Revista O Mundo da Saúde

Epidemiologic profile of colorectal cancer cases in a cancer hospital in Maranhao, Brazil

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Abstract

Colorectal cancer is a malignant neoplasm of the large intestine originated by hereditary, environmental and social conditions according to geographic regions. It is relevant to know which populations in the state of Maranhao are affected by this pathology. The goal of this study is to describe the sociodemographic and clinical aspects of colorectal cancer patients at the Center for High Complexity Oncology Care in Sao Luis, MA. This is a cross-sectional, retrospective study with a quantitative approach. The data were exported from the Hospital Cancer Registry information system, and 455 cases were analyzed from 2010 to December 2014, and were analyzed by descriptive statistics. There was a predominance of females, aged between 60-69 years, and 50.7% are illiterate/low schooling. The predominant topographies of the tumor were rectum and colon, mostly in stage III and IV, receiving multiple treatments, and patients started treatment after 61 days of waiting. Colorectal cancer in the population studied follows the national dynamics of cases identifying as elderly, female gender, low schooling, advanced staging with multiple interventions, needing to wait a time above the recommendation. This reflects in the deficiency of screening actions, early diagnosis, prevention, and disease control, and are fundamental tools in reducing the burden of morbidity and mortality in the population.

Keywords: Colorectal Cancer. Public Health Surveillance. Measures in Epidemiology.

INTRODUÇÃO

Colorectal cancer is a neoplasia of the digestive tract that consists of the appearance of tumors that affect the large intestine beginning from benign polyps of gradual growth in the wall of the colon and/or rectum, which may take several years to become malignant[1]. Thus, there will be an estimated 1.36 million new cases of colorectal cancer per year worldwide[1]. In Brazil, for each year of the 2020-2022 triennium, an estimated 20,540 cases of colon and rectal cancer are estimated in men and 20,470 in women, corresponding to an estimated risk of 19.64 new cases per 100,000 men and 19.03 per 100,000 women. In Maranhao, it was estimated that for the year 2020 there were 5.72 new cases per 100,000 inhabitants for men and 5.81 new cases for women, and is the third most incident cancer in both sexes[2].

Colorectal cancer (CRC) is a multifactorial disease, influenced by genetic, environmental, and lifestyle factors, which, related

DOI: 10.15343/0104-7809.202145606614

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to geographic differences, are associated with risk behaviors such as diet rich in red meats, fats, and processed foods, added to a sedentary lifestyle, obesity, smoking, and alcoholism[3]. However, preventing colorectal cancer (CRC) is based on the premise that the disease develops slowly, taking 10 to 15 years from the onset of the lesion to the onset of cancer, with a survival rate of 92% and 87% for colon and rectal cancer, respectively. If diagnosed at an early stage, as the tumor progresses, the lower the chances of cure are[3-4]. These facts support the implementation of population screening for the purpose of early diagnosis and treatment[5].

In Brazil, this already occurs in screening programs for cervical and breast cancer; however, the viability of these programs is still being studied to also focus on colorectal cancer, given its high burden of morbidity and mortality and magnitude[6]. Although there is no specific screening program for the CRC, the Ministry of Health presents recommendations regarding its management, guiding the broad dissemination of warning signs to the population, access to diagnostic procedures for suspected cases, with a timely and appropriate treatment and an individualized approach in high-risk cases[7].

The diagnosis of CRC is fundamental for establishing the appropriate treatment and it is based on early recognition of signs and symptoms such as hematochezia, changes in intestinal moviment, weight loss, and abdominal cramps, in addition to performing endoscopic examinations (sigmoidoscopy/colonoscopy), laboratorial exams, and pathological analyses[8]. As for treatment, therapeutic possibilities include surgery, chemotherapy, radiation therapy, and hormone therapy. The choice of treatment will depend mainly on the size, location, and extent of the tumor[9].

Primary health care through the Family Health Strategy aims to identify and modify the risk factors for diseases in general, including oncological ones, through strategies that promote health as well as prevent diseases within the population under its responsibility[10]. Therefore, the Ministry of Health recommends the active search for primary care services be carried out in order to facilitate access to the health of the targeted population with a view to the effectiveness of oncologic care[11]. In view of this scenario, the performance of health professionals regarding the orientation of the population concerning risk factors and early detection of colorectal lesions is essential, contributing to a diagnosis and treatment in early stages of the disease, in addition to health recovery and maintenance, planning, coordination, management, and evaluation of care provided to users and families[12].

Thus, the goal of this study was to describe the sociodemographic and clinical aspects of colorectal cancer patients treated at a cancer hospital in Maranhao.

METHODS

This is an cross-sectional, retrospective study with a quantitative approach. Carried out in the State of Maranhao, located in the west of the Northeast Region, with a territorial extension of 331,935,507 km², divided into 217 municipalities, according to data from the 2010 Demographic Census, conducted by the Brazilian Institute of Geography and Statistics, totaling 6,574,789 inhabitants[13]. And thus, the capital Sao Luis is a reference point within the scope of health care in the state of Maranhao. The Aldenora Bello Cancer Hospital is a Center of High Complexity in Oncology that makes up the oncology care network. The research population consisted of colorectal cancer cases from January 1, 2010 to December 31, 2014, reported in the Hospital Cancer Registry Information

System (HCR-IS). Data collection occurred from January to March 2020. The analyzed information consisted of the variables of the Tumor Registration Form (TRF) which are: gender, age group, race/color, education, and marital status. The clinical aspects were: type of tumor, staging, histopathological type, basis for diagnosis, family history of cancer, alcoholism, smoking, treatment performed, final state of the disease at the first treatment, and time for first treatment.

For data analysis, the information was exported from HCR-IS to Microsoft Office Excel 2018 spreadsheet, in which the data was processed by descriptive statistics in absolute numbers and percentages, using the SPSS Statistics Software 20.0. The International Classification of Diseases 10th revision (ICD-10) considers the nomenclatures: (C18.0) for malignant neoplasia of the colon, (C19.0) for malignant neoplasia of the rectosigmoid junction, and (C20.0) for malignant neoplasia of the rectum.

The study was approved by the Research Ethics Committee of the President Dutra-HUUPD University Hospital Unit under the opinion no. 1.749.940, as required by Resolution No. 466/12 of the National Research Council, which regulates scientific research in humans.

RESULTS

From 2010 to 2014, 455 cases of colorectal cancer were reported at the high complexity oncology care center in São Luís, MA. Table 1 presents the characterization of the sample distributed in groups, by gender, age group, race/color, marital status, and schooling.

The distribution by gender was similar among men and women with a slight predominance of females with 50.1% of cases, and a predominant age range of 60 to 69 years old, with a mean age of 58.3 years and a standard deviation of +/- 14 years.

Regarding color/race, there was a predominance of those identifying themselves as brown at 53.4%, followed by yellow at 21.1%. Concerning marital status, 54.2% were married, and the educational level of 50.7% of the patients was distributed among those who did not have any type of education and those who did not complete elementary school, according to Table 1.

Table 2 presents the distribution of clinical aspects of colorectal cancer. It is observed that the locations of the most incident topographic follow-ups were the rectum at 51.6% and the colon at 42.6%, while stages II, III, and IV demonstrated similar prevalence rates at 30.5%, 29.2%, and 31.2%, respectively. Considering the histopathological type, adenocarcinoma was present in 89% of the cases. The histological search of the primary tumor was the most important baseline for diagnosis, totaling 94% of the medical records studied. Regarding family history, 26.5% of the patients had a history of cancer (of any type) in the family. Regarding alcohol consumption, 26.16% consumed or were former consumers, and in relation to smoking, 28.14% of patients used various forms of tobacco or were former smokers.

Table 3 shows the distribution of treatment variables and time elapsed between the onset and diagnosis of the CRC. The treatment performed in 40% of the cases studied consisted of combined treatment (local + systemic), followed by isolated surgery in about 16.4%.

The disease status at the end of the first treatment in 25.4% of the patients was stable, and in 23.3% of the cases there was no evidence of tumors at the time of evaluation. Regarding the time elapsed between the diagnosis of CRC and the beginning of treatment, it was observed that 37.8% took 61 days or more to start their scheduled therapy and that 32.1% of the patients received their first treatment at the time of diagnosis.

Table 1 – Distribution of sociodemographic variables of colorectal cancer patients from 2010 to 2014 in the state of Maranhao, (n=455), Sao Luis-MA, Brazil, 2019

Variables	N	%
Sex		
Male	227	49.89
Female	228	50.11
Age Group (years)		
20-29	23	5.05
30-39	34	7.47
40-49	64	14.07
50-59	97	21.32
60-69	127	27.91
+70	110	24.18
Race/Color		
White	69	15.16
Black	27	5.93
Yellow	96	21.10
Brown	243	53.41
Indigenous	1	0.22
No information	19	4.18
Marital Status		
Single	141	30.99
Married	247	54.29
Widower	48	10.55
Divorced	8	1.16
Civil union	6	1.32
No information	5	1.10
Education		
None	51	11.21
Elementary school incomplete	180	39.56
Elementary school complete	57	14.73
High school	104	22.36
Higher education	23	5.05
No information	30	6.59

Source: HCR/IMOAB, 2019..

Table 2 – Distribuição das variáveis clínicas dos pacientes com câncer colorretal no período de 2010 a 2014 no estado do Maranhão, (n=455), São Luís-MA, Brasil, 2019.

Variables	N	(%)
Topography		
Colon (C18)	194	42.64
Rectosigmoid Junction (C19)	26	5.71
Rectum (C20)	235	51.65
Clinical Staging		
0	5	1.10
I	36	7.91
II	139	30.55
III	133	29.23
IV	142	31.21
Histopatological Type		
Malignant Neoplasm NOS	7	1.51
Epithelial Neoplasm NOS	5	1.10
Squamous cell neoplasia	18	3.86
Adenocarcinomas	405	89.01
Cystic, mucinous, and serous neoplasms	18	3.96
Others	2	0.44
Basis of diagnosis		
Clinical research	1	0.22
Imaging exam	23	5.05
Tumor markers	1	0.22
Histology of metastases	1	0.22
Histology of the primary tumor	428	94.07
No information	1	0.22
Family history of cancer		
Yes	121	26.59
No	127	27.91
No information	207	45.49
Alcoholism		
Yes	64	14.07
Never	144	31.65
Ex-consumer	55	12.09
Not evaluated	162	35.60
No information	30	6.59
Tabagismo		
Yes	18	3.96
Never	163	35.82
ex-consumer	110	24.18
not evaluated	137	30.11
No information	27	5.93

Source: HCR/IMOAB, 2019.

Table 3 – Distribution of treatment variables and time of start of care of colorectal cancer patients from 2010 to 2014 in the state of Maranhao, (n=455), Sao Luis, MA, Brazil, 2019.

Variables	N	%
Performed Treatments	75	16.48
Surgery	76	16.70
Chemotherapy	34	7.47
Radiation therapy	80	17.58
Chemotherapy and Radiation therapy	121	26.59
Surgery and Chemotherapy	8	1.76
Surgery and Radiation therapy	61	13.41
Surgery, Chemotherapy and Radiation therapy	N	%
Disease status at the end of the first treatment		
No evidence of disease	106	23.30
Partial remission	17	3.74
Stable disease	116	25.49
Progressing disease	80	17.58
Oncologic therapeutic support	31	6.81
Death	58	12.75
No information	47	10.33
Time (Days)	**N**	**%**
0	146	32.16
1 – 30	48	10.57
31 até 60	89	19.38
61 ou +	172	37.89

Source: HCR/IMOAB, 2019.

DISCUSSIONS

The cases of colorectal cancer in this study were similar to those in other studies conducted in Maranhao, predominantly in females, showing higher incidence and mortality rates in this group in this state[14-15]. It was observed that although the predominant age group is 60 to 69 years old, starting from 40 years and older there is an increase in the average number of cases per age and a small reduction in the public aged 70 years or more. Stratifying the cases of CRC in the 40 to 69 year old age group, it is noted that the highest occurrence in this group reinforces the findings of international and national studies that showed a decline in cases of CRC in the population over 50 years old, in contrast to the increased incidence among the population under 50 years old[3-2].

Regarding color/race, there was a predominance of brown-skin individuals in this research. In the study by Carneiro Neto *et al.*[16] conducted in Maranhao, they found a majority of cases in brown-skin individuals. It is worth noting that these findings are compatible with data from the last demographic census conducted in Maranhao, in which about 66.9% of the population has brown skin[13]. This is justified by the fact that such data is the result of the self-declaration of the population and that it may be related to a change

in the vision of oneself as an individual and the recognition of one's historical heritage.

Regarding marital status and education, most patients are married and had no education or did not finish elementary school. Similar studies have highlighted the predominance of married women emphasizing that people with this family arrangement have structured social support with better economic conditions, which, possibly due to the marital union, are able to adopt better healthy lifestyle habits collectively due the emotional and family support[17-18].

Regarding schooling, the state of Maranhao in 2018 participated in the National Household Survey which revealed the third highest illiteracy rate in the country, a condition that affects all stages of a person's life. Not being able to read or write makes the individual socially vulnerable to remain in poverty, making it easier to have health problems and to not recognize diseases[17]. Therefore, the relationship regarding the knowledge of prevention, symptomatology, and diagnosis of CRC when compared to the lower and higher educational level presented considerable differences regarding the early recognition of warning signs, identification of risk factors, treatment adhesion, and overall survival rate[19].

As for the clinical aspects of colorectal cancer, it was found that stage III and stage IV cases (more advanced) totaled 60.4% of patients. Similar data was found in international and national studies, where cases of stages III and IV (advanced stage) CRC indicate late diagnoses as a result of the population's access to medical and technological centers[20]. Because cancerous lesions in early stages are mostly asymptomatic, screening programs with the objective of providing less aggressive therapies and greater chances of cure are important[21].

Considering the histopathological type, adenocarcinoma was present in 89% of the cases. CRC develops from benign lesions, adenomas, which are slow to evolve, but have a high potential for malignancy, which is compatible with the findings in the literature[22-23]. Thus, the histological research of the primary tumor was the most important base exam for the diagnosis, totaling 94% of the medical records studied. Obtaining histopathological material through puncture, biopsy, or surgical specimen is essential to define the histopathological characteristics of the lesion as well as the degree of cell differentiation, making the establishment of the most effective therapy for the patient possible[24].

Routinely, the histological sample is obtained together with endoscopic procedures, such as colonoscopy or rectosigmoidoscopy that makes the visualization, detection, and removal of suspicious polyps possible. After the investigation and establishment of the characteristics of the tumor, the planning of scheduled therapy with the patient begins, consisting of isolated surgery, chemotherapy, and/or radiation therapy in neoadjuvant or adjuvant form[25-26].

Regarding family history, 26.5% of the patients had a history of cancer (of any type) in the family. The fact that a family member has cancer does not mean that it will be hereditary; however, it is believed that about 10% of most cancers are due to hereditary changes. In the case of CRC, about 7% are associated with some hereditary conditions, such as familial adenomatous polyposis[27].

Lifestyle has a significant influence on the development of disease. Alcohol is one of the main risk factors for CRC[28]. A recent cohort study in Europe and North America showed a slightly increased risk of colorectal cancer with regular alcohol consumption ≥45g/day, with a 45% risk for colon cancer and 49% risk for rectal cancer, when compared to non-alcohol drinkers in both sexes[29].

With regards to smoking, 28.14% of patients used various forms of tobacco or were former smokers. A randomized clinical trial showed that smoking was associated with a higher risk of one or more adenomas, and former smokers have a slightly lower but still

significant risk compared to those who have never smoked[30].

The main treatments adopted by the institution are in accordance with the therapeutic resources most frequently used in similar studies, where surgical treatments predominate, followed by chemotherapy and surgery associated with chemotherapy and radiation therapy[31-32-33].

Surgery in cases of CRC is considered the gold standard, since it allows resection of the primary tumor and of its regional lymph nodes. Surgical interventions, as well as chemotherapy and radiation therapy, have become promising as to the curative or palliative purpose of the treatment, even if later on it may present complications or metastases during follow-up[34-35].

During the time elapsed between the diagnosis of CRC and the start of treatment, it was observed that part of the patients received their first treatment at the time of diagnosis. This was probably due to removal of the polyp during endoscopic examinations or the need for emergency surgery[36].

The Ministry of Health recommends, through Law 12.732/2012, that the first oncologic treatment should begin within 60 days after the pathology report is signed[37]. It is worth noting that this period only takes into consideration the time elapsed between the admission and treatment of the patient in the specialized oncology institution, not evaluating the time of pilgrimage from the necessary referrals to care[38].

In the study by Dutra *et al.*[39] mortality rates from CRC increased in all Brazilian regions for men and women over a 10-year period. However, in the North and Northeast regions, the annual percentage change in CRC mortality is higher than in the South and Southeast regions. It is worth noting that these are the two least developed regions of the country, and it is necessary to consider the socioeconomic and cultural differences between these places.

It is noteworthy that the differences in mortality rates and their evolution over time may reflect socioeconomic inequalities related to risk factors for CRC and access to health services[40]. Given this aspect, it is relevant to think about the strengthening of primary care in the State, as a gateway and a means to health promotion, as the professionals in the area can develop preventive activities, working through actions aimed both at the individual and family[41].

The limitations of the study are related to data updates, number of blank/ignored information highlighting the need to instigate relevance of filling out the tumor registration form. However, this does not compromise the information presented in this study, because it has strong points, such as the six-year period, the identification of the types of cancer, and the time elapsed between diagnosis and treatment.

CONCLUSION

Colorectal cancer (CRC) is a public health problem in the state of Maranhao in which integrative actions of health care networks and oncologic care, qualified services in the identification of patients for timely diagnosis, and adequate treatment in the time recommended by the Ministry of Health must be carried out.

This study made it possible to describe the profile of the patients affected with CRC, which is very similar to the data published in the literature. The profiles of these patients are as follows: predominantly females, elderly, low education corresponding to elementary school/illiteracy, multiple treatments (local + systemic), a predominant histopathological diagnosis of adenocarcinoma, and waiting time to

start therapy taking more than 61 days to start the intervention.

Given the dynamics of CRC cases, it is important to emphasize that the Family Health Strategy aims to increase educational actions to prevent colorectal cancer in a timely manner in the community, actively seeking suspected cases in order to reduce the possibility of worsening the disease, as well as providing information on lifestyle changes and health education on signs and symptoms of the disease. Therefore, the access to health service makes the identification and treatment of cases agile.

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ACKNOWLEDGMENT: A Coordenação de Aperfeiçoamento Superior de Pessoal - CAPES and The Foundation for Support of Research and Scientific and Technological Development of Maranhão - FAPEMA for funding the research project “Men and women with cancer: meanings, perceptions and implications”, code PVCBS1406-2018 in which this study is included.

Received in january 2021.
Accepted in december 2021.