

Research Article

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Is the risk of colorectal cancer increased after a diverticulitis attack? Is routine colonoscopy necessary? our clinical experience

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Abstract

Diverticular disease is common, particularly in Western societies and in older age groups. Diverticulitis, occurring in 10–25% of cases, is the most frequent complication of this condition. Computed tomography (CT) is the standard imaging modality for diagnosing diverticulitis. Previous studies have demonstrated an increased incidence of colorectal cancer (CRC) in colonoscopies performed after episodes of diverticulitis and its complications. This study aims to evaluate the necessity of colonoscopic assessment in differentiating colorectal cancers in patients diagnosed with diverticulitis and its complications via abdominal CT. Between January 2018 and December 2024, 290 cases diagnosed with diverticular disease and its complications were retrospectively analyzed in the General Surgery Department of Recep Tayyip Erdoğan University Training and Research Hospital. Twenty-one patients were excluded from the study due to mortality following perforation or lack of follow-up. Demographic and clinical data were obtained from hospital records. Among the 269 patients included in the study, malignancy was detected in 37 (13.8%) cases after elective colonoscopy. The mean age of patients diagnosed with colorectal malignancy was 70.3 ± 9.7 years, which was statistically significantly higher compared to patients without malignancy. CT evaluations of wall thickening at the diverticulitis site revealed malignancy in 22 of 105 patients (21%) with localized wall thickening. Additionally, tumors were identified in 12 of 13 patients (92.3%) with wall thickening in colonic segments outside the site of diverticular disease. The risk of malignancy in patients with diverticulitis increases with age. Many studies have recognized an increased incidence of colorectal cancer following diverticulitis episodes. Based on our findings, we recommend performing elective colonoscopy 6–8 weeks after the treatment process in patients presenting with diverticulitis due to the high prevalence of colorectal malignancies. While CT is considered the standard method for diagnosing diverticulitis, its limitations in detecting colorectal cancer should be acknowledged.

Keywords: diverticulosis, diverticulitis, colorectal cancer, colonoscopy

1. Introduction

Diverticular disease is commonly observed, particularly in Western societies and among older adults (1). While it is frequently identified asymptotically during colonoscopies, it can also become symptomatic, leading to complications such as diverticulitis, hemorrhage, or perforation. Acute diverticulitis, observed in approximately 10–25% of patients, is the most common complication (2).

The imaging modality most frequently used for diagnosing acute diverticulitis and its complications is computed tomography (CT) (3). CT has a sensitivity and specificity of approximately 95% for the diagnosis of diverticulitis and its complications, making it the standard diagnostic method (4). However, due to imaging findings such as thickening of the bowel wall secondary to inflammation, there may be an overlap between diverticulitis and colorectal cancers (1,4). Several

studies have reported an increased prevalence of colorectal cancer ranging from 0.5% to 11% in colonoscopies performed after an episode of diverticulitis (4–5). This rate is notably higher in cases of complicated diverticulitis compared to uncomplicated cases.

In this context, the American Gastroenterological Association (AGA) guidelines, as well as other similar guidelines, recommend performing colonoscopy following an episode of diverticulitis (6).

This study aims to evaluate whether colonoscopic assessment is necessary to differentiate colorectal cancers in patients diagnosed with diverticulitis and its complications based on abdominal CT findings. While some publications suggest that the risk of colorectal cancer in uncomplicated diverticulitis cases is similar to that observed in standard

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colonoscopic screenings, others support the notion that the cumulative risk increases when diverticulitis and its complications are evaluated collectively. Our objective is to determine the prevalence and diagnosis of colorectal cancer in cases of diverticulitis diagnosed via CT at our clinic and to provide concrete data on the necessity of colonoscopy in our region.

2. Materials and Methods

In our study, 290 cases diagnosed with diverticular disease and its complications between January 2018 and December 2024 at the General Surgery Department of Recep Tayyip Erdoğan University Training and Research Hospital were retrospectively analyzed. Among these, 21 cases were excluded due to mortality following perforation or lack of follow-up data.

The demographic data of the patients, clinical symptoms, and results of elective colonoscopies performed after treatment, along with any complications, were recorded retrospectively. This study was approved by the Non-Interventional Clinical Research Ethics Committee of Recep Tayyip Erdoğan University Faculty of Medicine (Approval Date: October 1, 2024; Approval Number: 2024/258).

2.1. Statistical Analysis

Data were analyzed using IBM SPSS Statistics (Version 29) for Windows (Armonk, NY, USA, IBM Corp.). Numerical and percentage values were presented for categorical variables, while mean and standard deviation values were used for the age variable. Relationships between categorical variables were assessed using the Chi-square test and Fisher's Exact Test. The Mann-Whitney U test was used to evaluate the relationship

between age and tumor presence. A p-value of <0.05 was considered statistically significant for all analyses.

3. Results

A total of 290 patients with diverticular disease and its complications were retrospectively reviewed, 269 of which were included in the analysis after excluding 21 patients due to mortality following perforation or lack of follow-up.

The mean age of patients with a history of diverticulitis was 62.9 ± 12.2 years (range: 26–90). Among patients diagnosed with colorectal malignancy, the mean age was 70.3 ± 9.7 , compared to 61.7 ± 12.2 in those without malignancy (Mann-Whitney U test, $p<0.001$). Colorectal malignancy was detected in 37 (13.8%) of the 269 patients who underwent elective colonoscopy (Table 1).

Table 1. Age and cumulative colorectal cancer data

	Colorectal Cancer Present	Colorectal Cancer Absent	p
The average age (\pm SD)	70.3 ± 9.7	61.7 ± 12.2	$p<0.001^*$
Associated Tumor (%)	37 (%13.8)	232(%86.2)	

*: Mann Whitney U is used. SD: Standard deviation

Among the patients who underwent colonoscopy following diverticulitis, 51.3% (n=131) were female, and malignancy was detected in 8.4% (n=11) of them. Of the 138 male patients, malignancy was identified in 18.8% (n=26). No statistically significant difference was found between genders (Fisher's Exact test, $p=0.013$) (Table 2).

Table 2. Gender and tumor localization data

		Colorectal Cancer Present		Colorectal Cancer Absent		Total group		p-value
		n	%	n	%	n	%	
Gender	Male	26	18.8	112	81.2	14	24,1	$p=0.013^*$
	Female	11	8.4	120	91.6	44	75.9	
Same localization wall thickening on CT	Yes	22	21	83	79	105	39	$p=0.006^*$
	No	15	9.1	149	90.9	164	61	
Different localization wall thickening on CT	Yes	12	92.3	1	7.7	13	4.8	$P<0.001^*$

*: Fisher's Exact Test is used.

The most common initial diagnosis was diverticulitis (82.5%, n=222). The remaining cases included perforation (10.8%, n=29), abscess (4.5%, n=12), and bleeding secondary to diverticulosis (2.2%, n=6) (Table 3).

In terms of treatment, the majority of patients (84.8%, n=228) were treated medically without any intervention. Surgical interventions included Hartmann's procedure (10.8%, n=29) and diverticulitis excision or drainage combined with antibiotic therapy.

Table 3. Patient diagnoses

	Percentage (%) /Number (n)
Diverticulitis	82.5 (n=222)
Perforation	10.8 (n=29)
Abscess	4.5 (n=12)
Diverticulosis-related bleeding	2.2 (n=6)

3.1. Additional Results

When evaluating the localization of findings identified on CT by radiologists, the most common site was the descending colon/sigmoid colon in 92.2% (n=248) of cases. Colonoscopy findings showed that diverticula were most frequently observed in the descending and sigmoid colon, accounting for 74% (n=199) of the cases.

In the classification based on CT radiological findings, inflammation (43.9%, n=118) and wall thickening at the diverticulitis site (39%, n=118) were the most common observations.

When the wall thickening was localized to the same site as diverticulitis and its complications, malignancy was identified in 21% (n=22) of the 105 patients (Fisher's Exact test, $p=0.006$) (Table 2).

In contrast, in cases where wall thickening was present in a different colonic segment, 92.3% (n=12) of the 13 patients were found to have a tumor (Fisher's Exact test, $p<0.001$) (Table 2).

Among the 269 patients, only two cases (0.7%) presented with major complications such as perforation and bleeding, while no significant complications occurred in the remaining patients.

3.2. Discussion

The risk of malignancy in patients with diverticulitis increases with age. A meta-analysis by Koo et al. found an approximately 0.3% increase in risk per decade of life (4). Similarly, a study conducted in the United States reported a nearly twofold increase in colorectal cancer prevalence among patients over 65 years of age following diverticulitis (7). In our study, the mean age of patients diagnosed with colorectal malignancy was 70.3 ± 9.7 years, consistent with the literature (Table 1).

Multiple studies on the prevalence of colorectal cancer after a diverticulitis episode indicate malignancy rates of 0.5%–2% for uncomplicated diverticulitis and 5%–11% for complicated cases (4, 8, 9). When both categories are combined, cumulative malignancy risk ranges between 0.5% and 11%, as shown in numerous meta-analyses (8, 9). A community-based study by Jin-Dominguez et al. found that the prevalence of colorectal cancer within one year after an acute diverticulitis episode was nearly double compared to individuals without diverticulitis (10). In our study, colorectal malignancy was detected in 13.8% (n=37) of patients who underwent colonoscopy following a diverticulitis episode (Table 1).

Although a causal relationship between colorectal cancer and diverticulitis has not been established, both conditions share overlapping radiological features such as increased colonic wall thickening, soft tissue densities, and luminal narrowing (11, 14). Additionally, their shared localization in the sigmoid colon and factors such as prolonged colonic transit times and increased adenoma prevalence in these regions

suggest similar risks. Moreover, studies suggest that mucosal inflammation may contribute to carcinogenesis (12, 13).

CT is the standard diagnostic modality for diverticulitis and its complications, with reported sensitivity and specificity levels of approximately 95% (3, 5). However, CT findings such as wall thickening and inflammation overlap with features of colorectal cancer (14). This overlap reinforces the recommendation for post-attack colonoscopic evaluation in many studies (3, 5, 8, 13).

In our study, wall thickening was identified on CT in 105 patients, 21% (n=22) of whom were diagnosed with colorectal cancer. Among 164 patients without significant wall thickening, 9.1% (n=15) were found to have colonic malignancies ($p=0.006$, Table 2). Furthermore, of the 13 patients with wall thickening in a different colonic segment, 92.3% (n=12) were diagnosed with malignancies ($p<0.001$, Table 2).

Recent studies suggest that colonoscopy may not be necessary for patients with uncomplicated diverticulitis due to the low malignancy risk, which is comparable to that of the general population (15). The World Society of Emergency Surgery (WSES) does not recommend routine colonoscopy after uncomplicated diverticular disease unless screening is indicated for other reasons (16). However, there is a lack of long-term follow-up studies on this issue. Conversely, the American Gastroenterological Association (AGA) and several meta-analyses advocate routine colonoscopy due to the increased risk of colorectal cancer (4–6, 8). For instance, Rottier et al. reported colorectal cancer prevalence of 0.4%–1.0% in screening colonoscopies compared to 2.1% after diverticulitis (8).

While some studies suggest that colonoscopy can be performed within six weeks after an attack (17), the consensus recommends waiting 6–8 weeks (18, 19). Although rare, colonoscopy-associated complications can occur, particularly after diverticulitis. Technical challenges during colonoscopy, such as luminal narrowing, angulations, and spasms, can complicate the procedure (20). In our study, one case of perforation and another of bleeding were observed following elective colonoscopy.

Based on our findings, we recommend performing an elective colonoscopy 6–8 weeks after the resolution of a diverticulitis episode to address the increased risk of colorectal malignancy. While CT is the standard imaging modality for diagnosing diverticulitis, its limitations in differentiating diverticulitis from colorectal cancer should be recognized.

Conflict of interest

The authors declared no conflict of interest.

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None to declare.

Authors' contributions

Concept: A.Ö., O.B., Design: A.Ö., O.B., Data Collection or Processing: A.Ö., O.B., Analysis or Interpretation: A.Ö., O.B., Literature Search: A.Ö., O.B., Writing: A.Ö., O.B.

Ethical Statement

This study was approved by the Non-Interventional Clinical Research Ethics Committee of Recep Tayyip Erdoğan University Faculty of Medicine (Approval Date: October 1, 2024; Approval Number: 2024/258).

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