal Kanser Tarama Yaşının Düşürülmesinin Erken Tanı ve Tedavi Üzerindeki Etkisi: Türk Kohortunda Retrospektif Bir Çalışma

Amaç: Bu çalışma, Amerikan Kanser Derneği'nin kolorektal kanser (CRC) tarama yaşını 50'den 45'e düşürme önerisi doğrultusunda planlandı. Çalışmamız, 45-49 yaş arası Türkiye'deki hastalarda kolonoskopik polipektomi sonuçlarını değerlendirmeyi amaçlamaktadır. Böylelikle kolorektal poliplerin ve malignitelerin prevalansı ve özellikleri incelenerek Türkiye için bir veri tabanı oluşturulması hedeflenmektedir.

Gereç ve Yöntem: Hastanemiz endoskopi ünitesinde Eylül 2020 ile Eylül 2023 tarihleri arasında gerçekleştirilen kolonoskopiler retrospektif olarak incelendi. Polip veya malignite tanısı almış 45-49 yaş aralığındaki hastalar çalışmaya dahil edildi. Verilerine ulaşılamayan hastalar, tam kolonoskopi yapılamayanlar, tarama amaçlı yapılan kolonoskopiler, malignite öyküsü ve polip sendromu olanlar, polipektomi sonrası takipte olan hastalar çalışma dışı bırakıldı. Çalışmaya alınan hastaların demografik bilgileri, kolonoskopi endikasyonları ve patolojik bulguları analiz edildi. İstatistiksel analizler SPSS sürüm 25.0 kullanılarak yapıldı ve p değeri <0.05 istatistiksel olarak anlamlı kabul edildi.

Bulgular: 748 hastadan polip veya malignite tespit edilen 106'sı çalışmaya dahil edildi. Hastaların çoğunluğu erkek (%56.6), ortalama yaş 47.07±1.52 idi. Önemli kolonoskopi endikasyonları benign perianal hastalıklar (%34), bağırsak alışkanlıklarında değişiklik (%27.4) ve anemi (%12.3) idi. Poliplerin çoğu sol kolon ve rektumda yer alıyor, çoğunlukla düşük dereceli displazi adenomları (%68.9) ve yüksek dereceli displazi adenomları (%9.4) idi. Polip tespit oranı %14.2 ve malignite oranı %2.8 idi.

Sonuç: Literatüre göre, 50 yaş ve üzeri kişiler için tarama programı kapsamında yapılan kolonoskopilerdeki polip ve malignite tespit oranı, çalışmamızda bulunan oranlarla benzerdir. Bu benzerlik temel alındığında, 45-50 yaş grubundaki hastaları tarama kapsamına almayı düşünmek uygun olabilir.

Anahtar Sözcükler: Kolorektal kanser; malignite; polip; tarama yaşı; Türkiye.