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EVALUATION OF THE GENERAL DEMOGRAPHIC CHARACTERISTICS OF COLON CANCER PATIENTS: IS THERE A DIFFERENCE BETWEEN MALE AND FEMALE PATIENTS?

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Abstract

Objectives: Colon cancer (CC) is seen in both sexes at the third frequency, and it is the cause of cancer-related deaths at the second frequency despite the advances in diagnosis and treatment. This study, it was aimed to evaluate the patients diagnosed with CC and their general demographic features in Bolu.

Materials and Methods: CC patients' gender, age, body mass index (BMI), the primary location of the tumor, pathological diagnosis, grade, staging, location of metastasis and treatments administered were recorded retrospectively.

Results: Those diagnosed with CC constituted16.54% of all cancer patients during the study period. 199(60.49%) of 329 patients included in the study were male, and 130 (39.51%) were female. The median diagnosis age in men and women was 64 years, the maximal age range of diagnosis was 60-69 years (32.66% and 32.22%, respectively). It was found that 6.53% of men and 26.15% of women were obese. The pathological diagnosis of 317 (96.35%) of the patients was adenocarcinoma, and the highest Grade 2 tumors subsisted (48.63%) (p= 0.696). The most diagnosed stage was stage III in men (36.68%) and stage II in women (38.46%) (p=0.044). While the appeal with the metastatic stage was 25.13% in men, it was seen at 17.69% in women (p=0.044).

Conclusion: In Bolu, CC is among the cancers in the early stage diagnostic screening program. It is important to increase the training and participation in these programs and to provide healthy nutrition and exercise training to avoid obesity which plays an important role, especially in women, in CC etiology. In addition, prospective studies should be carried out to prevent data loss and to reach healthy statistical results in our country.

Keywords: Colon cancer, gender, demographic features.

Introduction

Colon cancer is seen as the third most common cancer after prostate and lung cancer in men and breast and lung cancer in women and cause of death at the second common.[1]

Obesity, inflammatory bowel diseases, diabetes mellitus, smoking and alcohol use, processed red meat consumption, polyp, family history, genetic factors can be counted in CC etiology.[2] Colon adenomas are more common in men and lead to an increased risk of CC. Although the reasons for this are not fully known, gender differences in exposure to hormones and risk factors are thought to be the possible cause.[3]

Obesity is a very important risk factor in the development of CC. It is more common in Western Europe, America and Australia than in India and Africa, suggesting that calorie consumption and nutrition play a role in cancer formation. At the same time, obesity-related insulin resistance, diabetes, and hyperlipidemia also increase the risk of developing CC.[4] The most important determinant factor of prognosis in CC is TNM staging which is done according to the depth of the tumor in intestinal layers (T), lymph node involvement (N) and presence of metastasis (M). It can be shown that other prognostic factors include histology of the tumor, grade, and anatomical localization of the tumor.[4]

This study aimed to evaluate the general demographic characteristics of patients who applied to the medical oncology clinic with the diagnosis of CC in Bolu and whether there is a difference between male and female patients.

Materials and Methods

After obtaining the ethical approval, the data of patients who applied to the medical oncology clinic of our hospital dates between 01.01.2012 and 31.12.2017 were analyzed retrospectively through the file and computer records. Gender age, body mass index (BMI), tumor location, pathological diagnosis, grade, stage, metastasis and treatments administered were recorded. The patients were evaluated as BMI <18.5 underweight, BMI 18.5 – 24.9 normal, BMI 25 – 29.9 overweight, BMI >30 obese. Patients whose files were not available, who had missing file data and were under 18 were excluded.

Statistical analysis

Statistical analyzes were performed by using SPSS version 20 software. The suitability of convenience to normal distribution was examined by visual (histogram and probability graphs) and analytical methods (Kolmogorov-Smirnov / Shapiro-Wilk tests). The men and women groups were compared with the Mann-

Whitney-U test (nonparametric variables) or Student T-test (parametric variables) for continuous variables. Continuous variables were shown as median (minimum-maximum) or mean±SD according to be nonparametric or parametric, respectively. Whether there is a difference in terms of frequency between groups was compared by using chi-square or Fisher tests (where the values observed in cells do not provide chi-square test assumptions) accordingly. The p-value below 0.05 was evaluated as statistically significant.

Results

It was observed that 332 (16.54%) of 1039 male and 968 female patients totally 2007 patients who applied to our hospital's oncology outpatient clinic, were diagnosed with CC**.** One patient was not included in the study because he was younger than 18 years old, and the file data of 2 patients could not be accessed. Data of 329 patients diagnosed with CC were received for consideration.

It was determined that 199 (60.49%) of the patients were male, and 130 (39.51%) were female. The median age of all patients was 64 (min 26-max 87) years, the median age for men was 64 (min 26-max 87), and the median age in women was 64 (min 30-max 87) years.

When the patients were evaluated according to age groups, 106 (32.22%) patients' age were between at most 60-69 age group. There was no difference between men and women. Both sexes were at most 60-69 years old (p=0.160).

When the patients were examined in terms of body mass index (BMI), men who had normal BMI was 34.17%, and women who were overweight was 30.00% constituted the majority. While 13 (6.53%) patients were obese in men, 34 (26.15%) patients were obese in women. The bodyweight index of 96 of the patients could not be calculated since (29.18%) were unknown the patients' weight and height data before diagnosis. The distribution of patients by age groups and BMI are shown in Table 1.

The most common location in men and women was the rectum (38.69% and 45.38%). There was no difference between groups in terms of the location of the primary tumor (p=0.778).

When the histo-pathological diagnosis of CC patients was examined, it was found that 317 (96.35%) of the patients were diagnosed with adenocarcinoma and ring cell carcinoma followed this histology with seven patients (2.17%). There was no difference between the groups in terms of histopathological diagnosis (p=0.394). When the tumor grades of the patients were evaluated, it was found that the most common grade with 160 (48.63%) patients was grade 2. There was no difference between the groups in tumor grade (p=0.959).

Table 1. The distribution of patients according to age and body mass index

	Male (N=199)		Female (N=130)		Total (N=329)		P*
Age (years)	64 (26-87)		64 (30-87)		64 (26-87)		0.916
Age Groups	n	%	n	%	n	%	
< 40 aged	5	2.51	3	2.31	8	2.43	
40-49 aged	9	4.52	13	10.00	22	6.69	
50-59 aged	56	28.14	30	23.08	86	26.14	0.160
60-69 aged	65	32.66	41	31.54	106	32.22	
70-79 aged	52	26.13	28	21.54	80	24.32	
80 aged≤	12	6.03	15	11.54	27	8.21	
BMI (kg/m^2)	25.0±3.7		28.2±5.3		26.4±4.7		<0.001
Weak	3	1.51	1	0.77	4	1.22	
Normal	68	34.17	25	19.23	93	28.77	
Overweight	50	25.13	39	30.00	89	27.05	<0.001
Obese	13	6.53	34	26.15	47	14.29	
Unknown	65	32.66	31	23.85	96	29.18	

BMI: Body mass index: * male, female

When the patients were evaluated according to their stages at the time of diagnosis, the stage diagnosed the most was stage III with 119 (36.17%) patients. Stage III disease with 73 (36.68%) patients in men and stage II with 50 (38.46%) patients in women was more. It was found that in 50 patients with the metastatic stage in men, admission was seen in 50 (25.13%) patients in men and 23 (17.69%) in women. When the patients were evaluated according to the locations of metastases at the time of diagnosis, 42 (12.77%) patients had liver, 10 (2.13%) patients had lungs, 3 (0.90%) patients (ovarian, bone and peritoneum), 19 (5.78%) patients had multiple metastases, and there was no metastasis in 256 (77.81%) patients. The most common site of metastases in male and female patients was the liver.

After the diagnosis of CC, surgical intervention was done to 301 (91.49%) patients. After the diagnosis of CC, curative surgery was done to 254 (77.20%). It was found that 47 patients (14.29%) out of 73 patients in the metastatic stage had palliative surgery, and 28 (8.51%) patients had not any surgical intervention. There was no difference between the groups (p=0.321). The tumor location, pathological diagnosis, grade and stage of the patients are shown in Table 2.

It was observed that there was no treatment indication for 46 (13.98%) of the patients, and 38 patients (11.55%) refused the treatment although they were indicated for chemotherapy. There was no difference between the groups (p=0.572).

Table 2. Distributions of the tumor location, pathological diagnosis, grade and stage of the patients

	Male (N:199)		Female (N:130)		Total (N:329)		P*
	n	%	n	%	n	%	
Location of tumor							
Cecum	18	9,05	13	10,00	31	9,42	0,778
Ascending Colon	19	9,55	10	7,69	29	8,81	
Transverse Colon	8	4,02	6	4,62	14	4,26	
Descending Colon	17	8,54	11	8,46	28	8,51	
Sigmoid Colon	55	27,64	30	23,08	85	25,84	
Rectum	**77**	38,69	**59**	45,38	136	41,34	
Synchronous Tumor	5	2,51	1	0,77	6	1,82	
Pathological Diagnosis							
Adenocarcinoma	194	97.49	123	94,62	317	96.35	0.394
Signet ring cell carcinoma	3	1.51	4	3.08	7	2.17	
Others	2	1.01	2	2,31	5	1.48	
Grade							
1	49	24.62	34	26.15	83	25.23	0.959
2	95	47.74	65	50.00	160	48.63	
3	16	8.04	11	8.46	27	8.21	
Unknown	39	19.60	20	15.38	59	17.93	
Stage							
I	26	13.07	11	8.46	37	11.25	0.044
II	50	25.13	50	38.46	100	30.40	
III	73	36.68	46	35.38	119	36.17	
VI	50	25.13	23	17.69	73	22.19	
Surgical intervention							
Curative	148	74.37	106	81.54	254	77.20	0.321
Palliative	30	15.08	17	13.08	47	14.29	
Unavailable	21	10.55	7	5.38	28	8.51	
Chemotherapy							
No indication	28	14.07	18	13.85	46	13.98	0.572
Chemotherapy	151	75.88	97	72.31	245	74.47	
Treatment Rejection	20	10.05	18	13.85	38	11.55	

*male, female

Discussion

Todays, CC continues to be an important cause of morbidity and mortality all over the world and in our country. According to statistics of Public Health Institution of Turkey, CC is seen with the rate 9% after lung and prostate cancer in men, and after breast and thyroid cancer in women, CC is seen in 3. place with the rate 8%.[5] In our study, it was seen that the patients diagnosed with CC were at a higher rate than this study. As a reason, it was thought that the patients who applied to the only outpatient clinic could be evaluated, and the elderly population could be high in Bolu.

The lifetime risk of CC is higher in men, with a rate of 4% than in women.[1] In our study, it was found that men were 1.5 times more than women. Obesity was significantly higher in women in accordance with the literature. The rate of obese %26.15 and overweight %30 was higher in female patients than in males. Particularly, while the rate of the CC patients aged 80 years and older was 11.54% for women, this rate was 6.03% for men. The reason for this was thought to be that women lived longer than men.

It is known that the incidence of CC increases gradually after 50.[1] In a study in the USA related to this issue, it was found that 89% of the patients were over 50 years old.[6] In our study, the age range mostly seen in CC was 60-69 age range.

CC is generally more common in men than in women.[7] In a study in which ten centers participated in the USA, CC was seen in men with the rate of 49.4%, and the rate was 50.6% in women.[8] In a study conducted by Liu and his friends In China, it was found that 57.5% of patients were male and% 42.4 were female.[9] Similarly, we found that men more than women.

In a study conducted in the Aydın region, 33.1% of CC patients were determined to be female, and 66.9% of patients were male.[10] In a study performed in the Southeastern Anatolia Region, it was found that 57.1% of CC patients were male, and 42.9% were female.[11] In our study, it was found that male patients were more diagnosed with CC than women, similar to Turkey and the world literature.

It is known that obesity increases the risk of the development of CC. In fact, it is thought that the degree of obesity and the risk of developing CC has a correlational relationship among themselves and increases the mortality associated with CC.[12] In a study conducted in Kütahya, it was found that 43.6% of CC patients had high BMI, and there was no significant difference between the overweight patients in terms of distribution of males and females.[13] In our study, it was found that male CC patients were more overweight than women.

In a study with CC patients in England and Scotland evaluating the location of the CC, the most common site of uptake was in the rectum.[14] In the study of Loree and her friends, it was seen that the most common location was sigmoid colon, rectum and caecum in both men and women.[15] In another study performed in Samsun, it was seen that the most common location of cancer was rectum in both men and women.[16] Similar to these studies, in our study, it was found that there was a sigmoid colon involvement after the most common rectum involvement and the least involvement was the transverse colon.

In the study conducted with CC patients in Thailand, the most common CC type was detected as adenocarcinoma of histological subtype.[17] In a study conducted in Jordan, it was observed that the most common was signet ring cell carcinoma following adenocarcinoma of histological subtype.[18] Similar to these

studies, adenocarcinoma was found to be the most common histological subtype with signet ring cell carcinoma, and no significant difference were found between the genders.

Although various methods are used in literature in grading CC, the method used more commonly is the degree of gland formation. Grade (G) 1 tumors were defined as well-differentiated, G2 tumors were moderately differentiated, and G3 tumors were poorly differentiated.[19] In a study conducted with CC patients in Egypt, it was seen that %87.7 of patients had grade 2 tumors.[20] In another study conducted in Ankara, it was found that grade 2 was the most common grade and then grade 3 and grade 1 were seen in CC patients.[21] Similar to the literature, in our study, it was observed that the highest number of patients with CC was grade 2.

The most frequently used system in CC staging is the TNM staging system. It is important to determine treatment and prognosis.[22] In a study conducted in the Netherlands, 17% of CC patients were found to be stage 1, and 23% were stage 4.[23] In our study, it was seen that the rate of men in the advanced stage was higher than women. While stage 3 was more common in men, stage 2 was more common in women.

The most commonplace of metastasis in CC patients is the liver. It is seen lung metastases following liver metastasis in patients.[24] In a study conducted in Sweden, after lung, peritoneal and bone metastases, the liver was observed in both men and women as the most common site of metastases of CC patients.[25] Another study performed by Hugen and his friends it was found that liver metastasis was seen the most commonly and after that lung and peritoneal metastasis.[26] In our study, the liver was the most common site of metastasis.

Surgery is generally the first choice in the treatment of CC, and it can be performed for curative and palliative purposes.

In a study conducted in Istanbul, it was seen that 83.4% of the patients who had surgical intervention due to CC were operated as elective, and 16.6% of patients were as palliative.[27] In another study carried out in Mersin, %86.2 of patients had an operation in elective conditions and %13.8 of patients had an operation for palliative purposes.[28] In our study, similar results were obtained.

In a study performed by Kumar and his friends, it was found that 9.8% of the patients refused treatment despite the indication of chemotherapy.[29] In the study conducted in İzmir, it was observed that 9.3% of CC patients did not receive any treatment.[30] In our study, the rate of refusing treatment was similar.

As a result, in Bolu, CC is more common in men and diagnosed at a higher grade than in women. Though CC is among the cancers being in the early stage diagnostic screening program, the education related to CC screening programs and enhancement of participation of these programs will help to diagnose in the early stage since the patients are diagnosed at a metastatic stage of approximately %25. It was also concluded that it is important

to give healthy nutrition and exercise educations for avoiding obesity, especially those that play a significant role in CC etiology. In addition, prospective studies were thought to be important in order to prevent data losses and reach healthy statistical results in our country.

Ethical considerations: For this study, following the permission of the hospital management on 02.05.2016, numbered 68246970 / 903.99, it was gained ethics committee approval from Bolu Abant İzzet Baysal University Faculty of Medicine ethical committee numbered 2017/63 dated 26.05. 2017.

Conflict of Interest: The authors declare no conflict of interest.

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