Demographic and clinical characteristics of colorectal cancer patients

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Abstract

Colorectal cancer is a predominant source of cancer-related illness and death worldwide. The study aimed to describe the demographic and clinical factors associated with CRC. A cross sectional study was conducted involving 74 cases of colorectal cancer patients. Analysis was done on demographic factors such age, sex, employment, and place of residence, we gathered clinical information from patients on their tumor site, family history, chronic illnesses, cancer grade, stage, and lymph node metastasis (LNM). Marked disparities were observed among colorectal cancer patients in term of age distribution and occupation with the largest proportion aged 41-50 years (31.08%). Tumor location was mainly on the left side (51.35%) with a significant association (p < 0.01). One-third of patients (33.78%) had a positive family history of colorectal cancer (p < 0.01). Chronic disease presence was higher in patients but not statistically significant (p = 0.11). Most patients presented with grade 2 tumors (78.38%) and stage T3 (78.38%) disease, with a high prevalence of lymph node metastasis (70.27%) (p < 0.01 for all). Sex and residency showed no significant differences between groups. The study highlights significant demographic and clinical disparities among colorectal cancer patients emphasizing the importance of age, occupation, tumor site, family history, and disease stage in CRC risk and progression. These findings can inform targeted screening and tailored treatment approaches.

1 Introduction

Colorectal Cancer (CRC) It is the most prevalent malignant neoplasm of the digestive system, ranking third worldwide in incidence and second in mortality, impacting both genders [1]. In males, colorectal cancer (CRC) is the third most prevalent cancer, following lung and prostate cancers; in females, CRC ranks as the second most prevalent cancer after breast cancer [2]. Colorectal cancer is the third most prevalent malignancy in Iraq, with more than 2,210 new cases annually [3].

Colorectal cancer predominantly originates from colorectal polyps (adenomas), as these polyps are susceptible to malignant transformation into carcinoma [4]. Recent studies have shown genetic alterations linked to the advancement of CRC in Egyptian individuals [5]. The development of colorectal cancer is complex, significantly influenced by genetic factors. Nonetheless, it is among the malignancies most influenced by lifestyle, as the colon is intimately linked to diet and numerous dietary contaminants. Moreover, the previous decade highlighted the significance of gut microbiota and its dysbiosis in colorectal carcinogenesis, which may represent a causal alteration [6].

The likelihood of acquiring colorectal cancer grows with age. The disease predominantly affects those over the age of 50, during which over 90% of colorectal cancer cases are identified [7]. Ageing, male sex, excessive intake of fat, alcohol, or red meat, obesity, smoking, and physical inactivity are identified as risk factors for disease development [8]. environmental variables, such as diet, lifestyle, and microbiota, are thought to induce carcinogenesis in the vast majority of colorectal cancer cases (around 80-85%), a phenomenon known as sporadic CRC. Cancers of the colon (CRC) occur in sporadic forms, affecting an estimated 75–95% of cases. [9] Colorectal cancer patients' symptoms could vary according on the tumor's size, location, and whether or not it has spread to other parts of the body. The clinical presentation involves symptoms which include nausea, vomiting, malaise, anorexia, abdominal distension, involuntary weight loss, changes in bowel motions, altered chronic bowel habits, and abdominal discomfort. [10]

This study sought to understand the prevalence of colorectal tumors in Iraqi patients and how they relate to demographic and clinicopathological variables such as tumor location and size, pathological stage, and grade

Methodology

Sample collection

The cross-sectional study was included 74 cases of colon and rectum carcinoma patients. The patient data were collected from patients who were attended to AL-Hussein teaching hospital and Al-haboubi hospital (Thi-Qar Specialized Oncology Center) in Thi-Qar province-South of Iraq during the period from July 2024 to November 2024.

Ethical consideration

The study was approved by the health committee in Thi-Qar health Directorate/Iraq. Permission to conduct this study was also obtained from the committee of publication ethics at the College of Medicine, University of Thi-Qar/ Iraq

Inclusion criteria:

Colorectal cancer (CRC) cases from 2022 to 2024, classified as CRC through histopathological examination, sourced from Al-Husain Teaching Hospital in Thi-Qar Governorate over the aforementioned three years.
Control: colonic polyp or alternative colonic diseases, excluding colorectal cancer, obtained from patients who underwent excisional procedures and subsequently sent for histopathological examination throughout the years 2024-2025.

Exclusion criteria:

1-Not fully informative patients

2-Patients who are unable to provide informed consent

Statistics

The data from this study were statistically analyzed using SPSS version 26, employing the Chi-square test at a p-value of ≤0.05.

Results

The current results investigation demonstrated a significant difference with a p-value of ≤ 0.05 according to age group and Jobs, while a non-significant difference according to sex and residency, the result showed the high number of patients in the second age group 31.08%, while a few number of patients in the first age group 14.87%, also, its noted that the male group 64.86% increased non-significantly than female group 35.14%, with regard residency, the rural residence 54.14% was non-significant when compared with those at rural area 45.95%, according the jobs the lowest cancer rate shown in the retired group 18.92% than other group, as in table 1.

Table 1: Demographic statistic of colorectal cancer patients and control group

Variables	Categories	Patient		P value
		No.	%	
Age Groups	30-40	11	14.87	<0.01**
	41-50	23	31.08	
	51-60	13	17.57	
	61-70	17	22.97	
	≥ 71	10	13.51	
Sex	Male	48	64.86	0.193
	Female	26	35.14	
Residency	Rural	40	54.05	0.157
	Urban	34	45.95	
Jobs	Gainer	20	27.03	<0.01**
	House wife	20	27.03	
	Officer	20	27.03	
	Retired	14	18.92	

** high significant differences

The present study showed a significant difference at p. value ≤ 0.05, according to site of tumor and family history, while a non-significant difference was detected according to chronic disease, the results recorded the high number of cases was left site of colon 51.35%, while the lowest detected in right site of colon 14.87%, also, the study noted the high number of patients have not family history 66.22%. In contrast, the patient with chronic diseases recorded 58.11% with non-significant differences. As revealed in table 2.

Table 2: Distribution of cancer patients according to site of tumor, family history and chronic disease

Variables	Categories	Patient		p. value
		No.	%	
Site of Cancer	Left	38	51.35	<0.01**
	Right	14	18.92	

		No.	%	
	Rectal	22	29.73	
Family History	Yes	25	33.78	<0.01**
	No	49	66.22	
Chronic Disease	Yes	43	58.11	0.110
	No	31	41.89	

The present result shows a significant difference at p. value ≤ 0.05, according to grade, stage and LNM, the study showed the most CRC patient in the grade two, while the lowest rate in grade three, the high incidence of patients was in stage three with high significant difference. According to lymph node metastasis the study showed the high cancer patient in suffering from lymph node involvement 70.27%, with high significant differences as in table 3.

Table 3: Distribution of colorectal carcinoma patients according to grade, stages and LNM

Variables	Categories	Patient		p. value
		No.	%	
Grades	Grade 1	8	10.8	<0.01**
	Grade2	60	81.08	
	Grade3	6	8.11	
Stages	T2	10	13.51	<0.01**
	T3	58	78.38	
	T4	6	8.11	
LNM	Yes	52	70.27	<0.01**
	No	22	29.73	
** Is high significant difference				

Discussion

Colorectal cancer (CRC) remains a major public health issue worldwide, driven by a multifactorial etiology involving genetic, environmental, and lifestyle factors [11,12]. Comprehensive analysis of demographic and clinical variables is essential for identifying disease trends and informing targeted strategies for prevention and early detection. In this context, the current study compared CRC patients with a control group across various factors to explore associations relevant to CRC risk in the studied population.

The study indicates that the predominant age range of colorectal cancer patients is between 41 and 70 years. This discovery signifies that the likelihood of colorectal cancer increases with age. The present study corroborates Ahmed Mjali's research (2022), which indicated that most colorectal cancer patients were aged between 50 and 70 years [13].I concur with Falih Soliman, N (2022), which indicated that the incidence of colorectal cancer (CRC) was elevated in those over 66 years of age, with an incidence rate of 40.3% the malignant cohort [14].

Ageing results in a gradual deterioration of the immune system; both innate and adaptive immune systems are influenced by alterations in their components and functions. The various alterations enhance vulnerability to carcinogenesis in the elderly [15].

The study demonstrated a high incidence of CRC in males compared to females. This data agreed with the previous finding of Siegel et. al. [11]. Several studies have demonstrated that colorectal cancer is more prevalent in males across various populations. According to Bray et al. (2018) [12]. This disparity has been attributed to both biological and behavioral factors. Hormonal differences, particularly

the protective effect of estrogen in premenopausal women, may play a role in reducing risk among females [16]. In addition, lifestyle-related risk factors such as higher rates of tobacco use, alcohol consumption, red and processed meat intake, and lower levels of physical activity have been more commonly observed among men, potentially contributing to the increased incidence [17]. This data was contradicted by other studies which reported that the incidence of CRC was equivalent between men and women [18,19]. A large percentage of patients with colorectal cancer (54.05%) lived in rural regions, whereas 45.95% did so in urban areas. This distribution can be a result of lifestyle and nutritional disparities, as well as environmental and social variables that are specific to living in a rural area, such reduced access to healthcare facilities and early screening programs. Rural residents frequently deal with issues including less health awareness and fewer resources for prevention, which can lead to delayed diagnosis and perhaps higher incidence. This finding consistent with previous study Doha El-Kassas1[20]. but non consistent with Allison E. Anderson [21].

The risk of colorectal cancer was substantially correlated with occupational status. Patients were almost equally distributed among gainfully employed people, housewives, and officers (each contributing 27.03%), with retirees making up a lower percentage (18.92%). Higher CRC risk has been associated with occupations that require little physical activity, high levels of stress, or limited access to healthcare, while the significant percentage of housewives may be due to behavioral or social factors like delayed health-seeking behavior or decreased screening [12]. Anatomically, the majority of colorectal tumors were left-sided (51.35%), significantly more common than right-sided (18.92%) or rectal tumors (29.73%) (p < 0.01). The current result is consistent with the previous study which reveled of majority of colorectal tumors diagnosed in left-sided [22,27]. However, other studies have noted a gradual increase in the incidence of proximal (right-sided) colon cancers, especially among older adults [23].

The results of the current study confirm that individuals with a family history are at a higher risk of developing CRC. The current study supports the evidence presented by Ahmed Mjali in previous research highlighting the increased vulnerability of this group and the importance of early screening and preventive measures[13,28].

Interestingly, there was no statistically significant association between the incidence of CRC and chronic illness (p = 0.110), even though 58.11% of patients reported having chronic disorders. This implies that chronic illnesses might not be the main risk factors in this population, while further research is needed. this aligns with previous study that indicated a lack correlation between chronic disease and development of colorectal cancer[29].

The majority of colorectal tumors were moderately differentiated (grade 2), comprising 78.38% of the cases. Well-differentiated (grade 1) and poorly differentiated (grade 3) tumors were less frequent (13.51% and 8.11%, respectively). According to this distribution, which is statistically significant (p < 0.01), the majority of patients had diagnoses at an intermediate histological grade, which might indicate that their tumors were moderately aggressive. Poorly differentiated tumors, while uncommon, are clinically important due to their association with rapid progression and metastasis. This in line with several studies [24,25].but non consistent with other study [26].

In a study conducted by Lin, Y. (2022), it was revealed that most patients were diagnosed at T3 (78.38%), indicating invasion through the muscularis propria This finding is consistent with the results of the present study, where the majority of cases were also diagnosed at the T3 stage, reflecting a similar pattern of local tumor advancement prior to distant spread. [24,25,27]

Additionally, 70.27% of patients had lymph node metastases, which were substantially linked to the advancement of the illness (p < 0.01) and highlighted the necessity of systemic therapy. All of these results point to the critical need to advance CRC early detection techniques in order to facilitate diagnosis at an earlier stage, when prognosis is better and therapy is more successful.

conclusion

The current study concludes that colorectal cancer more prevalent among male than female, and incidence increase with age. The left colon was the most frequent tumor site, and most cases were classified as grade II and stage T3. No significant association was observed between chronic diseases and colorectal cancer. The high rate of lymph node involvement indicates that many patients present with the disease at advanced stages, underscoring the need for early detection and targeted screening strategies.

Acknowledgment:

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