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Presentation Patterns and Outcomes in Patients with Colorectal Cancer Seeking the Emergency Department for Consultation

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Abstract

Background Patients with colorectal cancer may seek the emergency department for symptoms related to chemotherapy and radiotherapy side effects as well as those from the disease itself and from surgery complications.

Objectives To establish the epidemiological and clinical profile of colorectal cancer patients that look for consultations in the emergency department.

Methods Retrospective study of emergency room charts from colorectal cancer patients that consulted in a single oncological hospital for the period of 1 year.

Results Four hundred and forty-six consultations were identified (49.5% males and 50.5% females) with a mean age of 63 years and with advanced disease (most with tumor, node, metastases [TNM] stages III and IV). The most common complaint was abdominal pain (27.5%), followed by nausea (4.7%; more commonly seen in females with $p = 0.03$) and bladder symptoms (4.7%; more commonly seen in males, with $p = 0.003$). Infections (10.3%) and acute abdominal pain (9.1%) were the most frequent diagnoses. About 18% of them were admitted to the hospital and 80% were discharged home.

Conclusion The profile of patients with colorectal cancer seeking the emergency department comprises patients with advanced disease and a similar proportion of males and females. Symptom-driven complaints were the most frequent reason for consultations.

Keywords
- colorectal cancer
- emergency department
- infections
- acute abdomen

Introduction

Colorectal cancer is a common disease. According to the World Health Organization, this is the third most frequently diagnosed type of cancer in males and the second in females.[1] It is more common in the sixth and seventh decades of life, and its prevalence is related to ageing, poor eating habits, smoking, sedentary lifestyle, and obesity.[2]

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Nowadays, new forms of treatments—such as radiotherapy for rectal cancer, more-aggressive resection of metastatic disease, immunotherapy, as well as neoadjuvant and palliative chemotherapies—have been developed offering new choices to these patients. These new forms of treatment have almost doubled survival for advanced diseases[3] increasing the need of patient's follow-up by the health staff.

Patients under colorectal cancer treatment may seek the emergency department (ED) for management of chemotherapy and radiotherapy side effects and for the treatment of symptoms from the disease itself, such as intestinal obstruction, pain, bleeding, and surgery complications. According to Caterino et al.,[4] two thirds of ED consultations by cancer patients result in hospital admission, showing that the ED may act as an important gateway for hospital admissions and help in the continuum of cancer care.

The studies by Rivera et al.[5] and Mayer et al.[6] have shown that the most common complaints in patients with cancer seeking the ED are pain, and respiratory or gastrointestinal problems. However, these reasons may vary according to the type of tumor, the patient's geographical region, and to the health care offered locally.

Herein, the colorectal cancer patients' frequency and reasons for seeking ED consultation were studied aiming to obtain information to better prepare the ER staff to meet such situations. Knowing how cancer patients use EDs is a critical first step to improve the patient's care. In addition, we compared the differences between genders.

Methods

This is a retrospective study approved by the local Committee of Ethics in Research. Patients with a confirmed diagnosis of colorectal cancer who attended the ED of a reference hospital for cancer treatment (Hospital Erasto Gaertner), located in Curitiba, Southern Brazil, from January to December 2018, were included. The obtained data included gender, age, disease duration, TNM staging,[7] diagnosis, presence and location of metastases, previous and current treatment, reasons for seeking the ED, diagnosis, proposed treatment, and discharge from the ED. Patients with incomplete data in the medical record were excluded.

Data were collected in Microsoft Excel worksheets (Microsoft Corp., Redmond, WA, USA). The continuous variables were expressed as mean and standard deviation (SD) or median and interquartile rate (IQR) and compared using the t and Mann-Whitney tests. Categorical variables were expressed in percentages and compared using the Chi-squared or Fisher exact test, as appropriate. *P*-values lower than 5% were considered significant. Tests were performed with the help of the software GraphPad Prism 6.0 (GraphPad Software Inc., La Jolla, CA, USA).

Results

Four hundred and forty-six patients (221, or 49.5% males, and 225, or 50.5% females) were included, with ages ranging from 30 to 89 years old (median 63; IQR = 52–70 years). The rectum was the most common tumor location, and most of the patients had TNM staging III and IV. Data for the whole sample and the comparison between males and females is on ►**Table 1**. This table shows that females were younger, and males had more rectal cancer. Furthermore, although the number of patients with metastases were similar, males had more lung metastases (isolated or combined with liver) than females.

►**Table 2** shows the main complaints in patients seeking the ED and the comparison between males and females. It shows that females had more lumbar pain and nausea while males had more bladder symptoms. When the patients' complaints were studied according to tumor location (colon *versus* rectum), no differences were found (all with $p > 0.05$).

Age showed association with abdominal pain (22.6% in those with $\geq$ 60 years vs 34.2% in those with $<$ 60 years with $p = 0.006$; OR = 1.8 (95% CI = 1.1-2.7), weakness (those with $\geq$ 60 years with 5.4% versus 1.5% in those with $<$ 60 years with $p = 0.006$; OR = 3.6 (95%CI =1.4–16.5), and problems with surgical wound (those with $\geq$ 60 years with 4.6% versus 0.5% in those with $<$ 60 years with $p = 0.009$; OR = 9.3 (95% CI = 1.2–72.1); no other associations were found.

The main diagnosis found in the studied sample are on ►**Table 3**, as well as the comparison of their frequency according to gender.

When the outcomes were compared, the results on ►**Table 4** were found. Women tended to be discharged back home earlier, while men showed a tendency towards longer hospitalization.

Discussion

The findings of the present survey showed that both males and females with colorectal cancer, equally, look for consultations at the ED, mainly those with rectal tumor localization and with advanced disease staging. The most common complaints were abdominal pain (similarly found in both genders), nausea (seen more frequently in females), bladder symptoms (more common in males), and problems with the colostomy. The most common diagnoses were infections and acute abdominal pain, and near 20% of the cases were admitted to the hospital. Individuals with abdominal pain were younger; those with weakness and problems with surgical wound were older. These numbers offer important information on the epidemiological profile of the colorectal cancer patients seeking ED for consultations as well as the reasons for these consultations contributing to the understanding of this situation and to establish preventative measures. There are few studies in the literature in which patients are admitted to the ED with a diagnosis of colorectal cancer. Most of the available studies evaluate patients who are diagnosed with colorectal cancer after presenting symptoms in the ED.

Interestingly, a review of 15 other studies has shown that patients with colon and gynecological cancer are those with higher frequency of ED visits when compared to patients with cancer in other locations.[8] Currently, among the reasons that drove ED consultations, the most frequently reported

Table 1 Studied sample description and comparison between males and females (446 patients with colorectal cancer)

	Total N = 446 (100%)	Males N = 221 (49.5%)	Females N = 225 (50.5%)	*P* (*)
Median age (years) (IQR)	63 (52–70)	66 (54–72)	60 (50–69)	**0.0006**
Tumor location				**0.0002**
Rectum	211 (47.3)	123 (55.6)	88 (39.1)	
Rectosigmoid	91 (20.4)	47 (21.2)	44 (19.5)	
Right colon	76 (17)	32 (15.4)	44 (19.5)	
Left colon	40 (8.9)	15 (6.7)	25 (11.1)	
Transverse colon	14 (3.1)	2 (0.9)	12 (5.3)	
Not specified	14 (3.1)	2 (0.9)	12 (5.3)	
TNM staging				0.22
I	7 (1.5)	6 (2.7)	1 (0.4)	
II	87 (19.5)	42 (19)	45 (20)	
III	148 (33.1)	78 (35.2)	70 (31.1)	
IV	147 (32.9)	71 (32.1)	76 (33.7)	
Without staging	57 (12.7)	24 (10.8)	33 (14.6)	
Metastasis				**0.002**
No metastasis	296 (66.3)	147 (66.5)	149 (66.2)	
Liver	70 (15.6)	37 (16.7)	33 (14.6)	
Lung	20 (4.8)	13 (5.8)	7 (3.1)	
Liver and lung	18 (4)	13 (5.8)	5 (2.2)	
Peritoneal carcinomatosis	9 (2)	5 (2.2)	4 (1.7)	
Liver and peritoneal carcinomatosis	7 (1.56)	0	7 (3.1)	
Other	26 (5.8)	6 (2.7)	20 (8.8)	

Abbreviation: IQR, interquartile range.
(*) refers to comparison between males and females.

Table 2 Main complaints at emergency department in the studied sample and comparison between male and females

	Total 446 (%)	Males 221 (%)	Females 225 (%)	*P* (*)
Abdominal pain	123 (27.5)	60 (27.1)	63 (28)	0.54
Lumbar pain	16 (3.5)	2 (0.9)	14 (6.2)	**0.002**[(a)]
Rectal pain	9 (2)	3 (1.3)	6 (2.6)	0.50
Nausea	22 (4.9)	6 (2.7)	16 (7.1)	**0.03**[(b)]
Vomiting	7 (1.56)	5 (2.2)	2 (0.8)	0.47
Diarrhea	19 (4.2)	10 (4.5)	9 (4)	0.72
Constipation	13 (2.9)	4 (1.8)	9 (4)	0.12
Weakness	17 (3.8)	7 (3.1)	10 (4.4)	0.42
Bladder symptoms	21 (4.7)	17 (7.6)	4 (1.7)	**0.003**[(c)]
Dyspnea	14 (3.13)	10 (4.5)	4 (1.7)	0.09
Thoracic pain	13 (2.9)	10 (4.5)	3 (1.3)	0.08
Fever	14 (3.13)	6 (2.7)	8 (3.5)	0.45
Complaints on colostomy	21 (4.7)	12 (5.4)	9 (4)	0.32
Complaints on surgical wound	13 (2.9)	3 (1.3)	10 (4.4)	0.08
Change of consciousness	13 (2.9)	10 (4.5)	3 (1.3)	0.08

(*) – P values refers to comparison between males and females.
[(a)]OR = 7.2; 95% CI = 1.6–32.3.
[(b)]OR = 2.7; 95% CI = 1.08–6.8.
[(c)]OR = 4.5; 95% CI = 1.5–13.8.

Table 3 Main diagnosis at emergency department in colorectal cancer patients and comparison between males and females

	Total N = 446	Males N = 221 (%)	Females N = 225 (%)	P (§)
No diagnosis	210 (47)	–	–	n/a
Infections	46 (10.3)	24 (10.8)	22 (9.7)	0.54
Acute abdominal pain	41 (9.1)	25 (11.3)	16 (7.1)	0.12
Complaints on surgical wound	18 (4)	4 (1.8)	14 (6.2)	**0.01(ª)**
Colostomy problems	15 (3.3)	8 (3.6)	7 (3.1)	0.78
Acute diarrhea	13 (2. 9)	6 (2.7)	7 (3.1)	0.69
Chemotherapy side effects	9 (2)	7 (3.1)	2 (0.8)	0.10
Nephrostomy tube problems	9 (2)	6 (2.7)	3 (1.3)	0.33
Thoracic pain	8 (1.6)	6 (2.7)	2 (0.8)	0.10
Cardiac problems	7 (1.5)	4 (1.8)	3 (1.3)	0.78
Gastrointestinal bleeding	6 (1.3)	2 (0.9)	4 (1.7)	0.54
Anxiety	6 (1.3)	1 (0.4)	5 (2.2)	0.21
Acute respiratory insufficiency	4 (0.8)	2 (0.9)	2 (0.8)	0.89
Ascites	4 (0.8)	4 (1.8)	0	0.059
Others	50 (11.2)	–	–	

n/a- not available; (*) – *P* refers to comparison between males and females.
(ª) OR = 3.6; 95% CI = 1.2–10.1.

Table 4 Main outcomes in patients with colorectal cancer that consulted at emergency department

	Total N = 446 (%)	Males N = 221 (%)	Females N = 225 (%)	*P*
Discharged	357 (80.0)	168 (76.0)	189 (84.0)	**0.03 (*)**
Hospitalization	82 (18.3)	48 (21.71)	34 (15.1)	0.07
Death at the ED	5 (1.1)	3 (1.35)	2 (0.88)	0.87
Sent to another services	2 (0.4)	2 (0.9)	0	0.57

Abbreviation: ED, emergency department.
P refers to comparison between males and females; (*) - OR = 1.6; 95% CI = 1.02–2.6.

were symptom-related complaints, whose control is important to improve patient's quality of life. Pain was the leading symptom as found in other works.[5,6,9]

The use of the ED by individuals with cancer may have negative effects; there is usually a long waiting time; they may be exposed to infections; and these visits increase the treatment costs.[10–12] Studies done in the USA[11,12] have shown that 30 to 60% of ED visits by individuals with cancer are avoidable. Therefore, a better care related to symptom control may help preventing such visits.

The prevalence of rectal cancer is lower when compared to that of colon cancer; it is estimated to be one third of all colorectal cancers.[13] Nevertheless, patients with rectal location of the tumor were those with higher frequency of ED consultations. Other studies have shown that abdominal pain and obstruction are more common in patients with colon cancer than in patients with cancer of the rectum,[14] which may explain the higher rates of emergency presentation in those with colon cancer. The mainstay of rectal cancer treatment is surgical resection.[15] However, anatomic considerations distinguish rectal cancer from those from the colon; local narrowing of the pelvis makes surgical resection more difficult, and the lack of serosa below the peritoneal reflection favors deeper tumor growth, contributing to locoregional spread.[15] Such differences may favor complications and, consequently, ED visits.

Regarding the outcome found in this study, most patients (80%) progressed to discharge, similar to what was observed by other authors studying cancer patients treated in EDs.[11,12,14] It is believed that these patients, who do not evolve to hospitalization or death, seek for emergency services in order to have access to drugs not available at other levels of care, perform low-complexity tests, or for fear of not having effective outpatient care[12]. Thus, improving guidelines in routine consultations and outpatient follow-up can be important to prevent visits to the ED. Furthermore, hospital admission after admission to the ED may be a predictor of increased morbidity and mortality in gastrointestinal cancer.[16]

This study has limitations; its retrospective nature is one of them. Another limitation is that a high number of charts

did not have the final diagnosis. However, it has the advantage of studying a particular type of cancer, which highlights the special needs of this group of patients. It also helps showing the local reality and requirements to achieve a better cancer care.

Concluding, this study shows that the profile of patients with colorectal cancer seeking the ED includes advanced disease and similar proportion of males and females. Symptom-driven complaints were the most frequent reason for consultations. About 80% of patients were discharged home, while nearly 18% were admitted to the hospital.

Author Contributions

All authors contributed to the study conception and design. Material preparation and data collection were performed by C. D. S., E. D. C., D. S. B., A. C. B., E. D. A., F. D. S. T. The data analysis was performed by T. S. and R. N., and the first draft of the manuscript was done by all authors, who commented on previous versions of the manuscript. All authors read and approved the final manuscript.

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Conflict of Interests

The authors have no conflict of interests to declare.

References

1 World Health Organization. Global cancer observatory. Available in https://gco.iarc.fr/. Captured in 2021, august 26.
2 Kuipers EJ, Grady WM, Lieberman D, et al. Colorectal cancer. Nat Rev Dis Primers 2015;1:15065. Doi: 10.1038/nrdp.2015.65
3 Dekker E, Tanis PJ, Vleugels JLA, Kasi PM, Wallace MB. Colorectal cancer. Lancet 2019;394(10207):1467–1480. Doi: 10.1016/S0140-6736(19)32319-0
4 Caterino JM, Adler D, Durham DD, et al. Analysis of Diagnoses, Symptoms, Medications, and Admissions Among Patients With Cancer Presenting to Emergency Departments. JAMA Netw Open 2019;2(03):e190979. Doi: 10.1001/jamanetworkopen.2019.0979
5 Rivera DR, Gallicchio L, Brown J, Liu B, Kyriacou DN, Shelburne N. Trends in adult cancer-related emergency department utilization: an analysis of data from the Nationwide Emergency Department Sample. JAMA Oncol 2017;3(10):e172450. Doi: 10.1001/jamaoncol.2017.2450
6 Mayer DK, Travers D, Wyss A, Leak A, Waller A. Why do patients with cancer visit emergency departments? Results of a 2008 population study in North Carolina. J Clin Oncol 2011;29(19):2683–2688. Doi: 10.1200/JCO.2010.34.2816
7 Jessup JM, Goldberg RM, Aware EA, et al. Colon and Rectum. In: AJCC Cancer Staging Manual, 8th ed, Amin MB (Ed), AJCC, Chicago; 2017:251
8 Lash RS, Bell JF, Reed SC, et al. A systematic review of emergency department use among cancer patients. Cancer Nurs 2017;40(02):135–144
9 Gallaway MS, Idaikkadar N, Tai E, et al. Emergency department visits among people with cancer: Frequency, symptoms, and characteristics. J Am Coll Emerg Physicians Open 2021;2(03):e12438. Doi: 10.1002/emp2.12438
10 Vandyk AD, Harrison MB, Macartney G, Ross-White A, Stacey D. Emergency department visits for symptoms experienced by oncology patients: a systematic review. Support Care Cancer 2012;20(08):1589–1599
11 Brooks GA, Abrams TA, Meyerhardt JA, et al. Identification of potentially avoidable hospitalizations in patients with GI cancer. J Clin Oncol 2014;32(06):496–503
12 Panattoni L, Fedorenko C, Greenwood-Hickman MA, et al. Characterizing potentially preventable cancer- and chronic disease-related emergency department use in the year after treatment initiation: a regional study. J Oncol Pract 2018;14(03):e176–e185
13 Bondeven P. Cancer of the upper rectum. Dan Med J 2016;63(10):B5227
14 Mitchell AD, Inglis KM, Murdoch JM, Porter GA. Emergency room presentation of colorectal cancer: a consecutive cohort study. Ann Surg Oncol 2007;14(03):1099–1104. Doi: 10.1245/s10434-006-9245-z
15 Gaertner WB, Kwaan MR, Madoff RD, Melton GB. Rectal cancer: An evidence-based update for primary care providers. World J Gastroenterol 2015;21(25):7659–7671. Doi: 10.3748/wjg.v21.i25.7659
16 Esteva M, Ruidíaz M, Sánchez MA, et al; DECCIRE GROUP. Emergency presentation of colorectal patients in Spain. PLoS One 2018;13(10):e0203556. Doi: 10.1371/journal.pone.0203556

