Risk Factors of Colorectal Cancer in Northwest Iran

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Abstract

Purpose: Environmental and lifestyle factors are believed to play an important role in modifying incidence of colorectal cancer which is currently the third most common cancer in all over the world. This study was aimed to determine epidemiological findings regarding the association between risk factors and colorectal cancer among the northwest Iran population.

Methods: To examine the association between risk factors such as life style, familial history, diabetes, hypertension and colorectal cancer risk, we conducted a cross sectional study which included 100 patients who suffered colorectal cancer and attended in radiotherapy department of Imam Reza Educational-Medical center which is the most advanced referral center in northwest Iran.

Results: Patients consisted of 30 female and 70 male (mean age was 49.3±5.1 years old). Low physical activity, low fiber diet, obesity, smoking, diabetes, hypertension, and dyslipidemia were found among 96.9%, 62.2%, 41%, 42%, 27%, 37% and 27% of patients respectively.

Conclusion: Life style, low fiber diet, low physical activity and metabolic syndrome were found to have statistically significant relation with colorectal cancer. Considering results of this study, preventive programs should be modified, therefore programs for controlling burden of colorectal cancer might improve.

Introduction

Colorectal cancer is the third most common cancer and second most common cause of death caused by cancer in both male and female [1]. In Iran, which colorectal cancers are one of the most prevalent cancers, incidence and 5 year-prevalence contributed to colorectal cancer is respectively 6.9% and 8.4% [2]. Environmental factors, especially diet, are likely to contribute strongly to the etiology of colorectal cancer [3, 4]. Several studies suggest alcohol consumption and a diet high in meat may be associated with increased colorectal cancer risk, also other factors suggested as possible contributors to increased risk are male gender, diets high in sugar , high body mass (colton only), greater adult height (colton only), frequent eating, high fat intake, and consumption of eggs [5-7]. It is believed that family history is one of the strongest risk factors for the development of colorectal cancer. About 15% of individuals with colorectal cancer have a close relative affected by this disease [8-11]. There is an evident need for an organized colorectal cancer screening programs throughout Iran. This study was aimed to search for risk factors of colorectal cancer in the most advanced referral center of Northwest Iran, so sufficient and efficient information is acquired for performing case control studies which proposes guidelines for screening of colorectal cancer.

Methods

During present cross sectional study which was consisted of 100 patients who had developed incident colorectal cancer and attended radiotherapy department of Imam Reza Medical-Educational Hospital which is the main referral center in
Northwest Iran, between the year 2004 and 2011. The information were collected by a checklist prepared according to the previous similar studies[12, 13]. This check list included variables about some demographic information (age, sex, living location), socioeconomic condition, obesity (Body Mass Index (BMI) over than 30) and Past Medical History (PMH). The data were collected from patients’ medical records. Also, patients’ telephone number was used to acquire further information.

The data was analyzed by SPSS™ statistical software version 16.0 using Chi - square test or Fisher’s Exact test. P-value less than 0.05 was considered as statistically significant.

**Results**

A hundred patients were investigated (30 female and 70 male) who had developed colorectal cancer. Mean age of patients was 49.3±5.1 years and patients age ranged from 39 to 59. Twenty-one patients had familial history of colorectal cancer; among them 17 cases were male and 4 cases were female. (P=0.143). In 76 cases familial history was negative. Among patients, 12 cases had history of colitis and 11 cases had history of polyp positive. Only 3 cases had appropriate physical activity (at least 150 minutes of activity with moderate intensity or 75 minutes of activity with vigorous intensity) (2 male, 1 female). Of all patients, 94 cases had low physical activity. Also 41 cases were obese (defined as a BMI>30 kg/m²) and 59 cases of them had BMI <30 kg/m² and 30% of them were overweight. Of habits, 42 cases smoked cigarette and 30 cases consumed alcohol. Only three cases had positive history of cholecystectomy. Twenty- seven cases had diabetes. High Fasting Blood Sugar (FBS) indicating diabetes mellitus was not found.

About 50 % of diabetic cases were obese, but it was not statistically significant (P=0.580).Among patients, 37 cases had history of hypertension. Statistically relation between diabetes and hypertension was significant. Of all diabetic patients (27 cases) 18 had hypertension history (P<0.001). Of all patients with dyslipidemia (high total cholesterol, high low density lipoprotein, high triglyceride and low high density lipoprotein) (27 cases) 18 had hypertension history (P<0.001). Also 37 cases in daily program had high fiber dietary and 63 had low fiber dietary. This information was acquired via telephone contact. Frequency of some other risk factors are also shown in Figure 1.

**Discussion and Conclusion**

According to the results, there was a statistically significant relationship between life style, low fiber dietary, low physical activity, metabolic syndrome and colorectal cancer. According to mean age of patients, the incidence peaks in late 40s. It was observed that a rather rapid convergence toward native levels of Colorectal cancer mortality. Such a convergence was also found in other countries, including migrants originating from the Mediterranean region [14, 15]. Although there is no agreement yet on the most important causes of colorectal cancer, high consumption of red meat and alcohol, low consumption of vegetables, fruits, and micronutrients, and low physical activity are likely to play an important role in the observed increase in incidence and mortality risks [16, 6]; this is similar to present study’s findings.

The traditional diet of migrants, rich in fruits and vegetables and with generally lower red meat consumption is likely to have had a persistent protective effect against colorectal cancer among migrants in the Netherlands [17]; as our results in figure 1 shows that high BMI and low fiber dietary are important risk factors.

Excess body weight is the third most common avoidable cause of cancer in the United Kingdom, estimated to be responsible for 5.5% of cancers in 2010 (4.1% in male, 6.9% in female) [18]. In our study 94% had low physical activity. 41 cases were obese and 59 cases of them had BMI <30 and 30% of them were overweight. Obesity and diabetes are established risk factors for colorectal cancer but have mainly been assessed independently. Out of the markers of the metabolic syndrome assessed, overweight and diabetes are risk factors for colorectal cancer, whereas, in contrast to their role in cardiovascular disease, elevated blood pressure and hypercholesterolemia are not [19]. In our study nearly 50 % of diabetic cases were obese, but statistically analysis was not significant. In 37% of cases, history of hypertension was positive. Statistically analysis between diabetes and hypertension was positive. In 18 cases from 27 case of diabetic hypertension were positive. Also in 18 cases from 27 case of dyslipidemia hypertension was positive. 37 cases in daily program have high fiber dietary and 62.2% had low fiber dietary.

**Figure 1.** Frequency of risk factors of colorectal cancer in studied patients.
Long-term smoking is a potential risk factor for colorectal cancer [20, 21]. Long-term, heavy smoking has consistently been found to be associated with colorectal adenomas, whereas associations with colorectal carcinomas have been inconsistent [22]. Indeed, Giovannucci et al. found a twofold increase in risk of colorectal cancer after 35 years of smoking [23, 24]. In our study, 42% cigarette smoking and in 30% alcohol consumption were seen. Hereditary non-polyposis colorectal cancer, familial adenomatous polyposis and Inflammatory Bowel Disease (IBD) in familial history have an important role as risk factors of adenomatous polyposis and Inflammatory Bowel Disease (IBD). Hereditary non-polyposis colorectal cancer, familial history and polyps are significant risk factors for colorectal cancer. Unfortunately according to colorectal cancer prevalence, this study had a limited population and it was conducted in a specific reign, so further studies with more population in larger scales are needed.

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

References
