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Evaluation of colonoscopy indications and the association with malignancy in patients aged 75 and over

Cem Batuhan Ofluoğlu,[1] Fırat Mülküt[2]

[1]Department of Gastrointestinal Surgery, University of Health Sciences, Sancaktepe Sehit Prof. Dr. İlhan Varank Training and Research Hospital, Istanbul, Türkiye
[2]Department of General Surgery, University of Health Sciences, Istanbul Kartal Dr. Lütfi Kırdar City Hospital, Istanbul, Türkiye

ABSTRACT

Introduction: Colonoscopy is the gold standard for early diagnosis of colorectal cancer. Screening programs are recommended for individuals between the ages of 45-75. In this study, we aimed to evaluate the relationship between indications for colonoscopy and malignancy in patients aged 75 and above.

Materials and Methods: Between 2021 and 2023, 12,416 colonoscopic procedures performed in our endoscopy unit were retrospectively analyzed. Of these, 946 were patients aged 75 and over. After excluding those with inaccessible data, incomplete colonoscopies, or a history of colorectal cancer/polyps, 398 were included in the study. Symptoms were categorized as follows: macroscopic bleeding, anemia, changes in bowel habits, suspicion of malignancy, weight loss, and non-specific symptoms. Rates of malignancy were subsequently determined.

Results: The median age of all patients was 77 years (minimum: 75, maximum: 97), with 51.3% being male. Macroscopic bleeding was the most common symptom at 29.9%, followed by changes in bowel habits (28.6%), anemia (25.1%), non-specific symptoms (7.8%), suspicion of malignancy (6.5%), and weight loss (3.3%). Malignancy was detected in 10.8% of patients, with 55.8% of those diagnosed being female. The most prevalent symptom among these patients was macroscopic bleeding (44.2%), then anemia (25.6%), bowel habit changes (2%), suspicion of malignancy (14%), non-specific symptoms (4.7%), and weight loss (2.3%). Macroscopic bleeding (p=0.030) and suspicion of malignancy (p=0.037) were statistically significant in predicting malignancy, whereas the other symptoms were not.

Conclusion: Colonoscopy can be safely performed in patients aged 75 and over. It is particularly critical for patients presenting with macroscopic bleeding and suspicion of malignancy. However, the utility of colonoscopy for other symptoms warrants further evaluation.

Keywords: Colonoscopy, colorectal cancer, elderly patients, macroscopic bleeding, suspicion of malignancy

Introduction

Colorectal cancer (CRC) ranks as the third most common cancer globally and stands as the second leading cause of cancer-related mortality.[1] Worldwide, life expectancies are increasing with advancements in modern medical technology. As age progresses, the incidence of colorectal cancer also increases. Early diagnosis and treatment significantly improve the prognosis of patients.

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Correspondence: Cem Batuhan Ofluoğlu, M.D., Sağlık Bilimleri Üniversitesi, Sancaktepe Şehit Prof.Dr.İlhan Varank Eğitim ve Araştırma Hastanesi, Gastroenteroloji Cerrahisi, İstanbul, Türkiye
e-mail: dr.cemofluoglu@gmail.com

Colonoscopy stands as the gold standard for the endoscopic evaluation of the colon and rectum.[2] This procedure is utilized across a spectrum of clinical indications, from the early detection of colorectal cancer to the diagnosis and treatment of polyps. Therefore, its adoption as a screening method for specific risk groups is of paramount importance. In the latest guidelines published by the American Cancer Society, the recommended age for CRC screening has been lowered from 50 to 45. This screening program concludes at the age of 75. However, a consensus on the indications and frequency of screening for individuals aged 75 and above has not yet been fully established.[2]

The importance of regular screening in individuals over the age of 75 is being emphasized.[3] Yet, routine colonoscopy application in this demographic is critiqued due to the risks of complications, such as perforation, bleeding, and cardiopulmonary events, as well as the risks associated with general anesthesia.[4] Therefore, indications for colonoscopy in those over the age of 75 should be personalized, taking into account life expectancy, comorbid conditions, previous screening history, and patient preferences. High-risk groups, such as symptomatic patients (e.g., changes in bowel habits, rectal bleeding, or iron deficiency anemia) and those with a family history, should be carefully evaluated and given priority.[2]

This article aims to optimize our practice of colonoscopy in this critical age group by exploring the indications, applicability, and outcomes of colonoscopy in individuals aged 75 and over.

Materials and Methods

Between the years 2021 and 2023, 12,416 colonoscopic procedures performed in our hospital's endoscopy unit were retrospectively reviewed. A total of 946 patients aged 75 and above were identified.

Patients were categorized into six groups based on the presence of macroscopic bleeding, anemia, changes in bowel habits, suspicion of malignancy, weight loss, and non-specific symptoms. Data were recorded in a binary fashion as present or absent. All complaints of the patients were considered during data processing.

Radiological imaging findings, such as increased wall thickness and/or surrounding tissue inflammation, as well as elevated CEA levels, were regarded as suspicious for malignancy. Symptoms such as abdominal pain, bloating, and indigestion were classified as non-specific symptoms.

Bowel preparation in patients undergoing colonoscopy was achieved with two doses of oral laxatives the day before the procedure and two rectal enemas administered on the morning of the procedure. Standard colonoscopy equipment (Fujifilm, EC-600WM, Tokyo, Japan) was utilized. During the procedure, patients were administered 1 mg/kg of midazolam and 0.5 mg/kg of meperidine.

Patients whose data were inaccessible, who could not undergo a total colonoscopy for any reason, or whose examination was reported as insufficient due to uncleanliness, were excluded from the study. Additionally, patients with known malignancies, those who had undergone surgery for colorectal cancer, and those under surveillance due to a history of polyps, were also excluded. Of the remaining patients, 70 underwent colonoscopy due to positive fecal occult blood test (FOBT) results. Comparative analysis could not be conducted for patients with negative FOBT results due to a lack of data. The incidence rate of malignancy in patients with positive FOBT results was presented as a percentage.

All statistical analyses were performed using the SPSS software, Windows version 25.0 (SPSS Inc., Chicago, IL, USA). The normality of data distribution was assessed using the Shapiro-Wilk and Kolmogorov-Smirnov tests. For non-normally distributed data, median and min-max values were used. Data were also expressed numerically (n) and as percentages (%). Categorical variables were compared using the chi-square test. All statistical calculations were two-tailed, and a p-value of $<.05$ was considered statistically significant within a 95% confidence interval.

Results

The data of 398 patients were statistically evaluated in the study. The ages of the patients were not normally distributed. The median age of all patients was found to be 77 years (minimum: 75, maximum: 97). Of the patients, 51.3% were male (n=204), and 48.7% were female (n=194) (Table 1). Colonoscopy was performed on 29.9% (n=119) of patients due to macroscopic bleeding; 25.1% (n=100) due to anemia; 28.6% (n=114) due to changes in bowel habits; 6.5% (n=26) due to suspicion of malignancy; 7.8% (n=31) due to non-specific symptoms; and 3.3% (n=13) due to weight loss (Table 2).

Malignancy was detected in 10.8% (n=43) of the patients. The median age of patients diagnosed with malignancy was 76 years (minimum: 75, maximum: 88), while in patients without detected malignancy, it was 77 years (minimum: 75, maximum: 97) (Table 1).

Table 1. Distribution of colonoscopy findings by sex and age in patients aged 75 and over

	Benign or Non-Pathologic		Malignancy		All patients	
	n	%	n	%	n	%
Sex						
Male	185	52.1	19	44.2	204	51.3
Female	170	47.9	24	55.8	194	48.7
Age (Median/Min-Max)	77 (75-97)		76±3 (75-88)		77 (75-97)	

Table 2. Indications for colonoscopy in patients aged 75 and over

	Count	Column, n (%)
Macroscopic Bleeding	119	29.9
Anemia	100	25.1
Changes in Bowel Habits	114	28.6
Non-spesific Symptoms	31	7.8
Weight Loss	13	3.3
Suspicion of malignancy	26	6.5

Of the patients diagnosed with malignancy, 55.8% were female (n=24). Furthermore, among the 43 patients diagnosed with malignancy, the rate of macroscopic bleeding as a symptom was 44.2% (n=19); anemia was 25.6% (n=11); changes in bowel habits were 2% (n=9); suspicion of malignancy was 14% (n=6); non-specific symptoms were 4.7% (n=2); and weight loss was 2.3% (n=1) (Table 3).

The statistical analysis revealed that the presence of macroscopic bleeding (p=0.030) and suspicion of malignancy (p=0.037) were statistically significant symptoms in the detection of malignancy. On the other hand, the presence of anemia (p=0.942), changes in bowel habits (p=0.236), weight loss (p=0.713), and non-specific symptoms (p=0.416) were not found to be significant in the detection of malignancy (Table 3).

Malignancy was detected in 3 of the 70 patients with a positive FOBT, accounting for 4.2%.

Discussion

Our study examined the indications and outcomes of colonoscopy in a high-risk group aged 75 and above. It was observed that colonoscopies performed due to macroscopic bleeding and suspicion of malignancy were significant in the detection of malignancy. It was determined that other indications were not significant in the detection of malignancy. According to the recommendations of the American Cancer Society, the routine colonoscopy screening program consists of starting at age 45 and then proceeding with a high-sensitivity, guaiac-based fecal occult blood test annually; a multitarget stool DNA test every 3 years; a colonoscopy every 10 years; computed tomography colonography every 5 years; and flexible sigmoidoscopy every 5 years. The screening program concludes at age 75.[2]

While digital colon radiography and CT colonography can be used in colorectal cancer screening and polyp diagnosis, colonoscopy remains the gold standard as it provides simultaneous diagnostic and therapeutic opportunities. Complications such as perforation and bleeding related to the procedure, and morbidity associated with premedication and sedation, can be observed in colonoscopy. It is believed that in the elderly population, comorbid diseases may increase the risk associated with the procedure.[4] This situation necessitates the need for the procedure to be performed on selected patients.

In our study, no secondary complications were observed following colonoscopy. In a multicenter study, bleeding, one of the most significant complications post-colonoscopy, was seen in 0.13% of patients, and all were controlled endoscopically.[5] The same multicenter study reported no occurrences of post-colonoscopy perforation.[5] Another study found the rate of post-colonoscopy perforation to be 0.02%.[6] When considering the rate of complications in the literature, the absence of complications in our study could be attributed to the limited number of patients.

Increased age during the colonoscopy preparation phase can be associated with increased renal and cardiac dysfunction following the preparatory procedure. It has been indicated that the most challenging part of

Table 3. Association of colonoscopy indications with benign or non-pathologic and malignancy outcomes

Symptom	Benign or Non-Pathologic		Malignancy		p
	n	%	n	%	
Macroscopic Bleeding					
No	255	71.8	24	55.8	0.030[a]
Yes	100	28.2	19	44.2	
Anemia					
No	266	74.9	32	74.4	0.942
Yes	89	25.1	11	25.6	
Changes in Bowel Habits					
No	250	70.4	34	79.1	0.236
Yes	105	29.6	9	20.9	
Suspicion of Malignancy					
No	335	94.4	37	86.0	0.037[a]
Yes	20	5.6	6	14.0	
Non-spesific Symptoms					
No	326	91.8	41	95.3	0.416
Yes	29	8.2	2	4.7	
Weight Loss					
No	343	96.6	42	97.7	0.713
Yes	12	3.4	1	2.3	

[a]Statistically significant difference at the confidence level of 0.95.

the colonoscopy process for patients in this age group is the bowel preparation phase.[7] In our study, no adverse events related to the bowel preparation process were detected.

In our study, the rate of malignancy detection in patients over 75 years of age was 10.8%. This rate varies in the literature. In a study conducted with patients over the age of 80 by Bat et al.,[8] the rate was 28.7%, while Sardinha et al.[9] found it to be 4.5% in the same age group. The higher rate of malignancy detection in our study could be due to the inclusion of a younger age group. David et al.[10] reported that significant malignancy was not detected in patients over 75, concluding that screening in this demographic may not be meaningful.

In the study by Sardinha et al.,[9] the most common colonoscopy indications were changes in defecation, bleeding, and abdominal pain, with bleeding being the symptom most associated with a cancer diagnosis (11.5%). Apart from this symptom, malignancy was detected in 2 patients, and it was suggested that flexible sigmoidoscopy and double-contrast barium enema might be used for diagnosis. Similarly, in our study, the most frequent indications for colonoscopy were macroscopic bleeding, anemia, and changes in bowel habits, with macroscopic bleeding being the most related to malignancy, along with suspicion of malignancy.

Stevens and Burke included patients aged 50 to 100 in their study, but only 6% (n=53) were over 80. Their definition of "symptomatic patient" was limited to those with abdominal pain and changes in bowel habits, excluding anemia, occult blood loss, or macroscopic bleeding.[11] In contrast, our study focused solely on patients over 75, with the most common malignancy-related indications being macroscopic bleeding and suspicion of malignancy.

A multicentric study involving 1,199 patients is one of the most comprehensive on colonoscopy outcomes in the elderly. It categorized patients as symptomatic and asymptomatic, finding that the diagnostic yield was low in the asymptomatic group but beneficial in cases of macroscopic bleeding, positive occult blood, and changes in defecation. The study reported a low complication rate of

0.6% for colonoscopies in the advanced age group but did include patients with a history of polyp follow-up, which was the most frequent indication.[12] Our study excluded patients undergoing polyp follow-up to prevent skewing the results. Consistent with the literature, macroscopic bleeding was associated with malignancy detection. However, no significant findings were observed for positive occult blood, possibly due to the small number of affected patients. Notably, our study found a high rate of malignancy detection in colonoscopies prompted by suspicion of malignancy, an indication not commonly mentioned in similar studies. We defined suspicion of malignancy as increased wall thickness and/or inflammation in surrounding tissues on radiological imaging, or elevated CEA levels, which yielded significant results in malignancy detection, potentially contributing to the literature.

The limitations of our study include its retrospective nature, reliance on file review, and a limited patient sample, restricting our evaluation of outcomes related to symptoms like positive occult blood and weight loss. We also could not ascertain if patients had undergone previous colonoscopies or the timing of their last endoscopic examination.

Conclusion

Based on our review of colonoscopy outcomes in patients over the age of 75, we can conclude that colonoscopy is a safer procedure for this population than previously thought, as evidenced by the lack of complications in our study. Our findings support the use of colonoscopy for diagnosis and treatment in elderly patients who present with macroscopic bleeding and suspicion of malignancy. Furthermore, the relative absence of significant findings in individuals over 75 with non-specific symptoms suggests that the role of colonoscopy in this subset of patients may need to be reassessed.

Disclosures

Ethichs Committee Approval: The study was approved by Sehit Prof. Dr. İlhan Varank Training and Research Hospital. Local Ethics Committee, 2023/55.

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