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Epidemiological Data on Colorectal Cancer in Albania

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Abstract

Background: Colorectal cancer (CRC) is a common malignant digestive disease, with an incidence worldwide that varies from 5 per 100,000 patients in low income countries to 50 per 100,000 in developed regions. The aim of our study is to evaluate the temporal trend incidence of colorectal cancer in Albania, a country with limited resources for CRC screening.

Study design: This is a retrospective study

Methods: The data were retrieved from the electronic patient files database at the University Hospital Mother Theresa, Tirana, during January 2011- September 2016. Colon and rectum cancers were coded according to ICD-9 diagnosis codes. Duplicate admissions were removed and first admission was used to calculate incidences. Age distribution was reported by sex and age group. Mean annual incidence per 100, 000 inhabitants was calculated using as a reference population the Census 2011 INSTAT, Albania, for Tirana district during 2011- 2015.

Results: A total number of 1529 CRC patients, 861 (56.3%) males and 668 (43.7%) females (M: F ratio 1.28:1) were included. The mean age at diagnosis was 61.95±11.55 for colon cancer and 61.53±11.60 for rectal cancer. Females developed CRC more frequently than males on the 5th and 6th decades. On the 7th decade CRC was more prevalent in males (p=0.006). The mean annual incidence of CRC in Albania resulted 9.7 per 100 000. In Tirana's district, it resulted 13.6 per 100 000.

Conclusions: CRC affects slightly more frequently males than females in Albanian population. The mean age of 61.74 was significantly lower when compared to Western countries. In Albanian female patients the peak incidence of CRC was found a decade earlier than in males. CRC incidence in Albania results distinctively low in comparison to other European countries.

Keywords: Colorectal cancer, epidemiology, Albania.

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INTRODUCTION

CRC is considered the third most common cancer in men and the second in women worldwide. The mortality rates for 2018 are predicted 15.8/100,000 for men and 9.2/100,000 for women. These rates are expected to decline in all age groups (1).

CRC incidence is found to be slightly higher in men than females (M:F ratio 1.4:1). This incidence has a prominent geographical variation mainly attributed to diet and lifestyle (1, 2). Published data suggest that there is a significant relationship between CRC and western diet, which is characteristic in high income countries (3). Actually, due to rapid economic development associated with the westernization of lifestyle, CRC incidence has increased in countries where the overall risk was considered low such as Spain and Eastern Europe (4). Conversely, in developed countries such as Canada, USA, and Western Europe, the incidence is either stable or declining (1). In the USA there is a prominent decline of the incidence of both Colon and Rectal cancers progressively during the end of the 20th century, due to cancer screening programs, based to colonoscopy, with polyp resection, mucosectomy and endoscopic treatment of precancerous lesions (5).

There are few reliable data on CRC incidence in Albania, a developing country, experiencing rapid changes in diet and lifestyle (6). Therefore, in this article, we provide a comprehensive overview of current CRC data, including the evaluation of the temporal trend incidence and location of CRC in Albania, a country with limited resources for colorectal screening.

METHODS

This is a retrospective study, based on data retrieved from electronic patient files database at the University Hospital Mother Theresa, in Tirana, which represents the largest in and outpatient facility in Albania. During January 2011-September 2016, 1529 patients with colorectal cancer were enrolled in this study. These patients were collected in the medical units of gastroenterology, oncology and general surgery. Colon and rectum cancers were reported according ICD-9, 3 digit codes 153 and 154 respectively. The age distribution was reported by sex and age-group. Mean annual incidence of admissions per 100,000 inhabitants was calculated using as a reference population the Census 2011 INSTAT, Albania, for Tirana district during 2011- 2015.

RESULTS

1529 patients diagnosed with colorectal cancer were enrolled in this study, of which 861 (56.3%) were males and 668 (43.7%) were females. Males were slightly more affected than females. The M:F ratio was 1.28:1.

On table 1 we have reported the patients by dividing the colorectal cancer in right-sided and left-sided (descendent colon, sigma and rectum). Our data showed a large number of cases on the left side of the colon (1073 vs 205 = 70.17% vs 13.40%). There was no gender difference between the right-sided group and the left sided group: F:M

= 39.5% vs 60% for right-sided cancer and F:M = 43.3% vs 56.7% for left-sided cancer.

Table 1. Tumor localization divided in left and right-sided

Right-sided Colon: 205	
Females	81 (39.5%)
Males	124 (60.5%)
Left-sided Colon: 1073	
Females	465 (43.3%)
Males	608 (56.7%)
Undefined: 251	
Females	122 (48.6%)
Males	129 (51.4%)
Total: 1529	
Females	668 (43.7%)
Males	861 (56.3%)

On table 2 we have analyzed the location of colorectal cancer on regard of colon and rectum locations, as two different entities and also by gender. Colon cancer was identified in 770 (50.4%) patients, while Rectal cancer in 759 patients (49.6%).

Table 2. Localization of colorectal cancer on regard of gender.

Localization/ Gender	Female	Male	Total
Colon Cancer	338 (43.9%)	432 (56.1%)	770 (100.0%)
Rectal Cancer	330 (43.5%)	429 (56.5%)	759 (100.0%)
Total	668 (43.7%)	861 (56.3%)	1529 (100.0%)

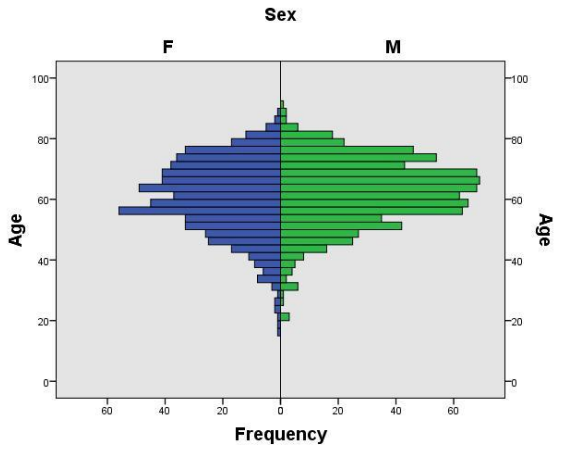
The mean age at diagnosis was 61.74±11.578; respectively 61.95±11.553 for Colon cancer and 61.53±11.606 for Rectal cancer. The mean age at diagnosis for Colon cancer was calculated 60.26±12.334 for females and 62.82±11.144 for males. The mean age at diagnosis for Rectal cancer was calculated 60.62±12.304 for females and 62.07±11.043 for males. There was no gender difference with the total number of CRC cases.

Distribution of colorectal cancer by age-group and gender are shown in table 3 and graphic 1. Results reported a higher frequency on the fifth decade (10.7%). On the sixth decade, there was a significant difference in the distribution, according to the gender, with a higher frequency in females (p=0.006).

Table 3. Distribution of colorectal cancer by age-group and gender.

Age-group /Gender	Female	Male	Total
<30	8 (1.2%)	5 (6.0%)	13 (0.9%)
30-40	25 (3.7%)	19 (2.2%)	44 (2.9%)
40-50	86 (12.9%)	78 (9.1%)	164 (10.7%)
50-60	183 (27.4%)	210 (24.4%)	393 (25.7%)
60-70	192 (28.7%)	314 (36.4%)	506 (33.0%)
70-80	146 (21.9%)	199 (23.1%)	345 (22.6%)
>80	28 (4.2%)	36 (4.2%)	64 (4.2%)
Total	668 (100%)	860 (100%)	1529 (100%)

Figure 1 1. Distribution of colorectal cancer by age-group and gender.



For a further epidemiological analysis, we selected the patients admitted during the period January 2011- December 2015, focusing on the geographical origin of these patients, coming from all Albania's districts. The total number by this selection was reduced in 1356.

Table 4. Incidence of CRC in Albania.

Nr	District	Population	CRC	Inci-dence
1	Tirana	749,365	509	13,6
2	Korça	220,357	147	13,3
3	Berat	141,944	77	10,8
4	Fier	310,331	157	10,1
5	Gjirokastra	72,176	36	10,0
6	Elbasan	295,827	113	7,6
7	Vlora	175,640	65	7,4
8	Shkodra	215,347	74	6,9
9	Kukës	85,292	28	6,6
10	Lezha	134,027	41	6,1
11	Durrës	262,785	72	5,5
12	Dibra	137,047	37	5,4
Total		**2,800,138**	**1,356**	**9,7**

As demonstrated in table 4, Tirana's district with the absolute number of 509 patients presents the highest incidence of 13.6 per 100,000 population. It is followed by Korça with an incidence of 13.3 per 100,000 and then, with lower incidences by Berat and Fier. Mean incidence rate of the total number of patients, from all Albania's districts, is calculated 9.7 per 100,000 inhabitants.

DISCUSSION

Colorectal cancer incidence has a large geographical variation worldwide. It ranges from 50 per 100,000 patients in developed countries, to less than 5 per 100,000 in low income countries (7). Epidemiological studies of CRC in Albania are scarce and therefore colorectal cancer remains a major diagnostic challenge. Published data are usually based on cancer registers of nearby countries (8).

In our study, we collected 1529 patients: 861 males and 668 females. Similarly to other countries, there is a male predominance. Based on the ACS report 2017-2019, CRC incidence rates are 30% higher in men, probably reflecting different approach to risk factors (7). Men tend to have an unhealthier style of life with more alcohol, abuse, smoking, and read meat consumption (9).

Regarding to the localization of colorectal cancer, our data showed a higher frequency of rectal localization compared to the entire colon's length (rectum vs. colon=1:1.014). The rectal cancer frequency is superior than that reported in previous western studies, while the gender differences are similar to those of colorectal cancer in general (10). Anatomically, the colon and rectum are very different in location, blood supply, drainage and innervation. These differences result in dissimilarities in the invasive

growth of the primary tumor, as well as surgical approaches and treatment outcomes (11). There are also etiological differences between Colon cancer and Rectal cancer. Various studies indicate that high body mass index, low physical activity and dietary parameters such as high intake of beef, pork or lamb, processed meat and alcohol are risk factors for Colon cancer, but not for Rectal cancer (12-14).

If we divide the tumors of left-sided and right-sided colon, we notice (tab 1) a significant higher localization of CRC on the left-side (70.17%). This distribution is similar in both genders for left and right-sided colon cancer. Literature data have outlined that the clinicopathological differences between left and right-sided colon cancer might be due to embryological origins, gene expression profiles and physiological and biological characteristics, thus suggesting that the carcinogenetic mechanism and progression of colon cancer may develop in different pathways (15-17).

The mean age of diagnosis for CRC in Albania is 61 years old, both for colon and rectal cancer. We notice a lower mean age in our country compared to the US, where the mean age for colorectal cancer at diagnosis is 68 years old in men and 72 years old in women; for rectal cancer it is 63 years old in both men and women (7).

Our group of patients showed a high incidence on the fifth decade (10.7%), with the highest peak on the sixth and the seventh decade (respectively 25.7% and 33.0%). On the ninth decade we noticed a significant reduction of cases (4.2%). Relying on these results, we can say that in Albania, similarly to other countries (18), the incidence rate begins to increase significantly during the fifth decade of life, between the ages of 40 and 50. In western societies, 90% of diagnosed cases occur after age 50 (19). However, CRC can occur at any age and the incidence of this tumor in patients younger than age 40 has increased in recent decades (7). Reasons for this change, may be related to sedentary lifestyle and increased obesity in the young age-group (20).

By analyzing age-groups by gender, differently from the general trend with a continuously male predominance, there is a switch on the sixth decade with a higher incidence rate in females ($p=0.006$). This change is probably related to the menopause. Increasing evidence shows that during the menopause, higher estrogen levels in the blood, increase the risk for colorectal cancer. Sedentary life and gaining weight are also risk factors for this age-group (7).

From January 2011 to December 2015, we collected 1356 cases with colorectal cancer, from all Albania's districts. Tirana's district, with the highest number of patients, has also the highest incidence of 13.6 per 100,000 inhabitants. Similar to Tirana, Korça has an incidence of 13.3 per 100,000 inhabitants, followed by Berat and Fier. The lowest rate is in Dibra's district: 5.4 per 100,000 inhabitants. Mean incidence rate of the total number of patients is calculated 9.7 per 100,000 inhabitants. Due to the fact that in Tirana lives approximately 1/3 of our population, of urban and rural provenance (because of

immigration), we can consider its incidence of 13.6 per 100,000 inhabitants, as representative of the entire Albanian population. This incidence is distinctively low if compared to Eastern and Western European countries, and also to the US (7, 8).However, it is important to recognize that in the US there is disparity between different racial groups. Incidence rates of CRC are highest in non-Hispanic blacks (NHBs) and lowest in Asians/Pacific Islanders (APIs) (7, 21). Reasons for racial/ethnic disparities in CRC are complex, but largely reflect differences in socioeconomic status that result in differences in access to early detection tests and the receipt of timely, high-quality treatment (5, 22-24).

In nearby countries, such as Italy or Serbia the incidence is also higher than ours, respectively 33.9 and 32.6 per 100,000 inhabitants. It is important to notice specifically the incidence rates in Greece: 15.4 per 100,000 in males and 11.5 per 100,000 in females (25). These rates are closer to the incidence rates of our country, probably because of the similarities in eating habits and lifestyle.

Low incidence of colorectal cancer in our country, is probably related to our eating habits. There is evidence of a higher risk for CRC in western societies, where people tend to eat more processed food than those living along the Mediterranean coast, who have a decreased overall cancer incidence, which is correlated to their eating habits, such as Mediterranean diet (26). In Albania, similarly to other Mediterranean countries, the consumption of fresh fruits and vegetables on a daily basis is higher than the consumption of processed food.

CONCLUSION

The epidemiological findings on colorectal cancer in Albania show a male predominance of CRC, similar to other countries. Mean age of both colon and rectal cancer is 61 years old. This age is lower compared to studies in the US and Western Europe. We noticed a significant female predominance on the sixth decade, probably related to menopause and sedentary lifestyle of this age-group. Mean incidence of the total number of CRC patients from all Albania's districts is calculated 9.7 per 100,000 inhabitants. However, we may consider Tirana's incidence of 13.6 per 100,000 inhabitants as representative of our country, due to the fact that in Tirana lives approximately 1/3 of the entire population. This low incidence is probably related to the eating habits of our population based on the Mediterranean diet.

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