



ORIGINAL RESEARCH ARTICLE

The epidemiology of colorectal cancer in Erbil

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Abstract: Colorectal cancer (CRC) is a major cause of morbidity and cancer related mortality throughout the world. It is the third most common cancer worldwide and the fourth most common cause of cancer-related death. The objective of this study is to study the epidemiology of colorectal cancer patients in Erbil city. Retrospective analysis of the data that was collected from registry units in Rizgary Oncology Center and Nanakaly Cancer Hospital in Erbil city during the period of Jan 2016–Dec 2016. Data of total 118 patients collected, 55.08% of patients were male and 44.92% were female with a male to female ratio of approximately “1.22:1”. The highest number of patients was in the age range of 60–69 years. The presence of 77.12% of patients with left side tumors makes that side the most common. The presence of 41.53% of the patients in stage III makes that stage majority. The most common histopathological type was adenocarcinoma not otherwise specified (NOS) by 90.68% of the patients. Overall one-year survival was 77.1%. The one-year survival of rectal tumors is 66%. Conclusions: The study concluded that the male to female ratio is “1.22:1”. The highest number of patients was in the age range of 60–69 years. The percentage of patients below the age of 40 years was 20.51%. The increasing proportion of young age CRC cases recorded in Iraq may be due to the young age-structure of this country. Two thirds of the patients were in the advanced stages (stage III and IV). Overall one-year survival was 77.1%.

Keywords: colorectal cancer; colon cancer; rectal cancer; epidemiology; survival

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Introduction

Colorectal cancer (CRC) is a major cause of morbidity and cancer related mortality throughout the world^[1]. It is the third most common cancer worldwide and the fourth most common cause of cancer-related death^[2].

Colorectal cancer is the third most common cancer in men (746,000 cases, 10.0% of the total) and the second in women (614,000 cases, 9.2% of the total) worldwide. Almost 55% of the cases occur in more developed regions^[3].

Globally, it is believed that approximately 1,200,000 new CRC cases diagnosed annually which accounts for nearly 10% of all incident cancers and mortality from CRC is estimated at about 609,000^[4].

Age has an impact on CRC incidence being greater than all other demographic factors. Therefore, sporadic CRC increases significantly above the age of 45 years for all groups. Colorectal cancer is generally believed to be a disease of older people, as more than 90% of patients being diagnosed above the age 55 years^[5]. In Western countries, about 2%–8% of all CRCs occur in young age (< 40 year old) patients^[6–10]. By contrast, many studies have revealed that 15%–35% of CRCs in Middle-Eastern countries occur in young age patients^[11,12]. These observations led some authors to suggest a difference in genetic susceptibility to cancer to interpret this wide different proportion of CRC among Middle-eastern and Western countries.

A study that using data from the Surveillance Epidemiology and End Results (SEER) program found

an increasing incidence of CRC over the last 20 years in patients aged 20 to 49. The most significant rise was in the age group 40 to 44 where colon and rectal cancers raised 56% and 94%, respectively. Depending on the findings and the fact that CRC leans to be more aggressive in younger patients, the authors recommended the colonoscopic age-based screening for average risk patients beginning at the age of 40^[13].

In nearly all countries, age-standardized incidence rates are less for women than for men. CRC is 25% more likely to occur in men than in women, and the rate is 20% higher in African Americans compared with whites^[14].

Colonic carcinogenesis is thought to be a multifactorial process; nevertheless, the direct etiology of CRC remains uncertain^[15].

Nearly 20% of cases of CRC are associated with familial clustering, and first-degree relatives of patients with colorectal adenomas or invasive colorectal cancer are at increased risk for colorectal cancer^[16–20].

Genetic susceptibility to colorectal cancer includes well-defined inherited syndromes, such as Lynch syndrome (also known as hereditary nonpolyposis colorectal cancer HNPCC) and familial adenomatous polyposis (FAP)^[21–23].

Approximately 5%–10% of CRC cases arise because of well-recognized hereditary conditions; however, the vast majorities are sporadic forms in subjects without family history or any apparent predisposing conditions^[24].

Epidemiological studies, in addition to familial tendency and the influence of genetic susceptibility, have recognized environmental risk factors that connected to an increased risk, including Western dietary practices, alcohol consumption, smoking tobacco, and physical activity^[25–27].

Dietary factors may affect the oncogenesis by modifying intestinal transit time, altering the recycling and flow of bile, or changing the composition of intestinal bacterial flora.

Increased body mass index (BMI), and central obesity are emergent risk factors for colorectal cancer. The Framingham Study found that a BMI > 30 increases the risk of colon cancer by 1.5 fold among middle-aged (30–54 year individuals) and by 2.4-fold for individuals aged 55–79 years^[28].

Objectives

The epidemiology of colorectal cancer is not well studied in many of the developing countries. The objective of this

study is to know the epidemiology and the pathological pattern of colorectal cancer patients in Erbil city, to compare the local data with the regional and global data, to collect demographic and anatomic pathology data, and to find the effect of well-known risk factors on these patients.

Patients and Methods

Retrospective analysis of the data that is being collected from registry units in Rizgary Oncology Center and Nanakaly Cancer Hospital, which are the only public cancer centers in the Erbil city during the period Jan 2016–Dec 2016. All hospital medical records that contain history and physical examination, histopathology reports, imaging reports, endoscopy reports, and treatments received by histologically proven colorectal cancer patients have been taken. The needed information was taken from the records, and the patients or their relatives were contacted by phone if any data was missing or incomplete.

Results

Data of total 118 patients collected, 55.08% (65) of patients were male and 44.92% (53) were female with a male to female ratio of approximately 1.22.

The patients' age ranged from 17–86 years, with the median age at diagnosis of 54 years (mean age of approximately 53 years). The highest number of patients was in the age range of 60–69 years (29 patients 24.79%) (**Figure 1**).

The number of patients below the age of 40 years was 24 (20.51%). The left side tumors were the most common, 91 (77.12%) of the patients. The majority of the patients were in stage III, 49 (41.53%) of the patients (**Figure 2**).

The most common histopathological type was adenocarcinoma not otherwise specified (NOS), 107 (90.68%) of the patients.

The most common histologic grade was grade II, 88 (74.58%) of the patients (**Figure 3**).

Overall one-year survival was 77.1% and one-year survival for stages I, II, III and IV were 76.9%, 85.7%, 79.6% and 64.3% respectively (**Table 1**).

Rectal tumors had the worst one-year survival (66% only) accounting for about 64.3% of CRC deaths in one-year duration (**Table 2**).

Four patients had past-history of cancer (2nd malignancy), one patient had familial adenomatous polyposis (FAP), and one patient had past-history of ulcerative colitis (UC).

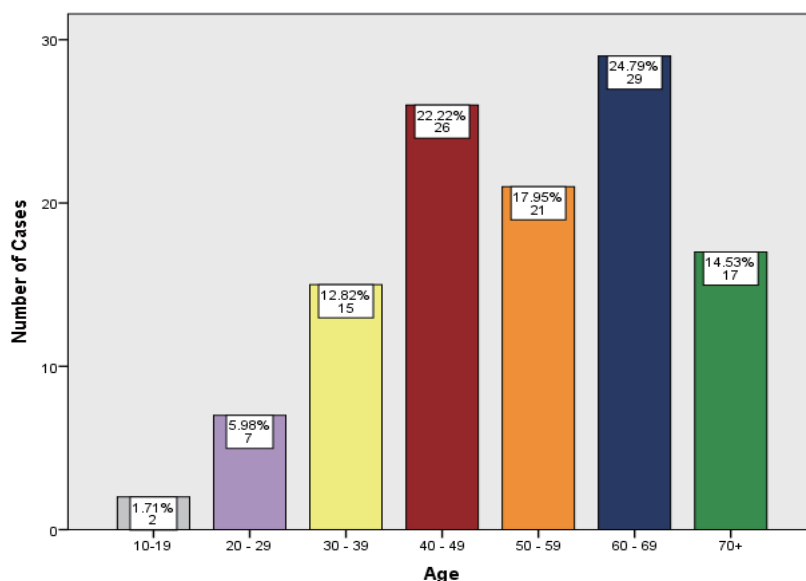


Figure 1. Age distribution

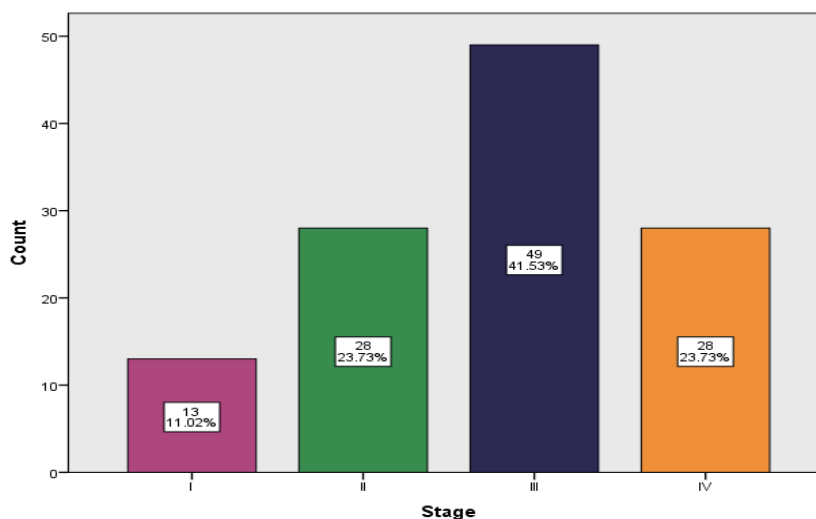


Figure 2. Stage distribution

Discussion

During the period of Jan–Dec 2016, data of 118 patients collected, there is a slight male predominance, 55.08% (65) of patients were male and 44.92% (53) were female with a male to female ratio of approximately “1.22:1”. This is nearly consistent with the previous studies and cancer data registries in Qatar (58% vs 42% and M:F 1.4:1)^[29], Jordan (57.5% vs 42.5% and M:F 1.35:1)^[30], Iran (54.9% vs 44% and M:F 1.24:1)^[31], Croatia (57.3% vs 42.7% and M:F 1.34:1)^[32], UK (M:F 1.27:1)^[33], (M:F 1.2:1)^[34], (55% vs 45% and M:F 1.2:1)^[35], Canada (51.9% vs 48.1% and M:F 1.08:1)^[36] and US (46 vs 35.1/100.000 and M:F 1.31:1)^[37].

The patients’ age ranged from 17–86 years, with mean age of 53 years. This is lower than the other studies and cancer data registries in Qatar (age range 33–83 years, mean age 57.1 years)^[29], (age range 31–80 years, median age 62 years)^[38], Iran (median age 57 years)^[31], Croatia (mean age 65.3 years)^[32], UK (mean age 70 years)^[33], US (median age 67 years)^[37], Taiwan (mean age 62 years)^[39], Austria (mean age 67 years and median age 69 years)^[40], but slightly higher than a Jordanian study (age range 14–81 years, mean age 49)^[30].

The highest number of patients was in the age range of 60–69 years (29 patients 24.79%) (Figure 1) which is consistent with the other studies in Qatar^[29], Croatia^[32],

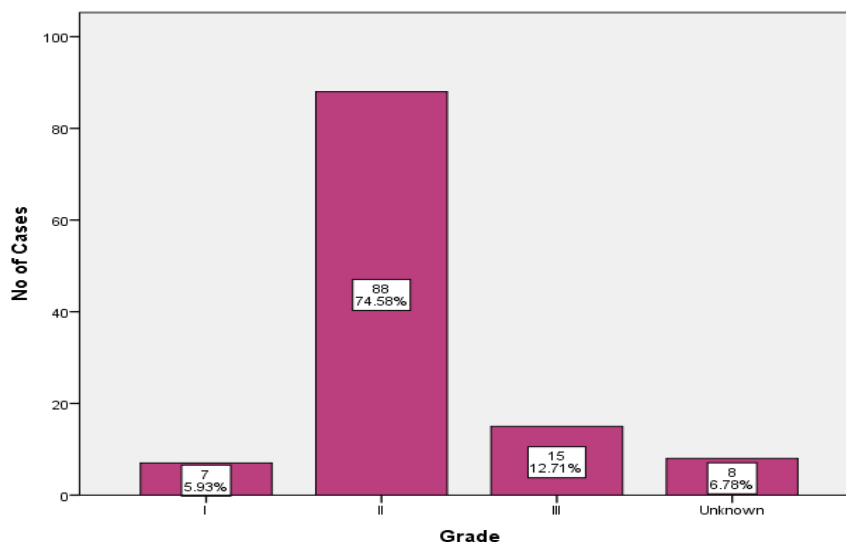


Figure 3. Grade distribution

Table 1. Survival According to the Stage

	Status								
	Alive			Dead			Unknown		
	Count	Row N %	Column N %	Count	Row N %	Column N %	Count	Row N %	Column N %
Stage I	10	76.9%	11.0%	3	23.1%	21.4%	0	0.0%	0.0%
Stage II	24	85.7%	26.4%	2	7.1%	14.3%	2	7.1%	15.4%
Stage III	39	79.6%	42.9%	6	12.2%	42.9%	4	8.2%	30.8%
Stage IV	18	64.3%	19.8%	3	10.7%	21.4%	7	25.0%	53.8%
All Stages	91	77.1%	100%	14	11.9%	100%	13	11.0%	100%

Table 2. Survival according to the location of tumor

Location	Status								
	Alive			Dead			Unknown		
	Count	Row N %	Column N %	Count	Row N %	Column N %	Count	Row N %	Column N %
Ascending	16	94.1%	17.6%	1	5.9%	7.1%	0	0.0%	0.0%
Transverse	5	100%	5.5%	0	0.0%	0.0%	0	0.0%	0.0%
Descending	7	77.8%	7.7%	1	11.1%	7.1%	1	11.1%	7.7%
Sigmoid	16	88.9%	17.6%	1	5.6%	7.1%	1	5.6%	7.7%
Colon NOS	3	100%	3.3%	0	0.0%	0.0%	0	0.0%	0.0%
Rectosigmoid	11	78.6%	12.1%	2	14.3%	14.3%	1	7.1%	7.7%
Rectum	33	66.0%	36.3%	9	18.0%	64.3%	8	16.0%	61.5%
CRC NOS	0	0.0%	0.0%	0	0.0%	0.0%	2	100%	15.4%

Taiwan^[39], lower by about a decade in comparison with other studies and cancer data registries in UK^[34,35], Canada^[36] and France^[41], but higher by a decade in comparison with the other studies and cancer data registries in Qatar^[38] and Egypt^[42].

The number of patients under the age of 40 was 24

(20.51%) (Figure 3). This is a bit comparable with the other studies in the neighboring countries (Qatar 20%^[29], Iran 17%^[31], Jordan 20.2%^[43] and Saudi Arabia 23%^[44]). However, it is more than twice or thrice in comparison to the other studies in some other Asian countries (Taiwan 6.2%^[39], Singapore 5.1%^[45] and Japan 10%^[46]), and three

to five times higher than studies done in Europe (France 3%^[41], Georgia 8.6%^[47], Italy 4.2%^[48] and Sweden 2.5%^[49]), New Zealand 5.5%^[44] and USA 6%^[50]. The number is much less than other studied in Egypt 38%^[42] and India 38%^[51]. The increasing proportion of young age CRC cases recorded in Iraq, and many regional and neighboring countries, may be due to the young age-structure of these countries.

The left side tumors were the most common, 91 (77.12%) of the patients which is consistent with the other study in Qatar (79.5%)^[29], but less than other studies and cancer data registries in UK (69%)^[35], Austria (64.7%)^[40], and US (50%)^[52].

The majority of the patients were in stage III, 49 (41.53%) of the patients (**Figure 2**) which is higher than the other studies and cancer data registries in Qatar (35.5%)^[29] and (41%)^[38], UK (26%)^[34].

The histopathological types were adenocarcinoma NOS, signet ring carcinoma, and mucinous carcinoma, 107 (90.68%), 6 (5.08%) and 5 (4.24%) of the patients, respectively. The adenocarcinoma NOS and signet ring carcinoma are more in comparison to other studies and cancer data registries in Qatar, (78.62%) and (2.07%) respectively, but the mucinous carcinoma is comparable (4.83%)^[38]. The signet ring carcinoma and mucinous carcinoma are much less in comparison to another study done in Jordan (14%) and (31%) respectively^[30].

Overall one-year survival was 77.1% and one-year survival for stages I, II, III and IV were 76.9%, 85.7%, 79.6% and 64.3% respectively, but this is not statistically significant (P value > 0.05) (**Table 1**). Although survival of stages II and III appears to be better than stage I numerically, but this might be explained by the post-operative staging of rectal cancers that received neoadjuvant chemoradiotherapy. The one-year survival is lower than other studies and cancer data registries in Qatar (84%)^[38], Croatia (84.4%)^[32], US (83.6%)^[53], (83%)^[54].

Rectal tumors had the worst one-year survival in comparison with other parts of colorectum (66% only), accounting for about 64.3% of CRC deaths in one-year duration (**Table 2**). The one-year survival for rectal cancers is much lower than the other studies and cancer data registries in Europe (UK 74.9%), (Denmark 79.6%), (Norway 81.8%), (Sweden 84.1%), Canada (84.8%) and Australia (84.6%)^[55].

Four patients had previous history of cancer (2nd malignancy), one patient had familial adenomatous

polyposis (FAP), and one patient had previous history of ulcerative colitis (UC).

Limitations

Despite all efforts, there are some limitations in this study. The information provided by the medical records may not be accurate especially for the patients that are clinically staged or received neoadjuvant treatment. Some variables that included in the questionnaire could not be analyzed because of incomplete histopathological reports that did not mention all recommended information especially molecular studies like MMR, RAS and BRAF studies due to lack of advanced laboratory services. Finally, not all patients might be registered in these two public centers during that period, since there are private sectors that manage cancer patients.

Conclusions

The study concluded that the male to female ratio is "1.22:1". The highest number of patients was in the age range of 60-69 years. The percentage of patients below the age of 40 years was 20.51%. The left side tumors were the most common, 77.12%. The majority of the patients were in stage III and IV, 67%. The most common histopathological type was adenocarcinoma NOS, 90.68%. Overall one-year survival was 77.1%.

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