ORIGINAL ARTICLE

Clinical and Epidemiological Characteristics of Colorectal Cancer Patients

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Abstract: ***Introduction:*** *Colorectal cancer is the third most prevalent malignant tumor and the second leading cause of mortality, following bronchopulmonary cancer. The aim of our study was to evaluate demographic, clinical, and paraclinical data in patients with colorectal cancer, to find prognostic markers.* ***Materials and methods:*** *We conducted a retrospective observational study, including 204 patients with colorectal cancer who were admitted in the Clinical Emergency Hospital of Bucharest, from January 1, 2022, to January 1, 2024.* ***Results:*** *We identified a slight male predominance (54% versus 46%) and an average age of 67 years. However, a significant percentage of patients were diagnosed with colorectal cancer before the age of 50 years (11%). Regarding harmful behaviors, 24% of patients were smokers, and only 2.5% confirmed chronic alcohol use. The most common comorbidity of patients in our study was hypertension (65.7%), followed by obesity (43%) and diabetes (24%). The sigmoid colon was identified as the predilection location of colorectal cancer through endoscopic evaluation. The most common histopathological type was NOS adenocarcinoma (76.5%), followed by mucinous adenocarcinoma (16.7%). Most patients (77%) had moderately differentiated tumors (grade G2). The in-hospital mortality rate was 2.5%, and the average duration of hospitalization was 14.51 days.* ***Conclusions****: It is imperative to raise public awareness regarding the risk of colorectal cancer, to encourage the adoption of a healthy lifestyle and to facilitate the implementation of novel strategies to manage this condition.*

Keywords: *colorectal cancer; screening; diagnosis; risk factors; prognosis*

1. INTRODUCTION

Colorectal cancer (CRC) is the third most prevalent malignant tumor and the second leading cause of mortality, following pulmonary cancer [1]. The incidence of CRC is greater in industrialized nations and is rising in developing countries. Additionally, a significant issue in recent decades is the rise in incidence of early-onset CRC (diagnosed before the age of 50 years) [1]. Enhancing awareness of CRC risk is crucial for improving patient prognosis through the adoption of a healthy lifestyle,

implementation of special screening measures for at-risk populations, and advancement of diagnostic and therapeutic care of this condition [1].
Considering the elevated prevalence of CRC, the lowering age of diagnosis, and the significant mortality rates, we decided to investigate the clinico-epidemiological variables that may suggest an adverse prognosis among CRC patients. This is an essential phase in comprehending the intricacies and variability of this ailment, beginning with diagnosis and lasting throughout treatment. Recognizing these traits enables us to examine the connection among multiple aspects of the disease, encompassing risk factors, clinical manifestations, progression, and therapy response. Furthermore, their investigation describes not only the clinical ramifications of CRC but also its effects on patients' quality of life and the dynamics of familial connections. By carefully analyzing these factors, we can determine individualized therapy and management plans, customized to the patient's distinct requirements, with the objective of enhancing treatment outcomes and elevating the quality of life for both the patient and family members.

2. AIM AND OBJECTIVES

The goal of our study was to assess demographic, clinical, and paraclinical data in patients with CRC, to determine predictive markers for the onset of oncogenesis and its adverse progression.

The secondary goals of this study are summarized as follows:
a) Epidemiological characterization of the study group.
b) Etiological characterization of the study group.
c) Characterization of the study group based on clinical parameters.
d) Assessment of causative associations between patients' comorbidities and the onset timing of CRC.
e) The assessment of variation in laboratory test results correlated with the age of individuals diagnosed with CRC.
f) Assessment of histological and immunohistochemical diagnoses of CRC.
g) Evaluation of the mean duration of hospitalization and determining the factors that impacted this indicator.
h) Evaluation of the fatality rate among patients with CRC and discovery of factors influencing this parameter.

3. MATERIALS AND METHODS

We conducted a retrospective observational analysis, including 204 patients with CRC who were admitted in the Clinical Emergency Hospital of Bucharest (Romania), from January 1, 2022, to January 1, 2024.

We obtained the approval of the ethical committee of the Clinical Emergency Hospital of Bucharest (approval no. 794/29.01.2024).

Population study

The research involved a cohort of 204 patients, chosen according to specified inclusion and exclusion criteria, as detailed below.

a) Inclusion criteria:
- Patients diagnosed with CRC subsequent to histological evaluation;
- Patients who received imaging examinations in the Clinical Emergency Hospital of Bucharest;
- Written informed consent for the utilization of personal data and participation in medical education.

b) Exclusion criteria:
- Refusal to sign the informed consent.
- Absence of epidemiological, clinical, and paraclinical data in the medical documents analyzed during the study.
- Patients diagnosed with different cancer types.

Database

Based on the inclusion and exclusion criteria, the database needed for the study was assembled by searching through the observation sheets, imaging study results, and biological investigation results that were stored in the Clinical Emergency Hospital of Bucharest archive.

The examined variables included age, sex, alcohol intake, smoking habits, tumor location, endoscopic characteristics, TNM staging, histological and immunohistochemical diagnosis, inherited cancer history (ICH), cholecystectomy, obesity, diabetes, hypertension (HTN), chronic obstructive pulmonary disease (COPD), impaired renal function or abdominal irradiation, serum levels of specific biological markers, and outpatient treatment with statins or aspirin.

4. RESULTS

In our study, we included 204 patients with a positive diagnosis of CRC. The median age was 67 years old, with values varying from a minimum of 30 years old and a maximum 91 years old. Regarding the gender distribution, we noticed a slightly higher prevalence of men (111 patients, 54%) than women (93 patients, 46%). These data are similar with those reported in the literature.

Subsequently, we evaluated the distribution of the study population based on smoking status, consumption of alcohol, and diagnosis of obesity, defined as a body mass index over 30 Kg/m^2.

In the investigated patients group, smoking was identified in around 24% of cases, specifically in 49 out of 204 patients. As depicted in Figure 1, 24% of the individuals diagnosed with CRC were smokers. It is noteworthy to point out that this information was recorded in only a limited number of observation sheets, namely 49, while the smoking status was undetermined for 155 patients, or 76%. Furthermore, the database investigation revealed that only 2.5% of patients were chronic alcohol drinkers, whereas the drinking habits of the remaining 97.5% were undetermined.

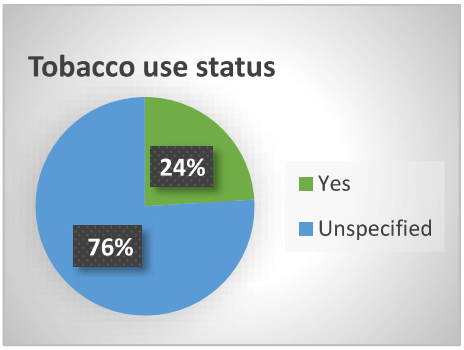

Figure 1. Smoking prevalence in CRC patients.

In our study group, we identified an increased prevalence of obesity, with 88 patients affected by this metabolic disease. Consequently, 43% of the patients who participated in our study had varying degrees of obesity (Figure 2). For the remaining 57% of patients, it is unclear whether the normal weight was caused by neoplastic impregnation syndrome or if they had a normal weight previous to the onset of colorectal oncogenesis.

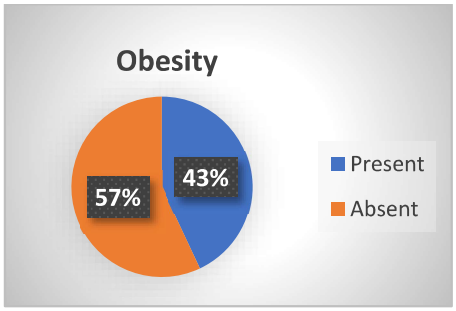

Figure 2. Obesity prevalence in CRC patients.

In the following phase, we examined the tumors localization, their endoscopic features, and the findings of the histological and immunohistochemical assessments. The sigmoid colon has been determined as the primary site of cancer, afflicting 76 patients, representing 37.3% of the total number of cases. The ascending colon was second (41 patients, 20.1%), followed by the transverse colon (28 patients, 13.7%) and the descending colon (24 patients, 11.8%) (Table 1). Furthermore, a single patient presented tumor growth in the cecum.

The most prevalent site for rectal tumors was the upper rectum, found in 8 patients, representing 3.9% (Table 1). A comparable percentage was noticed for tumors in the middle rectum (7 patients, representing 3.4%). Additionally, 5 patients (2.5%) presented with tumors in the lower rectum, whereas 3 patients (1.5%) had tumors adjacent to the recto-sigmoid junction. In one instance, the tumor expansion was observed in the lower and middle rectum, and in another patient, it was found in the upper and middle rectum (Table 1). It is crucial to ascertain the precise location of the rectal tumor in order to choose the most effective treatment, determine the viability of colorectal anastomosis or the necessity for a permanent colostomy.

Table 1. Site of tumors in the colon and rectum.

Tumor's location			
		Frequency	Percentage
Validated data	Ascending colon - cecum	1	0.5
	Ascending colon	41	20.1
	Ascending colon + medial third of the transverse colon	1	0.5
	Ascending colon and sigmoid colon	1	0.5
	Descending colon	24	11.8
	Right colon	2	1
	Sigmoid colon	76	37.3
	Sigmoid colon and medial rectum	1	0.5
	Transverse colon	28	13.7
	Transverse colon (distal third)	1	0.5
	Transverse colon (proximal third)	1	0.5
	Rectosigmoid junction	3	1.5
	Inferior rectum	5	2.5
	Inferior and medial rectum	1	0.5
	Middle rectum	7	3.4
	Upper rectum	8	3.9
	Upper and medial rectum	1	0.5
	Rectosigmoid	2	1
	Total	204	100

Seventy-eight patients (38.2%) exhibited a ulcerative and vegetative aspect of the tumor during endoscopic examination (Table 2). A significant number of patients (60 patients, 29.41%) presented stenosing tumors. The endoscopic presentation could indicate a diagnosis in advanced stages.

Infiltrative tumors have been detected in 7 patients (3.4%), whereas vegetative tumors were noted in 9 patients (4.4%) (Table 2). Only one patient (0.5%) had intestinal perforation resulting from tumor-induced erosion of the intestinal wall (Table 2). These findings are in accordance with the ones previously reported, which indicated that only a small proportion of patients suffered an acute complication. After analyzing this data, we can define acute complications as intestinal occlusion or perforation. It is estimated that 35% of patients with stenosing tumors experienced associated occlusive syndromes, namely 21 out of 22 patients with acute complications.

Table 2. The endoscopic aspect of colorectal tumors.

Endoscopic results			
		Frequency	Percentage
Validated data	Infiltrative	7	3.4
	Stenosing	59	28.9
	Ulcerative and ruptured	2	1
	Ulcerative and stenosing	1	0.5
	Ulcerative, stenosing and vegetative	1	0.5
	Ulcerative	78	38.2
	Ulcerative and infiltrative	11	5.4
	Ulcerative and vegetative	36	17.6
	Vegetative	9	4.4
	Total	204	100

In order to grade CRC, TNM classification was used, which defined tumor characteristics at the time of admission. Consequently, the majority of the 204 patients included in our study were found in stage 3B (72 patients, representing a 35.3% prevalence). Conversely, only one patient (0.5%), presented with stage 0 CRC (Table 3). These results are in agreement with the ones previously reported, which indicated that a substantial proportion of patients had stenosing tumors.

Additionally, 18.1% of patients were diagnosed with stage 2A CRC, 3.9% with stage 2B CRC, 3.4% with stage 2C CRC, 5.9% with stage 3A CRC, 15.7% with stage 3C CRC, and 8.8% with stage 4 CRC (Table 3).

Table 3. Tumor TNM classification.

Tumoral staging			
		Frequency	Percentage
Validated data	T0	1	0.5
	T1	17	8.3
	T2A	37	18.1
	T2B	8	3.9
	T2C	7	3.4
	T3A	12	5.9
	T3B	72	35.3
	T3C	32	15.7
	T4	18	8.8
	Total	204	100

The histopathological examination revealed that the predominant histological type of CRC was adenocarcinoma NOS (not otherwise specified), found in 156 out of the 204 patients, accounting for 76.5% of the cases. The second most prevalent histological variant of CRC was mucinous adenocarcinoma, found in 34 cases, representing 16.7% (Table 4).

Adenocarcinoma with a signet ring cell component was detected in 2% of the patients, specifically in 4 individuals (Table 4). Additionally, three individuals developed adenocarcinoma NOS, comprising a mucinous adenocarcinoma component, whereas one patient presented mucinous adenocarcinoma with a signet ring cell component (Table 4). Carcinoma in situ has been identified in only one patient, as previously mentioned.

Table 4. Patient distribution based on the histological diagnosis of tumors.

Histopathological Classification		Frequency	Percentage
Validated data	Colorectal adenocarcinoma with mucinous adenocarcinoma compound < 50%	1	0.5
	Signet ring cell carcinoma	4	2
	Mucinous adenocarcinoma	34	16.7
	Mucinous adenocarcinoma with signet ring cell compound	1	0.5
	Carcinoma NOS	156	76.5
	Carcinoma NOS with mucinous type adenocarcinoma areas	1	0.5
	Carcinoma NOS with mucinous adenocarcinoma compund	1	0.5
	Invasive carcinoma NOS	2	1
	Tubular adenoma	2	1
	Tubulovillous adenoma	1	0.5
	Carcinoma in situ	1	0.5
	Total	204	100

The degree of tumor differentiation is another histological parameter that has been demonstrated to have a prognostic significance. The observation sheets did not specify the degree of tumor differentiation in five of the 204 patients enrolled in our study (2.5%) (Table 5). Consequently, the data validated for this study totaled 199.

Most patients, specifically 157 individuals, representing 77%, were diagnosed with moderately differentiated tumors classified as grade G2 (Table 5).

In addition, a substantial proportion of patients (34 patients, 16.7%) had poorly differentiated tumors (grade G3), while only eight patients (3.9%) had well-differentiated tumors (grade G1) (Table 5). These outcomes are in accordance with the findings previously reported, which indicated that the majority of patients enrolled in our study were diagnosed with CRC in the advanced stages of the disease. The mucinous histological type and the weak-to-moderate tumor differentiation observed in a substantial proportion of our study group are recognized as negative prognostic predictors.

Table 5. Cancer cell differentiation.

Stages of differentiation		Frequence	Percentage from the whole group study	Percentage from validated data
Validated data	G1	8	3.9	4
	G2	157	77	78.9
	G3	34	16.7	17.1
	Total	199	97.5	100
Unaccounted data		5	2.5	
Total		204	100	

Subsequently, we assessed comorbidities and their prevalence among patients with CRC included in our study. Statistical analysis revealed the occurrence of inflammatory bowel disorders in a minority of these patients. Consequently, 16 patients (7.8%) reported a personal history of inflammatory bowel disease, while 188 individuals (92.2%) denied this comorbidity.

A history of abdominal irradiation is recognized as a risk factor for the CRC development. Accordingly, we sought to assess the prevalence of abdominal irradiation within our study group. Unfortunately, this was not detailed in 185 observation sheets. 19 patients (9.3%) have a history of abdominal irradiation. Nevertheless, we were unable to precisely ascertain the prevalence of this risk factor within our study cohort, as 90.7% of cases lacked information concerning the presence or absence of a history of abdominal irradiation.

Cholecystectomy was another comorbidity that was identified in 11% of all patients included in our study. Therefore, 22 patients disclosed that they had undergone cholecystectomy, while 182 patients denied having undergone this procedure. In patients with a history of cholecystectomy, the duration from the surgery to the diagnosis of CRC could not be established.

Regarding genetic syndromes, Gilbert's syndrome was reported in only one patient. The results reflect the senior mean age of the patients in our study sample, which is 67 years old. CRC linked to inherited polyposis or non-polyposis syndromes typically manifests at a young age. As a result, we do not anticipate a significant prevalence of these genetic syndromes.

Concerning cancer history, a notable proportion of patients, specifically 34.8% (71 patients), reported this comorbidity. They include both patients with a history of cancer with other locations and patients with a relapse of CRC, previously declared cured.

Additional comorbidities observed in patients with CRC in our study cohort were diabetes mellitus, HTN, kidney failure, and COPD (Figure 3).

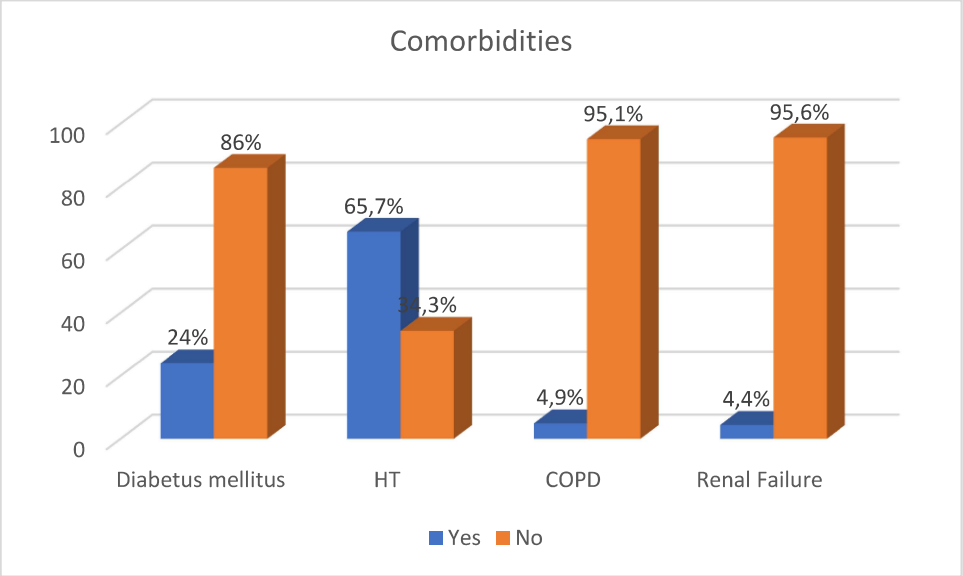

Figure 3. Comorbities of patients with CRC.

Amongst the aforementioned comorbidities, HTN was the most common, affecting 134 patients, or 65.7%. This result can be explained by the senior average age of the patients in our study group, which correlates with a high prevalence of HTN. Diabetes mellitus was also observed in a substantial number of patients (49 patients, which corresponds to a 24% prevalence). In contrast, renal failure and COPD were infrequently identified comorbidities in our study cohort (4.4% of patients had associated renal failure and 4.9% had associated COPD). Upon analyzing the data encompassing our study sample, we find that history of cancer were present in merely 2% of individuals. Of the 204 patients whose data were evaluated, four had a familial cancer history. However, the precise prevalence of this parameter cannot be determined as the absence of inherited cancer history was not reported in the remaining 200 observation sheets.

The administration of statins or aspirin has been proposed as preventive factors against the onset of CRC. We therefore proceeded to ascertain the prevalence of these drug classes among the patients in our study. Statistical study revealed that 27% of patients utilized statins (Table 6), while 16.7% employed aspirin (Table 7). Thus, our analysis indicates that the comparatively significant number of patients with CRC undergoing outpatient treatment with the two classes of medications do not support their protective effect against the onset of colorectal carcinogenesis.

Tabel 6. Prevalence of statin utilization among participants in our research.

Statin			
		Frequency	Percentage
Validated Data	No	149	73
	Yes	55	27
	Total	204	100

Tabel 7. Prevalence of aspirin utilization among participants in our research.

Aspirin			
		Frequency	Percentage
Validated data	No	170	83.3
	Yes	34	16.7
	Total	204	100

The mean duration of hospitalization for patients in our study was 14.51 days, with standard deviation of 8.822. The minimum duration of hospitalization was one day, while the longest duration was 60 days. Regarding the in-hospital death rate of patients included in our study, it was 2.5% (5 patients died during hospitalization).

5. DISCUSSION

This study sought to examine the diagnostic and prognostic significance of several epidemiological, clinical, and paraclinical parameters in patients with CRC. We conducted a thorough investigation to determine the impact of these factors in the pathogenesis and progression of CRC.

This study commenced with an analysis of some risk factors that cannot be altered, including age, sex, familial or personal cancer history, prior abdominal-pelvic irradiation, or genetic disorders. Consequently, the study of the database encompassing 204 patients with a confirmed diagnosis of CRC revealed an average age of 67 years. The extremes were characterized by patients diagnosed with CRC at ages 31 and 94, respectively, with a standard variation of 11.71 years. These data align with those in the literature. The American Society of Oncology revealed a notable escalation in the risk of CRC with advancing age [2]. While young adults may also be affected by this cancer, its prevalence is significantly higher after the age of 50 years [2]. Furthermore, a significant issue in recent decades is the rising occurrence of early-onset CRC (diagnosed before the age of 50 years). These epidemiological data directly resulted in the lowering of the age for implementing CRC screening measures in the USA to 45 years of age.

Our investigation revealed little variations in the gender distribution of CRC patients. Subsequent to the statistical analysis, we noted a minor male predominance. Consequently, 111 patients were male, constituting 54.4%, while 93 patients were female, representing 45.6%. The male predominance was in line with the literature, as determined by White et al. in their research [3].

The serum levels of the tumor markers CEA and CA19-9 have little diagnostic use for CRC, having mostly a prognostic role. Our study revealed a mean CEA value of 26.87 ng/mL, with a minimum of 0.31 ng/mL and a maximum of 400 ng/mL. Furthermore, the average value of CA 19-9 was 58.28 U/mL, with a minimum of 1.40 U/mL and a maximum of 1000 U/mL. It is important to acknowledge that these data were available for only a selected group of patients, a circumstance that may affect the statistical analysis. The simultaneous application of CEA and CA 19-9 tests may enhance their diagnostic sensitivity for CRC. The concurrent monitoring of these tumor markers is a crucial postoperative prognostic indicator, offering significant insights into disease stage and patient survival rates [4]. Through the evaluation of these markers, we can obtain a comprehensive understanding of disease development, facilitating a more accurate and individualized strategy for therapy and postoperative patient monitoring. These data were in accordance with the study by Wojciech Jelski et al. [4].

A crucial element in the proper management of CRC is the accurate localization of the primary tumor. This is particularly significant due to the diverse possible localizations of tumors, which determines the therapeutic approach. Colorectal tumors are primarily categorized into two types: those situated in the colon and those situated in the rectum. A thorough statistical examination of a valid patient group revealed that the primary site of CRC was in the sigmoid colon. This discovery is especially significant to the establishment of therapeutic guidelines and treatment therapies, as the sigmoid colon possesses unique anatomical and physiological traits that may impact tumor behavior and treatment efficacy. Consequently, accurately identifying the tumor's location not only facilitates the planning of surgical procedures and other treatment options but also enhances the comprehension of the epidemiology and pathophysiology of CRC. This degree of accuracy is crucial for enhancing patient

outcomes and formulating more effective prevention and therapeutic approaches. The most common site of CRC at the sigmoid colon is corroborated by specialized literature, as evidenced in the study conducted by Baojun Duan et al. [5].

The significance of identifying the site of CRC is as important as the necessity for its accurate staging. These two key factors facilitate the development of a successful treatment approach and the conveying of detailed information to the patient regarding the prognosis. Our statistical analysis revealed that the predominant tumor stage was 3B, followed by 2A and 3C stages. The significance of the degree of differentiation, with a notable prevalence of patients exhibiting moderately differentiated CRC, is also a crucial element. Additional research is required to confirm and enhance the existing understanding of these markers.

The localization and staging of RCC must be accompanied by a thorough identification of its histological type and an immunohistochemistry analysis. Our analysis identified a percentage of 76.5% patients with NOS adenocarcinoma. The literature supports that this is the predominant form of CRC [6]. Immunohistochemical examination data were accessible in approximately 10.8% of individuals. Experts have been participating in ongoing research to deliver optimal knowledge regarding these topics.

The clinical presentation and progression of patients differ significantly from case to case, emphasizing the unique characteristics of each individual at the time of presentation. Some patients have the possibility to undergo elective procedures. The statistical analysis indicates that most patients in our study group belong to this category. Nonetheless, 22 of the 204 patients participating in our trial experienced acute complications. The clinical presentation directly influenced the length of hospitalization and the in-hospital death rate. The average hospitalization length for patients in our study group was 14.51 days, with a maximum of 60 days. We also recognized the significance of elective surgery, as opposed to delay and subsequent admission to the hospital for an emergency situation. As a result, due to a higher percentage of patients in the first category, the in-hospital mortality rate decreased by 2.5%. These data, which underline the significance of prevention and early diagnosis, with the potential for intervention without complications, are also in line with the literature, as reported by Hamish Hwang et al. [7].

Assessing patients and diagnosing CRC requires a thorough evaluation of their individual pathology history, familial history, and lifestyle risk factors. Consequently, it is essential to note that abdominal irradiation was documented in only 19 patients in our study. Also, of the 204 patients, 71 had a personal history of cancer, while 4 had a hereditary history of cancer. The majority of patients in our study group were obese. Twenty-four percent of the patients in our study were smokers, while 2.5% were chronic alcohol consumers. The highest percentage of related comorbidities (65.7%) was identified in patients with HTN, attributed to the older age of individuals diagnosed with CRC. Diabetes, present in 24% of patients, must also be taken into account. This comorbidity was linked to a sedentary lifestyle and obesity, both of which are risk factors for CRC. The information concerning patient's pathologies is essential for the diagnosis, treatment, and prognosis of CRC, each significantly impacting these elements, a conclusion that aligns with observations from the literature [8].

A significant risk factor for CRC is the correlation with inflammatory bowel illnesses, particularly due to the pro-neoplastic effects of intestinal inflammation. Stidham and Higgins' work confirms a decrease in the incidence of this association due to screening programs for CRC and the improvement of mucosal inflammation control; this fact could also be observed following the statistical analysis conducted in this study, where only 16 patients had presented with associated inflammatory bowel diseases [9]. We also observed 22 patients who had a past cholecystectomy. The

research available indicates that this procedure may elevate the risk of CRC over time. In this regard, our study was unable to evaluate the time interval between cholecystectomy and the diagnosis of CRC [10].

In the context of outpatient treatment for the patients in our study, 27% utilized statins, while 16.7% utilized aspirin. The elevated percentages do not corroborate the purported preventive effect of the two drug classes against the development of CRC, as indicated in the research literature

Author contributions:
Conceptualization, V.A.I., I.A.B., G.G., A.B.D. and C.L.T.; methodology, G.G.; software, V.A.I.; validation, C.C.D..; formal analysis, G.G.; investigation, I.A.B., A.B.D.; resources, C.C.D.; data curation, V.A.I. and G.G.; writing—original draft preparation, V.A.I., I.A.B., G.G.; writing—review and editing, G.G.; visualization, C.C.D.; supervision, G.G..; project administration, C.C.D. All the authors have read and agreed with the final version of the article.

Compliance with Ethics Requirements:
"The authors declare no conflict of interest regarding this article".
"The authors declare that all the procedures and experiments of this study respect the ethical standards in the Helsinki Declaration of 1975, as revised in 2008(5), as well as the national law. Informed consent was obtained from all the patients included in the study"
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References

[1] Xi Y, Xu P. Global colorectal cancer burden in 2020 and projections to 2040. *Transl Oncol* 2021;14(10):101174.
[2] Colorectal cancer risk factors. Available online: https://www.cancer.org/cancer/types/colon-rectal-cancer/causes-risks-prevention/risk-factors.html. Accessed on March 03, 2024
[3] White A, Irnmonger L, Steele RJC, et al. A review of sex-related differences in colorectal cancer incidence, screening uptake, routes to diagnosis, cancer stage and survival in the UK. BMC Cancer. 2018;18(1):906.
[4] Jelski W, Mroczko B. Biochemical markers of colorectal cancer-present and future. Cancer Manag Res 2020;12:4789-4797.
[5] Duan B, Zhao Y, Bai J, et al. Colorectal cancer: An overview. Gastrointestinal Cancers (Internet). Brisbance (AU):Exon Publications, 2022.
[6] Fleming M, Ravula S, Tatishchev SF, Wang HL. Colorectal carcinoma: Pathologic aspects. J Gastrointest Oncol 2012;3(3):153-173.
[7] Hwang H. Emergency presentation of colorectal cancer at a regional hospital: An alarming trend. BCMJ 2012;54(2):83-87.
[8] Ionescu VA, Gheorghe G, Bacalbasa N, Chiotoroiu AL, Diaconu C. Colorectal cancer: From risk factors to oncogenesis. Medicina 2023;59(9):1646.
[9] Stidham RW. Colorectal cancer in inflammatory bowel disease. Clinics in Colon and Rectal Surgery 2018;31(3):168-178.
[10] Mu L, Li W, Ren W, Hu D, Song Y. The association between cholecystectomy and the risk of colorectal cancer: an updated systematic review and meta-analysis of cohort studies. Translational Cancer Research. 2023;12(6):1452-1456