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Colorectal Cancer Presentation in Damanhour Teaching Hospital

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ABSTRACT

Introduction: Colorectal cancer (CRC) is the third most common cancer, and the second most common cause of cancer mortality worldwide. In Egypt, a high rate was among adults less than 40 years of age.

Aim of the study: This study aimed to determine the age, gender distribution and emergency presentation in Egyptian patients with colorectal cancer, as seen in Damanhour Teaching Hospital.

Patients and methods: This retrospective study was conducted in Damanhour Teaching Hospital. Seventy-four patients who presented in the period from January 2020 to January 2024 were included. Data were collected from their hospital records.

Results: 33.8% of the study population (n=74) were below the age of 40 years, and 14.8% were below 30 years. The male to female ratio was 1.8:1. Intestinal obstruction was the most common cause of emergency presentation (73.9%). For emergency operations, the morbidity was 47.8% and mortality was 26.1%. For elective operations both morbidity and mortality were lower than in emergency situation 37.3% and 7.8% respectively. The tumour location was mainly in the left colon (60.8%), whereas obstruction was the predominant reason for acute presentation (73.9%) followed by perforation. Emergency presentation was higher among females 56.5% vs 41.2% in elective cases. Mortality was higher among females in emergency operations especially those above 70 years.

Conclusion: Colorectal cancer was found in young age groups. Emergency presentation was high and was mainly intestinal obstruction. Emergency surgery for colorectal carcinoma is related to higher postoperative morbidity and mortality rates.

Keywords: Colon cancers, Colorectal cancers, Emergency surgery.

INTRODUCTION

Colorectal cancer (CRC) is the third most common cancer and the second most common cause of cancer mortality worldwide. There are also changes in the age pattern of CRC, with increasing incidence in the young, especially in developed countries. These disparities may reflect differences in exposure to the risk factors for CRC, including lifestyle and environmental factors [(1)].

In Egypt, a high rate of colorectal cancer has been documented especially among adults less than 40 years of age, along with the high incidence rate of CRC in individuals under age 40, also CRC is diagnosed at more advanced stages in these younger Egyptians [(2)].

Although most cases of CRC correspond to sporadic forms, approximately 25%–30% of all cases occur in patients with a family history of CRC. Only a small fraction (2%–8%) of those CRC arises in the setting of the highly penetrant inherited syndromes due to germline mutations in well-known genes. The main subtypes of hereditary CRC are hereditary nonpolyposis CRC and familial adenomatous polyposis. Aside from these, there is a significant number of CRCs in which a strong family aggregation is observed but do not show a defined Mendelian inheritance pattern. It is termed familial CRC to distinguish it from the above well-established hereditary syndromes [(3)].

Due to the different anatomical and physiological functions of colon and rectum, the clinical manifestations of tumors in different anatomical sites are also different. Generally, abdominal mass and systemic symptoms are more common in right colon cancer, bloody stool and obstruction are more common in left colon cancer, and changes in defecation habits are more common in rectal cancer [(4)].

Although preventative measures and early detection programs, about 6–30% of patients with colorectal cancer admit with late complications, which requires emergent interventions. Those patients are usually at late stages and they are submitted to curative surgery in small proportion. Emergent surgical interventions for colorectal cancers are associated with a 15–20% of mortality and 40–50% morbidity, which are significantly higher than elective interventions. Also, bowel obstructions increase the risk of perforation, which is associated with increased rates of local recurrence [(5)].

AIM OF THE STUDY: The aim of this study was to determine the age and gender distribution of patients with colorectal cancer presented to Damanhour Teaching Hospital and to study their emergency presentation and risk factors for morbidity and mortality.

PATIENTS AND METHODS

This retrospective descriptive study included 74 patients who presented with colorectal cancer to Damanhour Teaching Hospital as elective or emergency. Data of all patients were obtained with their presenting symptoms particularly of emergency cases. Outcomes (length of stay, 30-day mortality and morbidity), surgical interventions, pathological results and staging were collected.

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Ethical aspects: The study protocol was approved by The Scientific Ethical Committee of Damanhour Teaching Hospital and General Organization of Teaching Hospital and Institutes (GOTHI). The Helsinki Declaration was followed throughout the study's conduct.

RESULTS

The present study included 74 patients. They were 48 males and 26 females with a male to female ratio 1.8:1. The age of the studied group ranged from 21 - 77 years with a mean of 46.6 ± 2 years. The distribution of the disease among the different age group was as follow: 11 patients [14.8%] were in the third decade of life, 14 patients [18.9%] were in the fourth decade, 16 patients [21.6 %] were in the fifth decade, 19 patients [25.6 %] were in the sixth decade, 9 patients [12.2%] were in the seventh and only 5 patients [6.8%] were in the eighth decade of life. The highest incidence of disease was in the sixth decade of life including [25.6 %] of patients.11 patients [14.8%] in this study were 30 years or younger and 25 patients [33.8 %] were 40 years or younger. Sigmoid cancer represented 32.4% of the study population followed by rectal cancer [28.4%] then cecal cancer [10.8%]. Out of the 74 patients, 55 were presented with Left-sided colo-rectal cancer [74.3%] of them 35 [63.6%] were males and 20 [36.4%] were females, while19 [25.7%] patients had right side tumors, there were 11 [57.9%] females and 8 males [42.1%]. The location of the tumor was in the left colon in 14 cases [60.8%], in the right colon in 6 cases [26.1 %], and in the rectum in 3 cases [13.1%] (Table 1).

Table (1): Location of colorectal cancer in elective and emergency setting

Location	Elective		Emergency	
	N	%	N	%
Caecum	6	(11.8)	2	(8.7)
Ascending colon	3	(5.9)	2	(8.7)
Hepatic flexure	2	(3.9)	1	(4.35)
Transverse colon	3	(5.9)	1	(4.35)
Splenic flexure	2	(3.9)	2	(8.7)
Descending colon	2	(3.9)	3	(13.1)
Sigmoid	15	(29.4)	9	(39.1)
Rectum	18	(35.3)	3	(13.1)
Total	**51**		**23**	

51 Patients [68.9%] presented as elective cases, the presenting symptoms were diarrhea, constipation, tenesmus, bleeding, anemia and abdominal pain with loss of weight. Out of 31.1% [23 patients] who presented in emergency situation 17 patients [73.9%] had intestinal obstruction, sigmoid perforation and fecal peritonitis in 3 cases [13.4%], intraluminal bleeding in one case [4.3%] and cecal perforation in 2 cases [8.6%].

Surgical intervention: On operation in elective situation macroscopic spread was undetected in 40 cases [78.4%]. While in emergency situation, macroscopic spread was undetected in 11 cases [47.8%], and in 12 cases [52.2%] the disease was advanced. The latter included 5 cases of liver metastases [21.6%], 4 cases of adjacent organ invasion [17.6%] and 3 cases of diffuse intra-abdominal dissemination [13.1%]. All patients had adenocarcinoma, adenomas were present in 4.5% and bilharzia in 9.4% of resected specimens. The pathological characteristics of resected specimens in elective and emergency cases are shown in table (2).

Table (2): Histological and pathological characteristics of colorectal carcinoma

	Elective		Emergency	
	N	%	N	%
Gross pathology				
Mass	27	(52.9)	12	(56.5)
Stricture	16	(31.9)	10	(34.4)
Ulcer	8	(15.6)	1	(4.1)
Duke's stage				
A	7	(13.7)	0	0
B	22	(43.1)	10	(43.5)
C	14	(27.5)	6	(26.1)
D	8	(15.8)	7	(30.4)
Differentiation				
Well	8	(15.8)	3	(13)
Moderate	34	(66.7)	15	(60.7)
Poor	9	(17.6)	5	(21.7)

23 patients [31.1%] underwent an emergency operation. These were 10 men [43.5%] and 13 women [56.5 %] with a mean age of 55.5 ± 6 years. From them 13 patients [56.5 %] were above or equal to 60 years of age. The performed operations for emergency cases are shown in Table (3). Hartman's procedure in 9 cases [39.1%], resection with primary anastomosis in 6 cases [26.1%], decompressing colostomy in 5 cases [21.7%], palliative resection in one case [4.3 %.], and palliative ileo-transverse anastomosis in two cases [8.7%]. Hartman's procedure was the preferred choice followed by resection with primary anastomosis. Decompressing colostomy was only performed in oncologically inoperable cases [21.7%].

lective operations for colorectal cancer were performed in 51 patients 30 men [58.8%] and 21 women [41.2%]. These cases included 33 patients [64.7%] less than 60 years of age and 18 patients [35.3 %] more than 60 years of age. The location of the tumor was in the left colon in 20 cases [39.2%], in the right colon in 13 cases [25.5%] and in the rectum in 18 cases [35.2%]. The resectability rate of emergency [69.3 %] was lower than of elective cases [86.7%]. The performed operations for elective cases are shown in Table (3).

Table (3): Performed operation for colorectal cancer in emergency and elective setting

Operation	Emergency N	%	Elective N	%
Colostomy	5	(21.7)	2	(3.9)
Right colectomy	3	(13)	11	(21.6)
Left colectomy	1	(4.3)	7	(13.7)
Sigmoid-anastomosis	1	(4.3)	11	(21.5)
Hartman's procedure	9	(34.7)	2	(3.9)
Subtotal colectomy	1	(4.3)	2	(3.9)
Abdomino-perineal	0	-	6	(11.7)
Low anterior resection	0	-	9	(17.6)
Ilio-trnsverse	2	(8.6)	0	-
Palliative resection	1	(4.3)	1	(1.9)
Total	**23**		**51**	

Morbidity and mortality:

The mean hospital stay for all colorectal cancer was 16.5 days [range 9-32]. That was 12 days [range 9-28] for patients less than 60 years of age and 14 days [range 12-32] for patients more than 60 years of age. The total morbidity rate for all colorectal cancer emergency was 47.8% [11 patients]. This was 63.6% [7 patients] for patients more than 60 and 36.6 % [4 patients] for patients less than 60 years of age. The morbidity rate for elective cases was 37.3% [19 patients]. This was 52.6% for patients more 60 and 47.4% for patients less than 60 years of age. The total 30 days mortality was 13.5% [10 patients] and for emergency cases, it was 26.1% [6 patients]. This was 17.5% [4 patients] for patients more than 60 years of age and 8.6% [2 patients] for patients less than 60 years of age. The mean age was 67.5 years [range 58-77] of whom 4 were women and 2 were men. Elective cases mortality rate was 7.8%, 2 patients were more than 60 years of age and another 2 were less than 60 years of age. Half of all patients presented with colorectal cancer emergencies were elderly [more than 60] and 5 of them [21.7%] were above 70 years of age (Table 4).

Table (4): Reasons of death in patients operated for colorectal cancer

N	Sex	Age	Diagnosis	Operation	Death day	Causes
1	♀	65	Sigmoid cancer (perforated, peritonitis)	Hartman's	2nd	sepsis
1	♀	72	Sigmoid cancer (perforated, peritonitis)	Hartman's	3rd	sepsis
1	♂	58	Rectal cancer (obstruction)	colostomy	10 days	Myocardial infarction
1	♀	75	Descending colon (obstruction)	Subtotal colectomy + anastomosis	14 days	Peritonitis
1	♀	63	Perforated cancer caecum	Palliative resection+ anastomosis	20 days	Pulmonary embolism
1	♂	55	Cancer sigmoid (obstruction)	Sigmoidectomy + anastomosis	2 days	Peritonitis
1	♂	55	Cancer rectum	Abdomino-perineal	10 days	Cerebral attack
1	♂	58	Cancer rectum	Anterior resection	12 days	Peritonitis fistula
1	♂	65	Sigmoid cancer	Sigmoidectomy+ anastomosis	7 days	Pulmonary embolism
1	♀	68	Splenic flexure + Splenic infiltration metastasis	Lt colectomy +anastomosis	23 days	Peritonitis

DISCUSSION

Colorectal cancer is not uniformly distributed among all population. Cancer of the large bowel is a disease of western developed countries. The highest incidences are in Western Europe and North America, while the lowest incidences are seen in Africa. The most common decade of life for the development of colorectal cancer was the seventh decade and by that the incidence of the disease tends to increase with age [4].

A streaking feature of the present study is the age distribution in this group of Egyptian patients. The mean age of patients in this study was 46.3 ± 7 years and [33.8%] of the patients were 40 years of age or younger. In addition, the most decade of life for the development of colorectal cancer in this study was sixth decade of life, other investigators have observed the same age distribution in other parts of Egypt [2].

The cause of such a great discrepancy in the age distribution of the disease between Egypt and Western countries is currently uncertain. It may be due to westernization of Egypt, as the country develops and is affecting young people first. The remarkable differences in molecular pathology as compared to Western patients could result from inheriting differences in sensitivity and molecular responses to Western life style in Egyptians. In some cases, environmental exposure to organochlorine pesticides and inherited genetic factors due to familial aggregation [6].

The finding that 14.8% of the patients in the present study were 30 years or younger and that 33.8% of patients were 40 years or younger is in agreement with the finding of **Soliman *et al.*** [7] who demonstrated that 35% of 1608 colorectal cancer patients recruited from different parts in Egypt were under 40 years of age. A similar data came from the National Cancer Institute in Cairo.

However, this very high incidence of the disease in these age groups is again in marked contradiction to that reported from the western countries which stated that 2-10% are 40 years or younger and approximately 0.6 - 5.4% are 30 years or younger. Recently **Nieminen *et al.*** [6] reported that Egyptian colorectal cancer showed significantly higher methylation of microsatellites stability tumour and lower frequency of nuclear-catenin localization than the sporadic Western cancer.

Agrawal S *et al.* [8] recommended screening of African Americans at a younger age [45 rather than 50 years] as they were found to have a higher incidence of developing colorectal cancer at a younger age. On the other hand, the highest incidence was identified in the age group 51-60 years [25.6%], which coincides with that reported by **Donald *et al.*** [9] and **Erin K *et al.*** [10], but differ from **Ferlay *et al.*** [11] and **Corman** [12] who stated that the peak incidence was at seventh decade and that the incidence of disease tend to increase with age.

In this study males [n=48] were more than females [n=26] at a ratio of 1.8: 1, which is almost similar to that shown by the others [13]. On the other hand, **Guraya *et al.*** [14] showed a different male to female ratio 4:1.

In this study 55 [74.3%] patients were diagnosed as having left sided colorectal cancer. In our study sigmoid (24 patients) [32.4%] was the most affected site followed by the rectum (21 patients) [28.4 %], and the caecum (11 patients) [10.8 %]. Nevertheless, a different report contrasts our findings [11].

In this study males had more left-sided colorectal cancer than females but females had more right sided colonic cancer than males. **Zbar *et al.*** [15] reported a steadily increase in both left and right sided colonic tumor with no gender predilection.

Our findings are keeping with **Woode *et al.*** [16] findings as 23 patients [31.1%] presented as an emergency; 17 [73.9%] had acute or sub-acute intestinal obstruction. This percentage was higher than shown elsewhere [17, 18, 19]. This reflects that intestinal obstruction is the main emergency presentation of colorectal cancer in the Egyptian patients that may be due to absence of colorectal cancer screening program, economic state, and the first line medical providers may not request rectal examination.

The Hartmann's procedure has gained a well-documented place in emergency colorectal surgery, since it allows radical local removal of the tumor without anastomosis [20]. This procedure was also our policy in (39.1%) of acutely operated cases and particularly in elderly patients. On the other hand, radical resection in acute situation ensures a potential curative management of colorectal cancer with acceptable morbidity and mortality [21].

In this study, resection operations were performed in 15 cases (65.2%) of patients undergoing emergency operations. Apparently, not all of them were curative, since the absence of macroscopic spread of the disease was noted in only 47.8% of the cases. Since there is no evidence of benefit from mechanical bowel preparation in elective surgery, there has been an increasing trend for primary anastomosis in emergency setting [22]. Our results are in accordance with it, primary anastomosis was performed in 26.1% of emergency cases. However, the staged procedure may be a more reasonable approach if a major co-morbidity pre-exists.

A decompressing colostomy may be a minimal alternative option in high-risk patients with complete obstruction [23], as performed in 21.7% of our emergency cases. In a large multi-center study, it has been reported that the 30 days mortality rate was 15.7%, after resection surgery for obstructing colorectal carcinoma in patients with a median age of 73 years [24].

In this study three out of the six patients [50%] who underwent resection and anastomosis died in the post-operative period with a median of 65 years of age. Emergency surgery for colorectal carcinoma in patients older than 60 years has been reported to be associated with elevated morbidity 42.6% and mortality 27.8%. The mean 30-day mortality rate was up to 7.5% [17].

In our study, the morbidity rate was 47.8% and the mortality rate was 26.1% among patients who underwent an emergency operation. These results are not comparable with other literatures that reported post-operative mortality ranging from 2%-9% and post-operative morbidity ranging from 18%-37% [25, 26].

In this study morbidity and mortality rates were higher in elderly patients (60 years of age) with major co-morbidity. Total postoperative morbidity was observed in 30 patients (40.5%), 11 of them from the emergency group and 19 from the elective group 47.8% vs. 37.3%. Complications rates were as follows: Wound was14.8% (including wound dehiscence, wound infection, wound hematoma), clinical anastomotic dehiscence was 4.1%, prolonged ileus was 5.4%, cardio respiratory tract was 8.1%, urinary tract was 6.8% and retracted colostomy was 2.7%. Postoperative mortality was higher in patients that needed urgent surgery than in patients operated electively. This was evidenced in our study (26.1% vs.7.8%) in which 6 of the 10 patients that died in the 30-day period after surgery were urgently operated due to obstructed and perforated colorectal carcinoma. In some cases, one possible explanation for the higher mortality in the urgently operated patients may be related to the fact that "on call" surgeons, not necessarily experienced in colorectal surgery, perform urgent surgeries whereas experienced coloproctology surgeons perform surgeries in elective cases.

Female sex, poor economic status and obesity were determined as risk factors for obstruction, perforation or emergency admission to hospital [25]. It may relate to biological, cultural and sociologic issues in the work-up of colorectal cancer symptomatology. There does appear to be issues with women's willingness to perform colonoscopy due to fear of pain, and embarrassment, specifically embarrassment at having a male physician to conduct the examination [27]. In our study 13 out of the 23 patients [56.5%] underwent emergency operations due to obstruction or perforation were females. Perforation seems to be a more closely related to higher morbidity and mortality rates than obstruction alone [26], as our study indicates as well the two cases whom were presented with sigmoid perforation died within 48 hours from septicemia.

Obesity has been shown to be both a risk factor and poor prognostic in colorectal carcinoma. The increased emergency presentation rates may be due to difference in access to care, and the challenges in the diagnosis associated with morbid obesity [28].

The most common grade of differentiation was moderately differentiation followed by poorly differentiation in both emergency and elective patients. According to Duke's classification the disease was more advanced in emergency than in elective cases. In correlation with age groups the younger patients had more advanced stages and poorly differentiated tumors as most of the previous studies reported [17, 29].

Obstructing colo-rectal cancer was more likely to be locally advanced with more common hepatic metastasis [22]. Similar findings were confirmed by the present study, hepatic metastasis was present at the time of diagnosis in 21.7% of cases. In this study, as for the emergency, the spread of malignancy outside the primary site was evident in 52.2% of cases, which were mainly in the liver or adjacent organs which is in accordance with previous studies [17, 26].

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