Analyzing The Link Between Symptoms and Tumor Site In Colorectal Cancer Patients At Al Sheikh Zayed General Hospital, 2010-2018

by Zaid Maad Ahmed Samem

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Abstract. *The purpose of this study is to better understand potential variables causing delays in diagnosis by examining the link between early symptoms and tumor location in colorectal cancer. Retrospective data from Hospital University Baghdad Iraq (Al sheikh zayed general hospital) patients diagnosed with colorectal cancer between 2010 and 2018 was gathered. The majority of the 212 patients in the research (43.4%) had rectal tumors, which were followed by left-sided tumors (37%) and right-sided tumors (18.9%). Upon analyzing the symptoms, it was found that rectal bleeding had a strong correlation (34%), but changes in bowel habits were more common in rectal tumors (32%) and left-sided tumors (22.6%). There was a strong correlation found between abdominal mass and right-sided tumors (7.5%) and left-sided tumors (11.3%) and intestinal obstruction. The most common sign of straining, called tendesmus, was observed in rectal tumors (8%). There was no discernible relationship between the location of the tumor and stomach discomfort. These results emphasize the need of taking early symptoms into account when identifying colorectal cancer and the necessity of customized screening and diagnostic strategies depending on the location of the tumor.*

Keywords: Colorectal cancer, Tumor location, Early symptoms, Diagnostic Delays, Hospital University Baghdad Iraq

Abstrak Tujuan penelitian ini adalah untuk lebih memahami variabel-variabel potensial penyebab keterlambatan diagnosis dengan mengkaji hubungan antara gejala awal dan lokasi tumor pada kanker kolorektal. Data retrospektif dari pasien Rumah Sakit Universitas Baghdad Irak (Rumah Sakit Umum Al sheikh zayed) yang didiagnosis menderita kanker kolorektal antara tahun 2010 dan 2018 dikumpulkan. Mayoritas dari 212 pasien dalam penelitian (43,4%) menderita tumor rektum, diikuti oleh tumor sisi kiri (37%) dan tumor sisi kanan (18,9%). Setelah menganalisis gejalanya, ditemukan bahwa perdarahan rektal memiliki korelasi yang kuat (34%), namun perubahan kebiasaan buang air besar lebih sering terjadi pada tumor rektal (32%) dan tumor sisi kiri (22,6%). Terdapat korelasi kuat yang ditemukan antara massa perut dan tumor sisi kanan (7,5%) dan tumor sisi kiri (11,3%) dan obstruksi usus. Tanda mengejan yang paling umum, disebut tendesmus, ditemukan pada tumor rektum (8%). Tidak ada hubungan yang jelas antara lokasi tumor dan ketidaknyamanan perut. Hasil ini menekankan perlunya mempertimbangkan gejala awal ketika mengidentifikasi kanker kolorektal dan perlunya strategi skrining dan diagnostik yang disesuaikan tergantung pada lokasi tumor.

Kata Kunci: Kanker Kolorektal, Lokasi Tumor, Gejala Awal, Keterlambatan Diagnostik, Rumah Sakit Universitas Bagdad Irak

1. INTRODUCTION

Colorectal cancer (CRC) is a prevalent gastrointestinal (GI) cancer worldwide. Despite historically lower rates among Asians compared to Caucasians, recent data from Japan and Korea indicate rising incidence rates in these populations. In Iraq, according to the National Cancer Registry of Iraq 2003, colon cancer is the third most common cancer for both genders, surpassing gastric cancer. CRC is now the most common GI cancer in Iraq, underscoring the importance of studying its characteristics in our local population (GOH et al; 2005). Colorectal

cancer poses a significant global health challenge, with survival rates heavily dependent on the stage at which it is diagnosed. Delays in diagnosis can stem from patient, practitioner, or hospital-related factors (Mitchell et al; 2007). To address the complexity of identifying patients who need further evaluation, various countries have developed guidelines aimed at promoting early detection of colorectal cancer (Benson III et al; 2000). The frequency of colorectal cancer is on the rise, yet the prognosis for this disease has not improved over the last forty years. Despite advancements in diagnostic techniques, delays in diagnosing colorectal cancer remain common. These delays can be attributed to several factors: patients delaying seeking medical attention; general practitioners not promptly identifying symptoms and initiating appropriate diagnostic procedures; hospital clinicians delaying the diagnosis of colorectal carcinoma; and systemic issues within the healthcare organization that impede timely treatment and outcomes (Mansour et al., 2024).

This paper aims to examine how early symptoms relate to the location of tumors, focusing on a potential factor contributing to delays in diagnosing colorectal cancer.

2. MATERIAL AND METHODS

2.1 Study design

This study is a retrospective, observational analysis of all patients diagnosed with colorectal cancer at Hospital Universiti Baghdad Iraq (Al sheikh zayed general hospital) from January 1, 2010, to December 31, 2018. Data pertinent to the study's objectives will be gathered from the medical records of patients diagnosed with colorectal cancer during the period. Inclusion criteria encompassed patients diagnosed with colorectal cancer from January 1, 2010, to December 31, 2018. The study includes patients diagnosed with colorectal cancer between January 1, 2010, and December 31, 2018. Patients with lost or incomplete medical records will be excluded from the analysis.

2.2 Data collection and analysis

Data for this study will be collected from the medical records unit, focusing on patients diagnosed with colorectal cancer between January 1, 2010, and December 31, 2018. The data will include patient names, registration numbers, demographic information, first presenting symptoms, and tumor location. Sample size calculation, conducted using PS software, determined a total sample size of 177 to compare symptoms among proximal, distal, and rectal colon cancer cases. Data analysis will be performed using SPSS software (Version 12), and the results will be compared with findings from other centers' studies.

2.3 Data collection forma:

The data collection process will utilize a structured proforma including demographic information such as name, registration number (RN), age, sex, race, weight, and date of examination. Additionally, the site of the tumor will be recorded based on colonoscopy or barium enema findings, distinguishing between right-sided, left-sided, and rectal tumors. Presenting symptoms will also be documented, encompassing rectal bleeding, alteration in bowel habits, intestinal obstruction, anemia, and abdominal pain, with checkboxes provided for each symptom for ease of recording.

3. RESULTS

3.1 Demographic Data and Tumor Location Epidemiology

3.1.1 Number of Patients

The data for this study were obtained from the medical records office at Hospital Al sheikh zayed general in Baghdad, Iraq. Over 14 years (2010-2018), 255 cases of colorectal cancer were identified. After excluding 43 patients with incomplete data, the final analysis included 212 patients. Data analysis was conducted using SPSS 18.0 software.

Between January 2010 and December 2018, 255 patients were admitted to Al sheikh zayed general hospital with a diagnosis of colorectal cancer. Following the exclusion of 43 patients due to incomplete data, 212 patients were included in the study (Table 1).

Table: 3.1 Number of patients studied

Total number of patients with colorectal cancer	255
Number of patients excluded from the study	43
Number of patients included in the study	212

3.2 Age distribution

The patients' ages in the study range from 16 to 93 years, with a standard deviation of 15.1. Among them, 31.6% are aged 49 years and below (Figure 1).
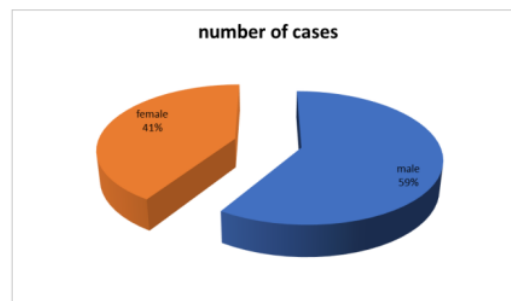

Figure 3.1: gender percentage

3.3 Location of the tumour

From 212 patients included in my study, majority of the cases are rectal tumour 92(43.4%) cases followed by left sided tumours 80 (37%) and then the right sided tumour with 40 (18.9%), as shown in cross table-2.

Table: 3. 2 Cross table 3 between the number of cases and the location of the tumour

Location of the tumour	Number of cases	percentage
Right side tumour	92	43.4%
Left side tumour	80	37%
Rectal tumour	40	18.9%

33u..4Age groups relation to the location of the tumour

In this study a comparison was done between 4 age groups and the location of the tumour. Out of 212 cases included in my study, the majority of cases 28 (13.2%) were in the age group 49 and less and at the rectal location, followed by age group 50-59, 21 (9.9%) at the rectal location. However, as shown in table-3, using pearson Chi-square, there was no significant difference between age group and the location of the tumour (p value > 0.05).

Table 3.3: Cross table shown Age groups relation to the location of the tumour

Location of the tumour	Age group ≤49 frequency (%)	Age group 50-59 frequency(%)	Age group 60-69 frequency(%)	Age group ≥ 70 frequency(%)	P value
Right side	17 (7.7%)	6 (3.2%)	10 (5.2%)	9 (4.0%)	0.865
Left side	24 (10.2%)	20 (11%)	25(11.4%)	16 (7.1%)	
rectal	27 (12.1%)	22 (10.1%)	23 (9.4%)	22 (10.9%)	

3.5 Gender relation of the location to the tumor

This research compared the gender distribution and tumor locations. Among the 212 cases included, rectal tumors were common in both males (49 cases) and females (23 cases). while, as indicated in the table, Pearson Chisquare test revealed no significant relationship with gender and tumor location (p-value > 0.05).

Table 3.4: cross table show the relation between the gender and the position of the tumor

Tumor location	Gender		P-value
	Male	Female	
The Right side	24	27	0.514
The Left side	40	29	
The Rectal	49	23	

3.6 Presenting symptoms

The seven presenting symptoms that were seen in Al sheikh zayed general hospital from 2010-2018 in 212 patients with colorectal cancer are rectal bleeding, alteration bowel habits, intestinal obstruction, anaemia, abdominal mass and tensmus. Rectal bleeding presented in 97 cases while alteration bowel habit presented in 137 cases of colorectal cancer. Moreover, 33, 52 and 79 cases presented with intestine obstruct, anemia and pain in the abdominal respectively. Moreover, that symptoms in abdominal mass and tenesmus with 33 and 22 cases respectively as shown in the table 5.

Table 3.5: Presenting symptoms frequency

Presenting symptoms	frequency
Bleeding of Rectal	91
Alteration bowel of habit	127
Obstruction in Intestinal	22
Anaemia	59
Paine of Abdominal	83
Abdominal of mass	44
Tensmus	29

3.7 Rectal bleeding relation to the location of the tumour

In this study, an analysis was conducted to compare the presence of rectal bleeding symptoms with the location of the tumor. Out of the 97 cases (45.8%) that presented with rectal bleeding, 72 (34%) were found to have a rectal tumor. In contrast, only 3 (1.4%) and 22 (10.4%) cases with left and right-sided tumors, respectively, presented with rectal bleeding. Statistical analysis using Pearson Chi-square test (as shown in Table 4.7 and Figure 4.5) revealed a significant relationship between rectal bleeding symptoms and the location of the tumor (p-value < 0.001).

Table 3.6: Relation of rectal bleeding and the location of the tumor

Location of the tumour	The bleeding Frequency (%)	The bleeding of rectal frequency (%)	P-value
Right side tumour	3 (1.4%)	37(17.5%)	
Left side tumour	22(10.4%)	58 (27.4%)	0.000
Rectal tumour	72 (34%)	20 (9.3%)	

3.8 Alteration bowel habit and that relation to the location of the tumor

Most patients with colorectal cancer had altered bowel habits, such as persistent constipation or intermittent diarrhea. This study examined the relationship between the tumor's

location and the existence of changed bowel habits. 68 cases (32%), or the majority of the 137 cases (64.6%) with altered bowel habits, were rectal tumors; the remaining cases, or 48 cases (22.6%), were left-sided tumors, and the other cases, or 21 (9.9%), were rectal tumors. The results of the Pearson Chi-square test statistical analysis (Table 4.8 and Figure 4.6) showed a significant correlation (p-value < 0.05) between the location of the tumor and changed bowel habits.

Table 3.7: Relation of alteration bowel habit to the location of the tumor

Tumour location	With alteration bowel habit Frequency (%)	no alteration bowel habit frequency (%)	P value
Right side tumour	21 (9.9%)	19 (9%)	
Left side tumour	48 (22.6%)	32 (15.1%)	0.034
Rectal tumour	68 (32%)	24 (11.3)	

3.9 Intestinal obstruction symptom relation to the location of the tumour

This study examined the relationship between the tumor's location and the symptoms of intestinal blockage. Of the thirty-two instances (15.1%) involving intestinal obstruction, twenty-four (11.3%) were discovered to have tumors on the left side, while two (9%) and six (2.8%) cases were linked to tumors on the right side and rectal side, respectively. The results of the Pearson Chi-square test statistical analysis (Table 4.9) showed a substantial correlation (p-value < 0.001) between the symptoms of intestinal obstruction and the tumor's location.

Table 3.8: Relation of intestinal obstruction symptom to the location of the tumour

Tumour location	With intestinal obstruction Frequency (%)	No intestinal obstruction frequency (%)	P value
Right side tumour	2 (9%)	38 (17.9%)	
Left side tumour	24 (11.3%)	56 (26.4)	0.000
Rectal tumour	6 (2.8%)	86 (40.6%)	

3.10 Intestinal obstruction symptom relation to the location of the tumour

This study looked at the connection between the location of the tumor and the symptoms of intestinal blockage. Thirty-two instances (15.1%) of intestinal obstruction were found to have tumors on the left side, twenty-four (11.3%) to have tumors on the left, and six (2.8%) to have tumors on the rectal side. The results of the Pearson Chi-square test statistical analysis (Table 4.9 and Figure 4.7) showed a substantial correlation (p-value < 0.001) between the location of the tumor and the symptoms of intestinal blockage.

Table 3.9: Relation of intestinal obstruction symptom to the location of the tumor

Tumour location	With intestinal obstruction Frequency (%)	No intestinal obstruction frequency (%)	P value
Right side tumour	2 (9%)	38 (17.9%)	
Left side tumour	24 (11.3%)	56 (26.4)	0.000
Rectal tumour	6 (2.8%)	86 (40.6%)	

3.11 Abdominal pain symptom relation to the location of the tumour

A general symptom that can arise from a variety of abdominal pathologies is abdominal discomfort. Nonetheless, it's a significant presenting symptom for colorectal cancer. In this study, the tumor's location and the symptoms of stomach pain were compared. Out of the 80 cases (37.3%) who had stomach pain, 37 cases (17.5%) had a left side tumor, while the remaining 27 cases (12.7%) and 16 instances (7.5%) had rectal and left side tumors, respectively. Nevertheless, utilizing pearson Chi-square, as indicated in table 4.11 and figure 4.9, there was no correlation between the symptom of abdominal pain and the tumor's location (p value > 0.05).

Table 3.10: Relation of abdominal pain symptom to the location of the tumor

Tumour location	With abdominal pain Frequency (%)	No abdominal pain frequency (%)	P value
Right side tumour	16 (7.5%)	24 (11.3%)	
Left side tumour	37 (17.5%)	43 (20.3%)	0.070
Rectal tumour	27 (12.7%)	65 (30.7%)	

3.12 Abdominal mass relation to the location of the tumor

When comparing the presence of an abdominal mass with the location of the tumor, we found that a significant proportion (7.5%) of cases with right-sided tumors presented with this symptom, while only 3.3% of cases with rectal tumors had an abdominal mass. Statistical analysis using the Pearson Chi-square test (as shown in Table 4.12 and Figure 4.10) revealed a significant relationship between the presence of an abdominal mass and the location of the tumor (p-value < 0.001)..

Table 3.11: Relation of abdominal mass to the location of the tumor

Tumour location	With abdominal mass Frequency (%)	No abdominal mass frequency (%)	P value
Right side tumour	16 (7.5%)	24 (11.3%)	
Left side tumour	11 (5.2%)	69 (32.5%)	0.000
Rectal tumour	7 (3.3%)	85 (40.1%)	

3.13 Relation of tenesmus symptom to the location of the tumor

Tenesmus was observed in 21 (9.9%) cases of colorectal cancer, with the majority of cases presenting this symptom having rectal tumors (17 cases, 8%). Interestingly, no cases with right-sided tumors exhibited tenesmus in this study. Statistical analysis using the Pearson Chi-square test (as shown in Table 4.13 and Figure 4.11) revealed a significant relationship between tenesmus and the location of the tumor (p-value < 0.05).

Table 12: Relation of tenesmus to the location of the tumor

Tumour location	With tenesmus Frequency (%)	No tenesmus frequency (%)	P value
Right side tumour	0 (0%)	40 (18.9%)	
Left side tumour	4 (1.9%)	76 (35.8%)	0.01
Rectal tumour	17 (8.0%)	75 (35%)	

4. DISCUSSION

In Iraq , colorectal cancer ranks third among cancer-related fatalities. The Ministry of Health in Iraq has released data which verifies that the admission rates for colorectal cancer rose from 8.1% in 2010 to 11.9% in 2018. (RAJENDRA *et al;* 2005). We have carefully reviewed a sample of population with colorectal cancer from 2010-2018 in one central hospital in Iraq which is Al sheikh zayed general hospital, located in Baghdad, Iraq. Our sample size related to all cases that are diagnosed as a colorectal cancer and treated in this hospital, excluding the patients with missed data. In contrast to a study conducted at the Al sheikh zayed general hospital that found that the average age of colorectal cancer is in the sixth decade of life and that the incidence increases with age above fifty, the mean age of colorectal cancer in this study is 56.2 years old, and the majority of cases are under 49 years old (GOH *et al;* 2005). However in other series also found that colorectal cancer increase with age, and the majority of cases are in the age group more than 70 years old.(Okamoto *et al;* 2002). This variation in the results may be due to geographical distribution and genetic causes. In one series shown no significant relationship between the location of the tumour and the age groups while some other series shown that the patients with proximal tumour tend to be older in age.(Fazeli *et al;* 2007). This study indicates that there is no significant correlation between the age group and the tumor's location; nonetheless, older adults have a higher prevalence of distant tumors. A study of the sex distribution revealed a small male majority, with 60% of men and 40% of women, respectively. There is no statistically significant correlation between gender and the anatomical site of the cancer (p value > 0.05), despite the fact that males predominate in all of the tumour sites. These findings are consistent with a research conducted at the Al sheikh zayed general hospital that revealed a small male preponderance (GOH *et al;* 2005). There is no way that more colonic examinations can account for the higher rise in colorectal cancer (CRC) in men than in women. Hormonal variables have been proposed as the cause of the disparity in CRC rates between men and women (Almilaji et al., 2022). According to Almilaji et al(2022)analysis of the anatomical location distribution of colorectal cancer cases between 2010 and 1018, the rectal tumor accounted for 37% of instances, followed by the left side tumor (35%), and the right side tumor (26%) (Hayne *et al;* 2001). These findings have practical implications for selecting the most cost-effective screening techniques for the population's high-risk subset, where faecal occult blood testing and flexible sigmoidoscopy may be more useful than other screening techniques. According to this study, rectal tumors account for 43.4% of cases, with left side tumors accounting for 37.7% and right side tumors for 18.9% of cases, respectively. According to (Holtedahl et al., 2021), the most prevalent signs of colorectal

cancer were rectal bleeding, stomach discomfort, and changes in bowel habits. Colorectal cancer also presents with many typical symptoms that last for a long time. While colorectal cancer patients frequently have these symptoms, they are also frequently seen in people with other benign illnesses such hemorrhoids or irritable bowel syndrome. Consequently, there is a high degree of overlap between benign gastrointestinal illnesses and cancer symptoms (Mahmoud, 2022). Saidi S. H.(2008) found that rectal bleeding was the commonest symptom for rectal cancer in the study which is done at university of Nairobi, Kenya.(Saidi *et al;* 2008). Similar results was found by (Holtedahl et al., 2021), at cook country hospital, Chicago, when reported that rectal bleeding is commonest in rectal tumors, about 70% of cases. In this study rectal bleeding was the commonest presenting symptom in rectal cancer, about 34% of cases, while it is only 1.4% on the right side cancer. Nonetheless, there is a significant correlation (p value<.001) between this symptom and the tumor's location. Rectal bleeding and a change in bowel habit are two significant criterion or symptoms that were released in the UK Referral Guidelines for Suspected Colorectal Cancer (Hamilton and Sharp, 2004). Saidi H. S. (2008) found that, alteration bowel habit and abdominal pain represent two of the three major presenting symptoms of colorectal cancer with rectal bleeding, and he found that all of these three symptoms mostly presented in the rectal cancer, followed by left side tumors.(Saidi *et al;* 2008). The study found a significant correlation (p value < 0.05) between the anatomical location of colorectal cancer and changes in bowel habits, where one third of patients with rectal cancer presented with this symptom followed by left side tumor (22%) of cases. Colorectal cancer causes approximately 50% of symptoms of large bowel obstruction, while volvulus, diverticular disease, hernia, fecal impaction, and others account for the remaining 50% of cases.(Cuffy *et al.*). Bowel obstruction is strongly correlated with the anatomical location of colorectal cancer, according to (Pisano et al., 2018).Of these cases presenting as an emergency, 34% had a left side tumor and 25% had a right side tumor; however, this symptom is less prevalent in instances with rectal cancer. (Veld et al., 2021). Intestinal obstruction was a frequent emergency presentation on the left side of colon cancer in this cohort, whereas it was uncommon on the right. This is most likely due to the fact that the tumors on both sides have different morphologies, with the left-sided tumor typically exhibiting annular growth with solid faces that cause obstructive symptoms. As of right now, anemia is defined by the national recommendations as Hb less than 10 g/dl in females and less than 11 g/dl in males. Masson S.(2006) reported that Anemia was present more frequently in those with right-sided colon cancer compared with left sided, and in those with non-rectal compared with rectal tumors. (Masson *et al;* 2007). Anemia was shown to be more common in people with right-sided colon

cancer than in left-sided colon cancer, as well as in those with non-rectal tumors as opposed to rectal ones, according to Masson S. (2006). (Goodman and Irvin, 1993), As many as 16% of patients with anemia who have an upper gastro-intestinal tract endoscopy and a benign etiology also have a colonic tumor, Cook et al. proposed that a proper study of anemia need examination of both the upper and lower gastrointestinal tracts. (Almilaji et al., 2022) In this investigation, there was a significant difference in hemoglobin levels between instances of rectal and left cancer and lesions on the right side (P value < 0.001). This discovery is the result of a variation in the tumor's macroscopic variety, where it tends to be ulcerative or cauliflower lesions on the right side, which bleed easily and cause this anemia symptom. One hazy and non-specific sign of colorectal cancer is abdominal discomfort. According to Hamilton et al; abdominal pain is a frequent symptom that is nonetheless linked to colorectal cancer, making it a challenging issue for primary care physicians to address. Furthermore, abdominal pain retained their association with the cancer 180 days before diagnosis, so serious consideration should be given to the possibility of cancer with this symptom. (Hamilton *et al;* 2005). This study showed that rather than being the only symptom of colon cancer, abdominal pain was mostly linked to other presenting symptoms such intestinal obstruction or abdominal mass. If not, there is no discernible correlation between this symptom and the tumor's anatomical location (P value > 0.05). This finding was in contrast to abdominal mass presentation which has significant relationship to the site of the tumor (P value < 0.001). Tenesmus is a painful straining to empty the bowel without resultant evacuation. This is a crucial early colorectal cancer symptom that often manifests in cases with rectal tumors. We discovered that, excepting an insufficient sample size to investigate the relationship between this symptom and the tumor's location, tenesmus is mostly linked to rectal tumors; no cases of tenesmus in right-sided tumors have been clinically documented.

5. CONCLUSIONS

From the analysis of the data and results obtained, several observations and conclusions can be drawn despite the study's limitations. Most patients diagnosed with colorectal cancer in this study were below 50 years old, with a predominance of males over females. Regarding the tumor's anatomical location, age and sex did not significantly correlate with one another. This study revealed that the most prevalent anatomical site of colorectal cancer was discovered to be rectal cancer, which was followed by left-sided tumors. Alteration in bowel habits was the most frequent presenting symptom, reported in more than half of the cases. The site of

colorectal cancer was shown to be strongly correlated with the presenting symptoms, with the exception of abdominal discomfort, which did not always manifest as a single symptom. In clinical practice, the results of this study can be useful in determining which investigative techniques are best for diagnosing and screening high-risk populations. This method may avoid delays in the management process and be both time- and money-efficient.

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