Research Article

Prevalence of Colorectal Cancers in Isfahan Province, Iran

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Abstract

Background: Colorectal cancer (CRC) as the most frequent malignant disease of the gastrointestinal tract, shows around 9.5% of all incident cancer internationally. However, different countries report dissimilar rates in incidence, but the rates change with time.
Objectives: The aim of this study was to provide information associated with the CRC rate of incidence in Isfahan Province, Iran.
Methods: This investigation was accompanied by Isfahan Kidney Transplantation Research Center. Data were collected from the Isfahan Cancer Registry. Period prevalence (PP) and incidence rate (Irs) were considered and reported per 100,000 persons.
Results: In all, there were 2623 patients with CRC comprised of 2112 alive and 511 deceased reported individuals. For the total population, the PP was calculated as 52.6 and Irs significantly increased (P < 0.01) from 10.3 to 15.1 per 100,000 people. The mean (SD, range) age of the patients was 62.0 (14.4, 3 - 98) years. The total PP was corresponded to a value of 22.6 for females and 30.1 for males.
Conclusions: There was a 47% increase in the rate of incidence over the investigated period. The PP was 6.8% higher in males than in females. In relation to the age, cancers occurred in 82% after 50 years old of life. Therefore, for allocation of health-care resources and attention toward strategic-based decisions, further studies in this direction seem to be advantageous.

Keywords: Colorectal, Bowel, Colon, Rectum, Cancer, Prevalence

1. Background

Colorectal cancer (CRC), known as bowel cancer and colon cancer, is the progress of cancer from the colon or rectum (1). The incidence of CRC is increasing globally, and the greatest increase is in low- to middle-income countries (2). However, old age and factors associated with lifestyle are responsible in most patients with CRC, but genetic disorders could also be mentioned as another reason for CRC (3). Diet, obesity, and lack of physical activity were mentioned as risk factors. In regards to gender, it affects both male and females equally (4). In fact, CRC was mentioned as a disease of developed countries (accounts for over 63%) with a western culture (5). With a gradual improvement in 5-year survival rate, national statistics have reported reductions in the incidence and death rates (6). The highest CRC incidence rates were reported for North America, Europe, and Australia. There are reports regarding an increase in incidence for Japan, Thailand, and Iran. In regards to Saudia Arabia, the double rate was reported since 1994 (7-9). There is an attribution of half of the incidence associated with mortality due to CRC globally. Survival is extremely reliant upon the stage of disease at finding, and characteristically sorts from a 5-year survival rate at the localized stage; 70% for local and 10% for individuals identified for metastatic cancer. Around 20% of those with development in CRC have a background with a positive family history (10-13).

2. Objectives

Due to Western influences of lifestyle in many countries including Iran, colorectal cancer is on the rise, therefore, this study designed to provide period prevalence (PP) and incidence rates (Irs) data of CRC in Isfahan province, Iran.

3. Methods

In conjunction to the Isfahan Kidney Transplantation Research Centre (IKTRC) data associated with the cancers of colorectal (extracted from the project with the origin source of 295115) were obtained from the Isfahan Deputy of Health associated to the years from 2011 - 2015. De-identified coded file included age, gender, final code for cancer diagnosis and date of reported cancer were recorded in Excel. Mean ± standard deviation (SD) calculated for age, as a continuous variable. Information associated with the population at risk was obtained from Isfahan Program and Budget Management Organization. The

proportion of the total cases over the period of the studied years/to the population at risk $\times$ 100,000 was expressed as PP. The incidence rate was calculated by dividing new cases of cancer during a given time period/to the population at risk during the same time period $\times$ 100,000 (14-19).

4. Results

Table 1 shows demographic and epidemiology characteristic of patients with CRC. In all, 2623 individuals with CRC were identified. For the total population, the PP was calculated as 52.6 in which corresponded to a value of 22.6 for females and 30.1 for males. Figure 1 shows the PP for CRC, according to the anatomical sites as well as; colon, rectum, rectosigmoid junction and anus, analcanal, anurectum that were as follow; 35.5, 12.9, 3.3, and 0.98 respectively.
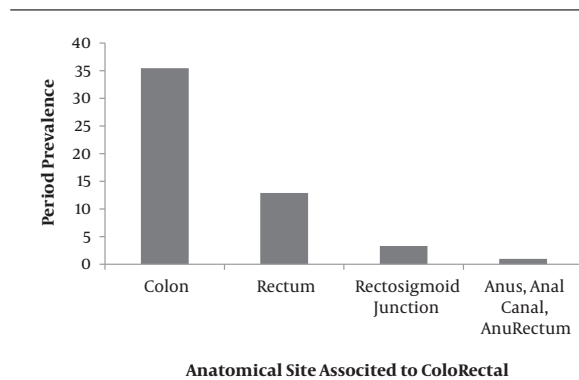

Figure 1. Period prevalence of CRC according to different anatomical parts in Isfahan province, Iran

Figure 2 shows the distribution of age according to gender. With a minimum of three and a maximum of 98, the mean age $\pm$ SD was 62.0 $\pm$ 14.4 years old. The minimum reported age in females with CRC was 19 and in males three years old. Age-related to CRC at the ages from 20 to 50 and 50 to 98 years were as follow; 225 versus 895 (females) and 249 versus 1247 (males).

Figure 3 shows the Irs for the related years of study. The calculated Irs for each year were as follow; 10.3 (2011 - 2012), 13.9 (2012 - 2013), 13.1 (2013 - 2014), and 15.1 (2014 - 2015) correspondingly.

Death informed data was associated with 511 records out of the total population (n = 2623) that was reported.

5. Discussion

CRC is the main cause of morbidity and mortality in which was reported as the third deadliest cancer throughout the world (1). Due to Western influences of lifestyle in many countries, including Iran, the study of CRC is an
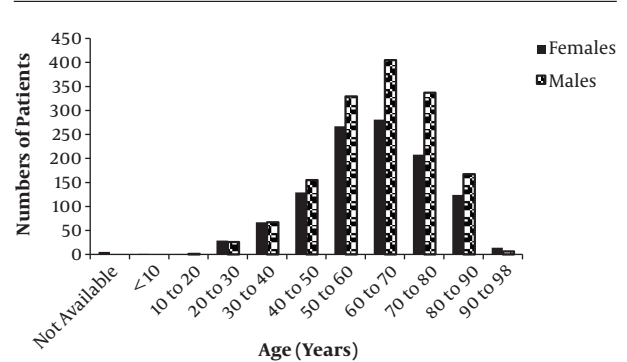

Figure 2. Age distribution in according to gender in patients with CRC
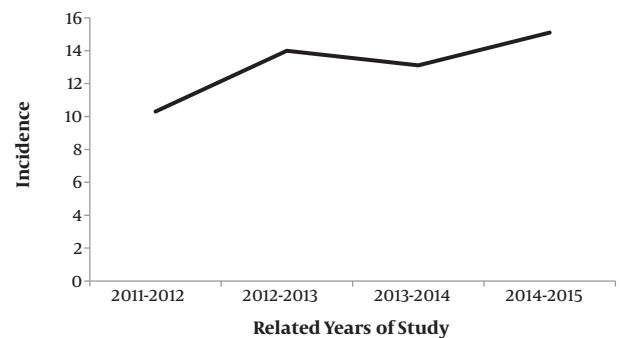

Figure 3. Incidence of CRC in related years of study in Isfahan province

important issue for health authorities (14-19). The mean age of patients in this study was 62.0 year with a tendency associated with 82% of occurrence in older age of life (50 to 98 years). This is in agreement with previous publications that mentioned advanced age as main risk factors in addition to family history and lifestyle (20). In addition, another publication confirmed that incidence of CRC increases with age, in which the highest incidence is observed, is after 75 years and above (13).

In this study, the total PP with a value of 52.6 per 100,000 persons was 6.8% higher in males than females (22.6 versus 30.1), respectively. The previous study confirmed over 55% of male cases. Other studies indicated that the incidence is higher in men. In another study, the sex ratio of males to females was 1.4 (4).

Regarding incidence of CRC, it is different in the world about 20 times, and most cases are reported in Western industrial countries. There was a significant (P < 0.01) increase of 47% in the incidence of CRC from the year 2011 to 2015. According to previously published articles, incidence rates vary ten-fold in both sexes worldwide. The highest estimated rates are found in Oceania with age-standardized rates of 44.8 and 32.2 per 100,000 in men and women and

Table 1. Period Prevalence, Estimated Deaths and Living Colorectal Cancer Cases by Sex, in Isfahan Province/Iran

Sites of Cancers	Total Cases	Period Prevalence	Estimated Living Cases			Estimated Deaths		
			Both Genders	Females	Males	Both Genders	Females	Males
Colon	1767	35.5	1326	606	740	441	178	263
Rectum	644	12.9	586	230	356	58	23	35
Rectosigmoid junction	163	3.3	156	68	93	7	2	5
Anus , anal canal, anorectum	49	0.98	44	16	28	5	2	3

the lowest in Western Africa with age-standardized rates of 4.5 and 3.8 per 100,000 (20).

In agreement with previous publications that reported an increase in both sexes between 2003 and 2008 (in women from 3.92 to 7.78 and in men from 5.56 to 12.7 per 100,000), in this study there was an increase in the incidence of CRC (21). The reason that may explain the increase in incidence could be associated with physical activity and smoking. In addition, in Iran, there are evidence that smoking has increased.

The previous study reported the lowest rate of CRC for Africa (3.6 per hundred thousand) and South Asia, including India and China, (3.6 per hundred thousand) (22, 23).

The results of this study showed that the tendency of CRC in Isfahan province/Iran is increasing. This could be due to alterations in lifestyle, smoking habit, physical activity, and western style, of diet based on fast food. According to the heavy burden of CRC on the health system, the plan for change in strategy based of disease reduction, prevention, and early diagnosis is recommended for health authorities in the Isfahan province/Iran (1-26).

Finally, the PP associated with CRC was with a value of 52.6 per 100,000 persons with a significant increase in the incidence from 2011 to 2015. These outcomes highlighted for a greater effort that should be made for prevention and early diagnosis of CRC in Iran.

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Footnotes

Authors' Contribution: Zahra Tolou-Ghamari completed this study from the idea to the final step of manuscript submission.

Conflict of Interests: There is no conflict of interest regarding to this article.

Ethical Approval: Isfahan University of Medical Sciences for the ethical code No. 295115.

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