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Risk Factors of Colorectal Cancer in Hospitalized Patients in Regional Hospital Durrës

Naim Mediu[1], Ridvana Mediu[2]*, Ridvan Alimemeti[3]

[1]Chirurgical Wards, Regional Hospital Durrës, Albania; [2]Logos University College, Tirana, Albania; [3]University Hospital Center "Mother Teresa" Tirana, Albania

Abstract

BACKGROUND: Globally, colorectal cancer (CRC) is the third most prevalent diagnosed malignancy, second leading cause of cancer death.

AIM: This study aimed to investigate the risk factors of colorectal cancer in surgical wards in Regional Durres Hospital in Albania during the years 2009–2011.

METHODS: Retrospectively, we've been in charge of a retrospective cohort study to explore risk factors of colorectal cancer at the surgical ward of the Regional Hospital Durres which is the second largest and a referral hospital center in Albania. This material has summarized medical records of 79 adults 18 years of age and older with initial diagnosis of CRC admitted to this hospital during the periods January 2009 until to December 2011. Data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 23.0. $p < 0.05$ was accepted as statistically significant.

RESULTS: Overall, 79 patients with CRC enrolled in the present study, the males (58.2%) were the most predominant gender compared to females (41.8%) with a strong significance between them $\chi^2 = 79.0$ and $p < 0.0001$. The average age was 69.43 ± 10.6 where the minimum age resulted 42 years old and the maximum 85 years old. Patients between the age groups of 61 and 70 years old were 29.1% of CRC cases, those with the age group of 71–80 years old presented the higher number of CRC 34.2% of cases. A strong significance association has been noted among the age groups and presence of CRC. There was found a significance association for some of risk factors of CRC such as gender, aging, marital status, education level BMI and physical activity. The p value in all these risk factor resulted < 0.05.

CONCLUSION: The prevalence of this malignancy in the material in question increases after the age of 60 years. The numerous studies we've done show that the presence of CRC was in strength association with some of risk factors. In this case, the number of patients was low, belonging to us observations, we suggest that the future studies should involve a large number of patients and focus on better understanding mechanisms for some of these associations and presence of CRC risk.

Introduction

Colorectal cancer (CRC) is the most common gastrointestinal cancer with an important global health problem. Worldwide, CRC is the third most prevalent diagnosed malignancy after lungs and breast cancer [1]. CRC affects more than 1 million individuals each year and causes 694,000 deaths in both sexes with almost equal gender distribution [2]. Although CRC occurs mainly in Western and industrialized countries, the incidence of this neoplasm has also increased in traditionally low incidence regions since 1950 [3].

The global burden of CRC is expected to increase by 60%, to over 2.2 million new cases and 1.1 million annual deaths, by the year 2030. This high growth figure is expected as a product of the economic development of transitioning and low-to-medium HDI nations (Human Development Index), as well as generational changes in developed nations. Increases in the incidence of CRC seem to increase uniformly with economic development [4].

The incidence of CRC is influenced more heavily by age than any other demographic variable. Sporadic CRC is rarely diagnosed before the age of 40. The incidence of this malignancy increases dramatically between 45 and 50 years of age, with 90% of cases occurring after the age of 50 years; consequently, deaths from CRC begin to increase slowly in the fifth decade of life, rising steeply with advancing age [5].

CRC incidence has been steadily rising worldwide, especially in the developing countries that are adopting the "western" way of life. Lifestyle or environmental factors play an important role in CRC [6], [7], [8]. Some of these factors such as obesity, sedentary lifestyle, red meat consumption, alcohol, and tobacco are considered the driving factors behind the growth of CRC [9]. This study aimed to investigate the risk factors of colorectal cancer in surgical wards in Regional Durres Hospital in Albania during the years 2009–2011.

Methods

Study design

A retrospective cohort study had been conducted to explore risk factors of colorectal cancer at the surgical ward of the Regional Hospital Durres which is the second largest and a referral hospital center in Albania.

Study population

The medical records of 79 adults aged over 18 years with primary diagnosis of CRC admitted to this hospital during the periods January 2009 until to December 2011 were collected. Classification of diseases and diagnostic information is coded according to the International Classification of Diseases, Version 10 (ICD-10) [10]. The information presented on demographic characteristics, administrative diagnosis and procedure, biochemical and tumor marker laboratory testing, evidence, as well as clinical data of CRC pathology and grade of tumor were recorded for all patients.

Inclusion criteria

All patients with CRC tumor's type admitted to the hospital during the periods January 2009 until to December 2011.

Exclusion criteria

Patients admitted to the hospital during the periods January 2009 until to December 2011 with other tumor's type and histopathological confirmed non-malignant tumors were excluded from the study.

Statistical analysis

Data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 21 and summarized using descriptive statistics of frequency, as well as mean and standard deviation. Chi-square and Fisher exact tests were used for categorical variables while Student t-test and Mann-Whitney U test were used for continuous variables. Multivariable logistic regression estimated odds ratios (OR) adjusted for the potential correlation between the risk factors: Gender, age, and other risk factors. Differences between samples were considered significant at $p < 0.05$.

Results

A variety of potential lifestyle risk factors that contribute to CRC has been identified during the studies. The distribution of female versus male cases according to age groups is presented in Figure 1.

The risk factor for 79 patients with CRC enrolled in this study is presented in Table 1. Throughout the analysis of group patients, males (58.2%) were the most predominant gender compared to females (41.8%) with a strong significance among them Chi-square 79.0, $p < 0.0001$.

Table 1: Risk factors for colorectal cancer

Variables	Number of cases	Percentage	p value
Sociodemographic			
Gender			<0.0001
Female	33	41.8	
Male	46	58.2	
Age groups (years)			0.02
40–60	17	21.5	
61–70	23	29.1	
71–80	27	34.2	
≥81	12	15.2	
Education level			0.03
Illiterate	9	11.4	
Elementary/secondary	52	65.8	
University	18	22.8	
Marital status			0.042
Single	4	5	
Married	42	53.2	
Divorced	16	20.2	
Widow	17	21.5	
Employment status			0.071
Employed	35	44.3	
Unemployed	44	55.7	
Medical			
Family history of CRC			0.002
Yes	26	32.9	
No	53	67.1	
BMI, kg/m^2			0.0038
≤25 kg	11	13.9	
26–30 kg	39	49.4	
>30 kg	29	36.7	
Comorbidities			0.85
Yes	42	53.2	
No	37	46.8	
Habits			
Smoke			0.0012
Yes	51	64.5	
No	28	35.5	
Alcohol			0.34
Yes	39	49.4	
No	40	50.6%	

The mean age was 69.43 ±10.6 with a range 42–85 years old. Regarding the age groups, all CRC cases are grouped in five categories. The age group of 40–50 years old presented only 6.3% of cases, the age group of 51–60 years old was 15.2% of CRC cases. Patients between the age groups of 61and 70 years old were 29.1% of CRC cases, those with the age group of 71–80 years old presented the higher number of CRC 34.2% of cases, while those aged ≥ 81 resulted 15.2%. A strong significance association has been seen between the age groups and presence of CRC.

In terms of education level, 1.4% of patients had not any of education level, Elementary/Secondary education level referred 65.8% of patients and University referred 22.8% of patients. There was found a significance association for education level as a risk factor and CRC for 95% CI p value resulted 0.03. In addition, related to marital status of patients, only 5% were single, divorced 20.2%, widow 21.5%, and the most predominant cases were married 53.2%. There is an association between the marital status and presence of CRC among patients p = 0.042.

Majority of patients of this analysis were unemployed (55.7%) in the time that coming in hospital versus 44.3% employed. In this case, there is no association between employment status and CRC for 95% CI p > 0.05. Family history of CRC is a significant risk reported in more researches. In the examination of the case in question, we found that 32.9% of patients had a familiar history with CRC, and the others 67.1% do not have. A strong significance was found between the family history and presence of CRC among patients for 95% CI p = 0.002. Body mass index (BMI) is notice as a significant risk factor in patients with CRC. Concerning this factor, in healthy weight, ≤25 kg resulted 13.9% of patients, in overweight, 26–30 kg resulted almost the half of patients with CRC 49.4%, and in obesity, >30 kg resulted 36.7% of patients. A strong association was discerned among the BMI and presence of CRC for 95% CI p = 0.0038.

There is no association between comorbidities and presence of CRC. Patients with comorbidities were 53.2% and those without comorbidities 46.8%. As observed in the first table, related to the habits of patients, almost half of them 49.4% were alcohol consumers and the others 50.6% were not. Even in this case, there is not found an association. p value resulted > 0.05. Oppositely, for smoke, 64.5% were current smoker and the rest did not turn out that way. A strong association was found between the smoke and presence of CRC for 95% CI p = 0.0012.

Table 2 shows characteristics of CRC and a comparison between early and late onset of CRC. In terms of CRC features, most of the patients were in the late onset of CRC 68.4% 54/79 of patients and on the early onset of CRC 31.6% 25/79 of patients. Regarding the site of colon, in the early onset, 28% have CRC in the right site, 40% in the left site, and 32% in rectum., toward late inset 32.5% in the right site, 38.9% in the left site, and 25.9% in rectum. The most predominant number of patients were in the late stage of CRC, respectively, 62.1% for the early onset and 56% in late onset. Even for the grade of CRC, most of the patients were in high grade. In terms of onset of CRC, about 36.7% of patients resulted on early onset and 63.3% of them on late onset. The results of multivariable analyses showed an association only for the late stage of CRC (Table 2).

Table 2: CRC characteristics; comparison of early onset versus late onset of CRC

Variables	Early onset		Late onset		Odds ratio 95% CI	p value
	No.	%	No.	%		
Site of colon	25	31.6	54	68.4		
Right colon	7	28	19	35.2	Reference	
Left colon	10	40	21	38.9	1.34 [0.5–3.7]	0.057
Rectum	8	32	14	25.9	1.74 [0.5–5.8]	0.36
Stage of CRC	29	36.7	50	63.3		0.001
Early	11	37.9	22	44	Reference	
Late	18	62.1	28	56	2.4 [1.3–4.2]	
Grade of CRC	23	29.1	56	70.9		0.7
Low	9	39.1	24	42.86	Reference	
High	14	60.9	32	57.14	1.16 [0.43–3.1]	

Discussion

This detailed material presents a retrospective cohort study to investigate the risk factors for CRC at the surgical ward of the Regional Hospital Durres. Overall, 79 patients with CRC enrolled in this study, the male (58.2%) was the most predominant gender compared to female (41.8%). The role of gender in the development of colorectal cancer remains unclear. The predominance of males versus females in the study in question is similar with another study [11], [12]. In addition, in a quantitative analysis of body mass index and colorectal cancer: Findings from 56 observational studies by Ning *et al*. [13] present a stronger association in males compared with females. This fact turned out to be the same as that done in this study, in which there is found a strong significance among males and presence of CRC χ^2 = 79.0 and p < 0.0001.

In more studies were reported the role of risk factors such as BMI, family history of colorectal cancer, inflammatory bowel disease, and habits (smoking tobacco and drinking alcohol) that contribute in developing colorectal cancer [14], [15], [16]. Evidently, this study shows that there is an association between some of the risk factor for CRC such as aging, marital status, education level, BMI, and habits (smoke). The p value for these risk factor resulted <0.05.

In relation to the family history of CRC, there is an association between positive family history of colorectal cancer and colorectal cancer occurrence. This may be explained by genetic predisposition or sharing same life habits and social characters, which is in agreement with many researches showing that a family history of colorectal cancer increases the risk of having this disease [9], [16], also the finding under discussion is in accordance with Heavy *et al*. in 2004 [17] who reported that hereditary factors play a definite role in CRC occurrence.

If we are going to make a comparison between employment status with unemployment, we realize that unemployment carries more risk to have CRC and this may be due to more sedentary lifestyle among unemployed contrary to employed. No indeed significant difference was observed for the employment and unemployment status in study in question. It is worth noting that for alcohol status was not found a significant association with the presence of CRC.

Early-onset CRC (aged ≤50 years) is regarded as a marker of a hereditary syndrome for as long as it shows proximal location. Early-onset CRC is associated with aggressive tumor characteristics, distal location, and systemic therapy use. Despite some adverse risk factors, these patients tend to have better survival than older onset patients [18], [19]. According to the CRC characteristics among patients, most of the patients were in the late onset of CRC 68.4% of patients and on the early onset of CRC 31.6% of patients. The left side
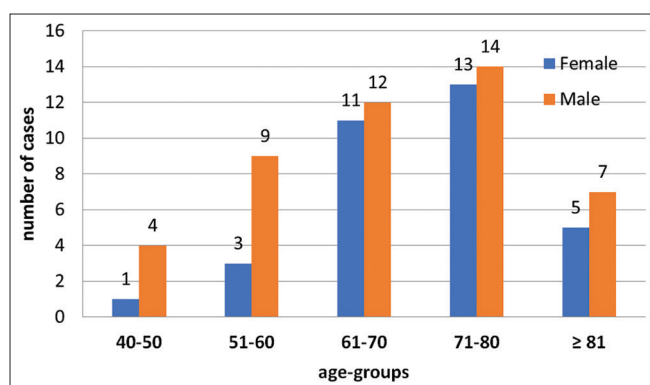
Figure 1: Distribution of female versus male cases according to the age groups

of colon, late stage of CRC, and high grade of CRC presented the highest number of patients compared to the right site of colon, early stage, and low grade of CRC.

The limitation of this study comes mainly from low number of patients involved. This may introduce an element of selection bias for cases.

Conclusion

The findings of this study show that the presence of CRC was in strength association with some of risk factors. The most predominant cases were in late onset of CRC. These results may inform future research on the risk factors underlying early-onset CRC. We recommend more attention on improvement of standardized system for screening of people that are at risk and especially the elderly. The early detection of colorectal cancer and provision of health educational information, with good knowledge about the risk factors for CRC may be will enhance the awareness among population worldwide regarding this disease. In the case in question, the number of patients was low, so based on these observations, we suggest that future studies should involve a large number of patients and focus on better understanding mechanisms for some of these associations and presence of CRC risk.

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