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Epidemiology of colorectal cancer in patients admitted to Imam Reza hospital in Kermanshah from 2006 to 2011

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ABSTRACT

Background: The aim of this study was to investigate the epidemiological features of colorectal cancer in Imam Reza hospital in Kermanshah, Iran, in a five-year period.

Methods: This cross-sectional study included all the patients (N=167) admitted to Imam Reza hospital in Kermanshah over a five-year period, diagnosed with colorectal cancer through performing colonoscopy and confirming via pathology. The census sampling was applied, and the data collection tool was a questionnaire on demographic variables, smoking history, and family history of cancer in immediate relatives. The data were analyzed using the descriptive statistics of frequencies and ratios, and the statistical tests of t-test and chi-square.

Results: The mean age of the patients was 58.67±14.31 years old (14-87 years), and 12 % of the patients were under 40 years old. The majority of the patients (52.1%) were males, but no significant difference was found between the two genders in terms of age (P=0.939). The rectum (31.1%), the sigmoid colon (20.4 %), and the ascending colon (18.6%) were the most common tumor sites. Colon adenocarcinoma (96.4%) was the most common reported pathology, 30.5 % of the patients were cigarette smokers, and abdominal pain (22%) was the most common complaint on admission.

Conclusion: Given the results of the present study, it is highly recommended that comprehensive studies should be conducted on screening colorectal cancer in high risk populations in order to reduce the incidence and prevalence of the disease and treat it more effectively based on early diagnosis.

Keywords: ***Adenocarcinoma, Lymphoma, Constipation, Abdominal pain, Gastrointestinal bleeding, Kermanshah.***

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Introduction

Colorectal cancer is the most common gastrointestinal cancer.[1] It has a worldwide distribution and is one of the leading causes of mortality in developed countries, but it is rare in developing countries. Despite this fact, the prevalence of the disease is increasing dramatically in various countries,[2] so that various official and unofficial statistics indicate an increase in the incidence of this disease in the industrialized countries of East Asia including Japan, Singapore, and Hong Kong. Mass migration, adopting the western lifestyle, smoking, alcohol use, age over 50 years, and many other factors have been identified as the risk factors for this cancer.[2] The diversity of the contributing factors of colorectal cancer and a number of 400,000 deaths worldwide each year due to this disease have challenged many communities.[3]

Colorectal cancer is the second leading cause of mortality due to cancer in the US after lung cancer. Only in 2004, 146,940 new cases of colorectal cancer occurred, and 6,730 deaths were reported due to the disease.[4] China previously had a low incidence rate, but in recent years the rate has been increasing due to the changes happening in lifestyle and food habits. The annual average increase in the disease incidence rate in China has been 4.2%.[3]

In Iran, the annual incidence rate of colorectal cancer is approximately 6 to 7.9 per 100,000, and the disease is the fourth most common cancer.[5] With a mortality rate of 1.198 per 100,000, colorectal cancer constitutes approximately 13 % of the deaths from gastrointestinal cancers and 5.3 % of the deaths from causes other than accidents in Iran.[6]

In recent years, there has been a change in the pattern of disease. Studies conducted in various areas of the world indicate a shift of the cancer toward the proximal colon and an increased incidence of the cancer on the right side. This shift to the right, regardless of the reasons, is important in choosing the screening methods. The continuity of the shift to the right has been observed in China, alongside the western countries, due to the changes in food habits.[7] Paying attention to this fact alongside other contributing factors of colorectal cancer in our country can have positive and invaluable results. Therefore, we investigated the epidemiological features of colorectal cancer in Imam Reza hospital in Kermanshah (west of Iran) in a five-year period in order to obtain a better understanding of the disease and pave the way for timely and exact diagnosis of the disease via appropriate and comprehensive programs in the future.

Materials and Methods

AThis cross-sectional study included all the patients admitted to Imam Reza hospital in Kermanshah over a five-year period from 2006 to 2011. The patients had been diagnosed with colorectal cancer through performing colonoscopy and confirming via pathology. The census sampling was applied, and a total of 167 patients with colorectal cancer, admitted to the hospital during this five-year time interval, were considered as the sample size. For each patient, the information related to age, gender, smoking history, clinical signs of the disease, site of tumor in the gastrointestinal tract, type of cancer, and family history of cancer in immediate relatives was extracted from the hospital files and recorded in the designed checklist. The data were then analyzed using the descriptive statistics of frequencies and ratios, and the statistical tests of t-test and chi-square.

Results

Out of a total of 167 patients in this study, 87 patients (52.1%) were male, and the male to female ratio was 1.08. The mean age of the subjects was 58.67±14.31 years, ranging from 14 to 87. The mean age of the males was 58.75±14.81 years, and the mean age of the females was 58.58±13.85 years, showing no significant difference between the genders in terms of age (P=0.939). In addition, 51 patients (30.5%) were cigarette smokers, out of whom 45 were male (51.7% of the male patients and 88.2% of the smokers) and only 6 were female (7.5% of the female patients and 11.8% of the smokers).

The difference in the number of the smoking patients in terms of gender was statistically significant (P≤0.01). A positive family history of cancer in immediate relatives was found in 27 patients (16.2%). The frequencies and percentages of some of the underlying variables are presented in **Table 1**.

The most common anatomical sites of the tumor were the rectum (31.1%), the sigmoid colon (20.4%), the as-

Table 1. Frequency distribution of the underlying variables			
Underlying Variable		**Frequency**	**Percentage**
Age group	Under 40 years	20	12
	40-65	84	50.3
	Over 65	63	37.7
Gender	Male	87	52.1
	Female	80	47.9
Smoking history	Yes	51	30.5
	No	116	69.5
Family history of cancer in immediate relatives	Yes	27	16.2
	No	43	25.8
	Not recorded	97	58

cending colon (18.6%), the transverse colon and the splenic flexure (14.4%), the descending colon (10.2%), and the cecum (5.3%) respectively. In addition, the rectum and the sigmoid colon were respectively the most common anatomical sites of the tumor in terms of gender. In contrast to the tumors in the rectum, the sigmoid colon, and the ascending colon, the tumors in the transverse colon, the descending colon, and the cecum were more common in the females than in the males. The statistical tests did not show a significant difference between the two genders in terms of tumor site (P=0.324). **Graph 1** shows the frequency distribution of the anatomical sites of colorectal cancer in total and separately in terms of gender.

The colorectal cancers in this study were classified into three main groups of the right colon, the left colon, and the rectum cancers. The right colon includes the cecum, the ascending colon, the hepatic angle, the transverse colon, and the splenic angle. The left colon includes the descending colon and the sigmoid colon. The rectum includes the rectal-sigmoid junction and the rectum. The site of the tumor in 64 patients (38.4%) was the right colon, in 52 patients (31.1%) the rectum, and in 51 patients (30.5%) the left colon. The right colon was the most common tumor site in the two genders. No significant difference was found between the two genders in terms of the tumor site (P=0.867). **Graph 2** illustrates the frequency distribution of the anatomical sites of colorectal cancer in the right colon, the left colon, and the rectum groups in total and separately in terms of gender. In terms of type of tumor, adenocarcinoma with 161 cases (96.4%) was the most common pathology, followed by lymphoma with 4 cases (2.4%), and other types of cancer with 2 cases (0.6%). Abdominal pain with 60 cases (28.2%) out of a total of 213 clinical signs recorded in the files was the most common clinical sign in the patients (Some patients had several clinical signs simultaneously), followed by bleeding from the rectum with 57 cases (26.8%), and changes in bowel habits with 56 cases (26.3%).

Discussion & Conclusion

This study aimed to investigate the epidemiological features of colorectal cancer in patients admitted to Imam Reza hospital in Kermanshah, west of Iran, from 2006 to 2011. The mean age of the patients was 58.67±4.31 years,

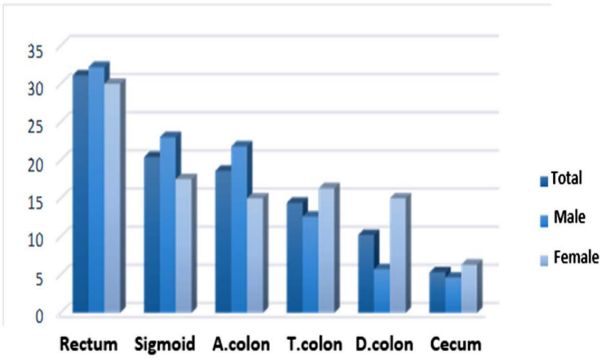

Figure 1: Frequency of the anatomical sites of colorectal cancer in total and in terms of gender.

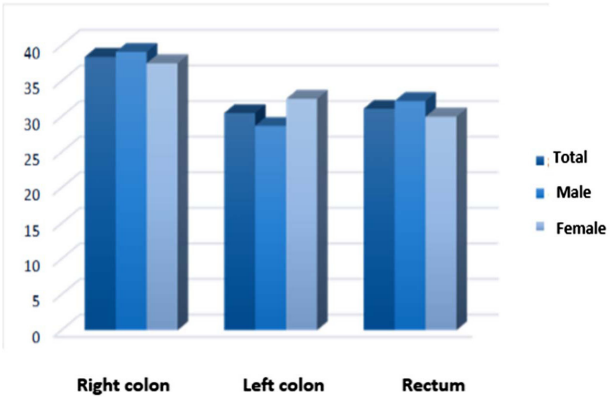

Figure 2: Frequency of the anatomical sites of colorectal cancer in the right colon, the left colon, and the rectum groups in total and in terms of gender.

with a minimum age of 14 and a maximum age of 87 years. The mean age of the patients in our study was higher than the mean ages in the studies conducted in Kenya (49.7 years),[8] Egypt (51 years),[9] and China (55.3 years),[10] but lower than the mean ages in the studies conducted in Jamaica (65.5 years)[11] and Hungary (12.5±65.2).[12] The studies conducted in Iran showed lower mean ages for the patients with colorectal cancer compared to the mean age in the present study.[13, 14, 15] In our study, 50.3% of the patients were in the age group of 40 to 65, 37.7 % in the age group of 65 and over, and 12% in the age group under 40 years. In the study in Nigeria, the cancer was reported in 23% of the patients under 40, and in 16.8% of those over 60 years old.[16] Compared to our study, a higher percentage of the patients in the study in Nigeria were in the age group under 40 years old, while a lower percentage were in the age group over 60. In a study in Hungary, 0.5% of the patients were under 30, 2.5% under 40, and 11% under 50 years old.[12] In the studies performed in Sari,[14] Arak,[15] and Tehran,[17] 33.5%, 17.5%, and 20.4% of the patients respectively were under 40 years old, showing that a lower percentage of the patients in our study were under 40 compared to these three studies conducted in Iran. Most patients with colorectal cancer are diagnosed after the age of 50, and after this age the prevalence of the disease increases steadily. Despite the apparent relationship between colorectal cancer and aging, the disease is not always the disease of the elderly. In the western countries, 6 to 8% of colorectal cancer cases occur in patients younger than 40 years old. The onset of genetic and familial forms of the disease is in lower ages, particularly in the third decade of life.[18] As the results show, the percentages of the patients under the age of 40 in our study and in other studies in Iran are considerably higher than the rates mentioned in the reference books.[19] This difference can be attributed to the younger population of Iran compared to the western communities, Iranian over-50 patients' ignorance of routine screening, increase in harmful habits among the youth, inactivity, obesity, and genetic factors.

In the present study, 52.1% of the patients were male and the male to female ratio was 1.08, and this result is consistent with the results of the studies conducted in Nigeria,[16] China,[10] Hungary,[12] Tehran,[13] Gorgan,[20] Sari,[14] Yazd,[21] and Arak.[15] However, in the study in Jamaica, 57.82% of the patients were female.[11] In our study, the mean age of the males was 58.75±14.81 years, and the mean age of the females was 58.58±13.85 years, showing no statistically significant difference in terms of gender. According to the reference books, the mean age of diagnosis of colorectal cancer is 63 years in males and 62 years in females,[22] being higher than the mean ages of the males and the females in our study.

In our study, the rectum (31.1%) was the most common anatomical site of the tumor, followed by the sigmoid colon (20.4%), the ascending colon (18.6%), the transverse colon and the splenic flexure (14.4%), the descending colon (10.2%), and the cecum (5.3%). These findings are similar to the results from the studies carried out in Nigeria,[16] Tehran,[23] Arak,[15] and Yazd,[21] which reported the rectum, the sigmoid colon, and the ascending colon as the most common sites of involvement. Some studies conducted in other countries show differences in terms of tumor site compared to our study and other similar studies in Iran.[15, 16, 21, 23] In the study in China, the tumor site in 52.2% of the patients was the right hemi-colon, in 25.2% the left hemi-colon, and in 18.1% the rectum.[10] In the study in Jamaica, the most common tumor sites were the right colon (28.5%), the sigmoid colon (20.4%), and the rectum (23.1%), and the ratio of rectal to colon tumors was 3.3 to 1.[11] According to the reference books, the distribution and patterns of tumors in the colon and the rectum are variable, so that the prevalence of the cancers in the right colon is higher in low-risk societies while the prevalence of the cancers in the left colon is higher in high-risk societies.[22] Nevertheless, given that Iran is an area with low risk, the rectum was the most common site of involvement in our study and other similar studies conducted in Iran.[15, 16, 21, 23] Reaching a conclusive conclusion requires that meta-analyzes be conducted in this regard in Iran. Considering that few studies have been conducted in Iran, however, it appears that the first step in this direction is to conduct similar studies in other regions of the country. In our study, the most common tumor sites in the males were the rectum (32.2%), the sigmoid colon (23%), and the ascending colon (21.8%) respectively, whereas the most common tumor sites in the females were the rectum (30%), the sigmoid colon (17.5%), and the transverse colon and the splenic flexure (16.3%). In the present study, no significant difference was found between the males and the females in terms of tumor site. In addition,

according to the classification of tumor site into the right colon, the left colon, and the rectum, the most common tumor site was the rectum in the males (32.2%) and the right colon in the females (37.5%), being similar to the findings of the studies conducted in Arak[15] and Tehran.[23] The differences in the anatomical distribution of the tumor can be justified based on the reference books. Based on the reference books, males are more afflicted with the rectum tumors, and females with the right colon tumors.[18] However, the insignificance of the noted differences in this study may be attributed to the low sample size.

Our study, similar to the other studies in Jamaica,[11] Tehran,[23] Yazd,[21] Arak,[15] and Gorgan[20] reported adenocarcinoma, followed by lymphoma, as the most common pathology, being consistent with the surgical reference books.[22] In our study, 30.5% of all the patients, 51.7% of the male patients, and 7.5% of the female patients were cigarette smokers, and this difference in the number of smoking patients was statistically significant in terms of gender. Although the relationship between smoking and colorectal cancer has not been confirmed so far,[22] the results of a study, which examined the patients with colorectal cancer in Spain from 1951 to 2006, indicated a positive association between smoking and the incidence and mortality of colorectal cancer.[24] On the other hand, the results of a case-control study in the US showed no positive association between cigarette smoking and risk of colorectal cancer.[25] Given that our study was conducted retrospectively and based on the information on smoking recorded in the files of the patients, the rate of smoking in the patients might have been higher than the recorded rate due to the probable carelessness that had happened in recording the information. Furthermore, since no control group was included in our study, smoking cannot be reported as a risk factor conclusively. Therefore, conducting a prospective case-control study seems to be necessary.

Abdominal pain (28.2%), rectal bleeding (26.8%), and altered bowel habits (26.3%) were the most common clinical signs in the present study. The results of the studies performed in Jamaica,[11] Tehran,[23] and Gorgan[20] also reported the above-mentioned clinical signs as the most common with slight differences in the percentage of each of the signs. According to the results of the study by Fateh and Amini in Arak, rectorrhagia was the most common sign in the patients with colorectal cancer.[15] The signs of colon and rectal cancers are non-specific and usually occur when the cancers advance locally. The first classical signs of colorectal cancer include changes in bowel habits and rectal bleeding. Obstruction is usually caused by large tumors, and is the sign of the disease progression. On the other hand, the patient may be asymptomatic or presents with unjustifiable anemia, weight loss, and anorexia.[18]

In our study, 16.2% of the patients had a family history of cancer in immediate relatives, out of whom 6.6 % had a history of colorectal cancer in immediate relatives, and these results are consistent with the results of the study conducted by Jalali et al. in Tehran.[13] On the other hand, the results of the study by Fakheri et al. in Sari reported a higher percentage (24%) of the patients with a history of colorectal cancer.[14] In Safaee et al.'s case-control study, a familial history of different types of cancer was reported by 36.4% in the case group and 24.4% in the control group. Moreover, the results of this case-control study were indicative of a 4.8-fold odds ratio of colorectal cancer in the patients with a positive history of colorectal cancer.[26] Therefore, the lower rate of a familial history of colorectal history in our study compared to other studies could be due to the fact that our study was conducted on the basis of the incomplete information in the patients' files. Conducting a prospective case-control study can be effective in finding the exact rate of family history in colorectal cancer patients and identifying it as a risk factor. Finally, it is recommended that the age, gender, and anatomical patterns of colorectal cancers be studied in a longer period of time, and the results be compared with the results of this 5-year study.

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