

Time for diagnosis of colorectal cancer

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Abstract

Background: Colorectal cancer (CRC) is one of the most commonly diagnosed cancer worldwide. CRC-related mortality is highest in less developed countries. The poor survival is probably due to the lack of available health resources or late diagnosis of the disease.

The aims of this study: To evaluate the factors cause a delay in diagnosis and treatment of colorectal cancer patients.

Methods/Design: A cross sectional study conducted in the surgical wards at Baghdad teaching hospital for the period from 1/1/2016 to 1/1/2018. 2 years period.

During the study period, patients who presented with large bowel obstruction, lower GIT bleeding or colicky abdominal pain with altered bowel habit and diagnosed with colorectal cancer by emergency laparotomy or endoscopy were included in the study.

Result: The study population consisted of 106 patients (55 men and 51 women). 29.4 % of patients below 50 years of age diagnosed after 210 days while 23.6 % of patients equal or above 50 years of age diagnosed within 30 days. 29.1% of male patients diagnosed within 30 days, while 25.5% of female patients diagnosed after 210 days. 28.9% of urban patients diagnosed within 30 days while 29.5% of rural patients diagnosed after 210 days. Regarding Occupation of patients, it was found that there was no significant effect on duration for diagnosis and found that 23 patients was examined by DRE (1st visit) with while 83 patients was not examined by DRE. Also 54 patients were requested to undergo endoscopy while 52 patients were not requested for endoscopy and only 7 patients were requested for occult blood in stool test.

Conclusions:

- Females, rural residents and younger patients are more prone for delay in diagnosis of CRC.
- High percentage of patients required emergency laparotomy for diagnosis (56.6%) of CRC.
- DRE and FOBTs did not significantly affect the time for diagnosis of CRC.

Key words: colorectal cancer, colonoscopy, faecal occult blood in stool and duration for diagnosis of CRC.

Introduction

Colorectal cancer (CRC) is one the most commonly diagnosed cancers worldwide [1]. CRC-related mortality is highest in less developed countries. The poor survival is probably due to the lack of available health resources or late diagnosis of the disease [2].

CRC incidence and mortality show wide geographical variations across the world. When comparing age-standardized incidence rates (ASR_{is}) of CRC in different countries, we found the highest rates in Australia and New Zealand, and the lowest rates in Western Africa. Nearly 55% of CRC cases occur in developed regions. However, high- and low-income countries also show large variations in the proportion of the population included in CRC registries [1].

CRC SCREENING TESTS

Stool tests

It has been established that CRC mortality could be reduced by screening with periodic faecal occult blood tests (FOBTs), followed by colonoscopy when the results were positive [1][3].

Invasive techniques

Flexible sigmoidoscopy screening was shown to be effective in reducing the incidence and mortality rates of CRC [4]. It should be taken into account that, when a distal adenomatous polyp is detected in a sigmoidoscopy, a colonoscopy is required [5]. This is necessary, because the characteristics of adenomas found in the rectum and sigmoid are correlated with the probability of presenting a proximal CRC [5].

Survival of CRC patients depends mostly on their disease stage at the time of diagnosis [6]. Most patients will be alive after 5 years if the tumour has not reached the intestinal wall (stage I). This rate decreases to 60% if the tumour has invaded regional lymph nodes (stage III) and to only 5–15% if the neoplasm has metastasized (stage IV) [7]. Thus, individuals with symptoms or signs suspicious of CRC should be examined without delay; however, many are not [3,7].

Most studies use the term delay to describe the time elapsed between onset of the first symptom to diagnosis or treatment [8]. Conceptually, diagnostic delay in cancer is a complex process involving patient behaviour, physician attitudes, response of the health system, biology of the tumour cells and interaction between host and tumour [9]. Studies on delay tend to distinguish between patient and health system delays [9,10]:

1. Patient delay

There are a number of reasons why a patient, facing a sign or symptom suspicious of malignancy, may decide not to visit a doctor [10,11]:

- a) The patient may not be aware of the importance of symptoms.
- b) may be embarrassed to consult about them.

- c) May not relate them with the disease.
- d) May fear a possible cancer diagnosis.
- e) A family history of cancer together with a negative attitude to the medical profession can also be a reason for delay, as is a previous history of anxiety or depressive illness.
- f) Additional factors may include patient age, civil and social status.
- g) Mistrust in doctors or lack of time to visit a physician.
- h) Patient reluctance to undergo rectal exploration may increase delay.

2. Family doctor delay

The general practitioner plays an active role in cancer diagnosis^[10]. His or her style of practice is important in recognizing CRC^[12]. A study on family doctors' clinical management of patients with gastrointestinal symptoms found that one third of patients did not have a physical examination, fewer than 50% underwent a digital rectal examination, and at least 90% of hospital referrals failed to include primary care findings^[10].

3. Hospital delay

Factors described as possible contributors to delay include specialist referrals' waiting lists, poor coordination, and complementary examinations. About 65% of patients affected by gastrointestinal tract cancers were initially diagnosed by a hospital emergency department, and over 50% had visited their general practitioners while having symptoms related to CRC^[9,10].

Patients and method

A cross sectional study conducted in the surgical wards at Baghdad teaching hospital for the period from 1/1/2016 to 1/1/2018. During the study period, patients who presented with large bowel obstruction, lower GIT bleeding or colicky abdominal pain (mainly in the left side of the abdomen) with altered bowel habit and diagnosed with colorectal cancer by emergency laparotomy or endoscopy were included in the study. The patients in this study came from different governorates of Iraq, mainly from middle, west and south of Iraq who were referred to our hospital for different reasons such as the need for RCU. All patients were asked about their names, age, residency and occupation. Information was collected about the first symptom of CRC and the date of this symptom. Also, they were asked about the date and method of diagnosis. Every patient was asked if they did seek medical advice and agreed on all investigations requested by their doctors. Also, they were asked if they were requested for endoscopy, DRE, blood in stool test and the duration of wait for endoscopy. The duration for diagnosis was defined as: the period from the onset of the first symptom till diagnosis which is done by endoscopy or by exploratory laparotomy. All data were arranged in tables and presented in simple measures of frequency, percentage and mean. Analysis of data was carried out using the statistical package of SPSS-24 (Statistical Packages for Social Sciences- version 24). The significance of difference (the P value) for the means (quantitative data) were calculated

using Students-t-test. The significance of difference (P value) for percentages (qualitative data) were tested using Pearson Chisquare test (χ^2 -test) with application of Yate's correction. Statistical significance was considered whenever the P value was equal or less than 0.05.

Results

The study population consisted of 106 patients (55 men and 51 women) with 1.07/1 male to female ratio, 32.1% aged below 50 years and 67.9% aged equal or above 50 years with mean 55.1 years, 42.5% of the patients live in urban areas and 57.5% live in rural areas.45.3% are employee while 54.7% are non-employee.

Table NO. (1) demographic features of the study population		n	
		No	%
<i>Age (years)</i>	<50	34	32.1
	=>50years	72	67.9
<i>Gender</i>	Male	55	51.9
	Female	51	48.1
<i>Residency</i>	Urban	45	42.5
	Rural	61	57.5
<i>Occupation</i>	Employee	48	45.3
	Non-employee	58	54.7

In this study it was found that 59.4% of the patients presented initially with altered bowel habit (constipation) with a mean duration for diagnosis 129.4 days, 20.8% with abdominal pain with a mean duration for diagnosis 154.2 days and 19.8% with bleeding per rectum with a mean duration for diagnosis 146.9 days, with a mean duration for diagnosis equal to 138 days for the whole study population. Regarding method of diagnosis of colorectal cancer in this study it was found that 46patients (43%) diagnosed by endoscopy with a mean duration for diagnosis 104.1 days and 60 patients (56.6%) diagnosed by emergency laparotomy with a mean duration for diagnosis 182.2 day.

Table NO. (2) initial symptoms and method of diagnosis

		No.	%	Mean duration for diagnosis (days)
<i>Initial symptoms</i>	Constipation	63	59.4	129.4
	Abdominal pain	22	20.8	154.2
	Rectal bleeding	21	19.8	146.9
	Total	106	-	138
<i>Diagnostic procedure</i>	Endoscopy	46	43.4	104.1
	Emergency laparotomy	60	56.6	182.2

Regarding patient factors that affect duration for diagnosis we found in our study that Age of patients was a significant factor (P value 0.004) in which 29.4 % of patients below 50 years of age diagnosed after 210 days while 23.6 % of patients equal or above 50 years of age diagnosed within 30 days. It was found that Gender was a significant factor (P value 0.002) that affect duration for diagnosis in which 29.1% of male patients diagnosed within 30 days, while 25.5% of female patients diagnosed after 210 days. We also found in our study that Residency was a significant factor (P value 0.003) in which 28.9% of urban patients diagnosed within 30 days while 29.5% of rural patients diagnosed after 210 days. Regarding Occupation of patients, it was found that there was no significant effect on duration for diagnosis of colorectal cancer (P. value 0.694) whether the patient was governmental employee or non - governmental employee.

Table NO. (3) patient factors that affect the duration for diagnosis

<i>Duration of diagnosis (days) since first symptom</i>	<i>Age</i>		<i>Gender</i>		<i>Residency</i>		<i>occupation</i>	
	<i>< 50 years</i>	<i>=>50years</i>	<i>Male</i>	<i>Female</i>	<i>Urban</i>	<i>Rural</i>	<i>Employee</i>	<i>Non-employee</i>
	<i>%</i>	<i>%</i>	<i>%</i>	<i>%</i>	<i>%</i>	<i>%</i>	<i>%</i>	<i>%</i>
<i>< 30</i>	5.9	23.6	29.1	5.9	28.9	9.8	17.9	11.2
<i>30----</i>	5.9	12.5	12.7	7.8	4.4	14.8	8.5	13.5
<i>60----</i>	26.5	8.3	12.7	15.7	8.9	18.0	13.2	15.1
<i>90----</i>	17.6	5.6	3.6	15.7	8.9	9.8	7.4	13.2
<i>120----</i>	-	4.2	5.5	-	-	4.9	13.6	8.9
<i>150----</i>	8.8	4.2	-	11.8	6.7	4.9	5.8	-
<i>180----</i>	5.9	22.2	16.4	17.6	28.9	8.2	17.1	19.8
<i>=>210</i>	29.4	19.4	20.0	25.5	13.3	29.5	16.5	18.3
<i>Total NO.</i>	34	72	55	51	45	61	48	58
<i>P. value</i>	0.004*		0.002*		0.003*		0.694	

Regarding doctor factors that affect the duration for diagnosis it was found that 23 patients was examined by DRE (1st visit) with a mean duration for diagnosis 145.3 days while 83 patients was not examined by DRE with a mean duration 136 days which was not a significant factor (P value 0.728). Also 54 patients were requested to undergo endoscopy with a mean duration 106.5 days while 52 patients were not requested for endoscopy with a mean duration 170.8 days and this was a significant factor (P value 0.003). It was found also that only 7 patients were requested for occult blood in stool test with a mean duration 202.1 days while 99 patients were not requested with a mean duration for diagnosis 133.5 days and that was not a significant factor (P value 0.119).

<i>Table no. (4) doctor factors that affect the duration for diagnosis</i>				
		<i>Total NO.</i>	<i>Mean duration for diagnosis(days)</i>	<i>P. value</i>
<i>DRE done at first visit</i>	<i>YES</i>	23	145.3	0.728
	<i>NO</i>	83	136	
<i>Doctor request for endoscopy</i>	<i>YES</i>	54	106.5	0.003*
	<i>NO</i>	52	170.8	
<i>Doctor request for occult blood in stool test</i>	<i>YES</i>	7	202.1	0.119
	<i>NO</i>	99	133.5	

Discussion:

In this study it was found that the mean duration for diagnosis of CRC was 138 days and this result is near the duration found in Spain by *Esteva et al. BMC Cancer 2013*^[2] which was 128 days.

In the study population it was found that the mean age of patients was 55.1 years, the youngest aged 23 years and the oldest aged 80 years, and it was found that the patients aged below 50 years experienced more time to diagnosis of colorectal cancer compared to patients above 50 years of age, this is also found in Canada, Manitoba study done by *Singh et al.*^[13] This is because symptoms of colorectal cancer were not taken seriously by physicians in younger patients^[13].

Regarding gender, in our study it was found that women are more likely to experience longer time to diagnosis than men. This result is compatible with results found in Spain by *Esteva et al. BMC Cancer 2013*.^[2] These results probably are related to gender differences in coping with symptoms and help-seeking behaviour^[2].

It was also found that residency affect duration of symptoms in which rural residents experienced more time to diagnosis and treatment of colorectal cancer which is compatible with the results found in Canada, Manitoba done by *Singh et al.*^[13].

Regarding occupation of the patients there was no significant relationship with the duration for diagnosis of colorectal cancer, the same results was found in regions of Spain a study done by *Esteva et al. BMC Cancer 2013*^[2].

It was also found that patients presented initially with abdominal pain took longer time till diagnosis of colorectal cancer followed by patients with rectal bleeding compared to patients presented initially with constipation whom the duration of diagnosis was earlier. This was found not compatible with the results done by *Esteva et al. BMC Cancer 2013*^[2] in which patients with abdominal pain and constipation took shorter duration for diagnosis than rectal bleeding^[2]. The exact reason for this is unclear but might be explained by the knowledge that rectal bleeding is associated with many benign anorectal disorders. The above study found that 12% of healthy adults might complain of rectal bleeding. Rectal bleeding is often attributed to haemorrhoids and it is often difficult for physicians to determine that abdominal pain (as initial symptom) is related to CRC or it is related to often benign pathologies^[2].

In this study it was found that (56.6%) more than half of patients having CRC diagnosed by emergency laparotomy and this is high percentage as compared with the results in Spain done by *Esteva et al(23.9%) BMC Cancer 2013*^[2], and the results in Canada, Manitoba done by *Singh et al(26%)*^[13]. And this is because in the absence of a population-based screening program, a large percentage of CRC is diagnosed in patients who present with symptoms. The ambiguity of symptoms might lead patients and physicians to disregard or overlook important cancer-related symptoms^[2]. More important, the nonspecific nature of GI symptoms can lead to patient delays in seeking care, inappropriate physician advice, out-of-place testing, and ultimately delay in CRC diagnosis^[13].

The results in this study showed that there was no relationship between duration for diagnosis of CRC and performing DRE and physicians only carried out digital rectal examination for only 23 patients and depended on other modalities for confirming the diagnosis, this is the same for patients in *Cross Cancer Institute in Edmonton, Alta, Canada* done by *Corey Tomlinson et al*^[14]. This study found that only 38% of patients had DRE performed at their initial physician visits while presenting with GI symptoms^[14].

It was also found that 46 patients underwent endoscopy out of 54 patients that were requested for endoscopy and took shorter duration for diagnosis of CRC than those who were not requested and this is the same results in regions in Spain done by *Esteva et al. BMC Cancer 2013*^[2].

Regarding patients in our study only 7 patients tested for occult blood in stool and the mean duration for diagnosis was longer than those who were not asked for occult blood in stool test and this compatible with the results found in Canada, Manitoba done by *Singh et al*^[13]. and the cause for this long duration that the diagnosis was not confirmed in those patients^[15].

Regarding patients with colon cancer. In addition to patient factors, wait times for appointments and tests also play a role in the delay of diagnosis and treatment^[14].

The results of the present study may suggest that emotional barriers such as embarrassment about symptoms and fear of diagnostic procedures should be taken into consideration when addressing interventions aimed at promoting help-seeking in patients with any possible cancer symptom.

Conclusion:

We conclude that:

- Females, rural residents and younger patients are more prone for delay in diagnosis of CRC.
- High percentage of patients required emergency laparotomy for diagnosis (56.6%) of CRC.
- DRE and FOBTs did not significantly affect the time for diagnosis of CRC.

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