Original Paper

The Clinical and Pathological Characteristics of Colorectal Cancer in Young Age Group in Karbala Province/ Iraq.

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Abstract

Background: Colorectal cancer (CRC) is a major health problem in Iraq.
Aim: to identify the clinicopathological characteristics of colorectal cancer in young Iraqi patients in Karbala.
Design of study: Retrospective study was conducted in a single center, Imam AL-Hussein general teaching hospital during the period from January 2009 to April 2017.
Patients and Methods: A sample size of 96cases of Colorectal Carcinoma was diagnosed during the study period. The clinic-pathological parameters were reported.
Results: The mean age of the patients was (51.68). There is a general increase in the incidence of colorectal cancer across the years with percentage of (41.7%) being younger than 45 years. There was slight male predominance. The predominant site of the tumor is colon in (75%) of cases followed by rectum (17.7%). The most common type was adenocarcinoma (82.1%) followed by mucinous type (27.3%), most patients presented with grade I (61.5%). In the majority of patients the malignancy reaching the pericolic fat (54.5%). About (43.6%) of patients presented with N1 and (50.9%) with stage III followed by stage II in (30.9%). For all cancer grades, the frequency of CRC was higher among patients > 45 years with the majority of patients with grade III being younger than 45 years and this make a significant difference between both categories, (P=0.043). With respect to the depth of invasion, those with advance disease (T3), 17 out of 30 cases were younger than 45 years, thus there was significant difference between 2 age groups.
Conclusion: the incidence of colorectal cancer is upgrading in those younger than 45 years.
Keyword: colon cancer, young age, epidemiology, stage, grade.

Introduction

Colorectal cancer is ranking the third among men and the second among women depending on the GLOBOCAN worldwide estimation in 2012. [1] it is important to mention that, over the last decades and during observing a clear decrement in incidence of colorectal carcinoma in elderly, the incidence rates were increased gradually for adolescents and young adults.[2] multiple factors can clarify this prevalent in youth , specifically an absence of a fixed programs of screening and a new lifestyle issues that come to the view like being an obese and overweight, negligence of sports, and acquisition of bad dietary habits over time. All these are added to main risk factors such as environmental and genetic factors that play an important role in raising the possibility of developing Colorectal cancer. [2] in spite of an apparent relevance with aging process, colorectal carcinoma is not accurately a cancer of an elderly and it is a quietly heterogeneous disease. [3]

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An early onset colorectal cancer notably behave in a particular way in that mostly tends to be presented as an advanced disease, more aggressive histo-pathological criteria and a diversity in genetic mapping that produce a tumor with distinctive thumbing biological behavior versus their older corresponds. [4] multiple studies and literatures detect that early-onset colorectal carcinoma carry a congruent prognosis or may exceed that of older patients at the parallel stage [4]. However, it is generally believed that diagnosis in younger age groups may be troublesome, since both patient and the doctor don't rely on the chief symptoms, leading to a recurrent undesirable fate of the disease. [5] Attempts are continuing and still in progress to improve our sense about the molecular view or aspect of early onset colorectal cancer, trying to highlight many aspects like the prevention, screening, and suitable therapeutic policies for this distinctive patient population.[2]

Several studies recorded a raised incidence of early onset colorectal carcinoma with cancer prevalence of 38% in Egypt[6], 18% in Turkey [7], 23% from Saudi Arabia[8], 39% in India [9] and 52% from a solitary foundation in Pakistan[10]. Notably, in the United States a novel research involving data collected from patients over a 15-years duration, uncover an apparent decrement in the incidence rates of malignant colon neoplasm by 0.92% - the imprint of screening. [11] In Jordan, 2013, and according to Jordan mortality registry, "neoplasms were the second leading cause of death and cancer of small intestine, colon, rectum, and anus accounted for 2% of total deaths". [12] Karbala city is one of the important provinces in Iraq. According to the latest statistical data, the total population of this city was nearly doubled in the last decade with a reasonable raising of the number of patients diagnosed to have a malignancy in this population.[13]

Materials and Methods

This retrospective study was conducted in a single center, Imam AL-Hussein general teaching hospital during the period from January 2009 to April 2017. A total number of 96cases were collected.

For all cases, Colorectal Carcinoma was diagnosed during the study period. All the clinic-pathological parameters like the age, sex, type of sample (diagnosing biopsy or colectomy), cancer location, the type of CRC, the number of lymph nodes involvement, grade and the stage were reported. All cases were reviewed by two pathologists for confirmation of the diagnosis.

Design of the study: According to the design of this study the patients were divided into two main categories depending on their ages; patients less than 45 years and those older than 45. Accordingly descriptive analysis of data was done regarding the prognostic factors in both groups. Then we try to found if there is a relationship between these parameters (the grade, depth of invasion and lymph nodes status) and the ages of patients in both categories using Chi-square test where a p value <0.05 was considered statistically significantly.

Results

A total of 96 cases of CRC were registered between January 2009 and April 2017. The mean age of the patients at the time of diagnosis was (51.68) with (13.899 SD). Data analysis revealed that there is a general increase in the incidence of colorectal cancer across the years with percentage of (41.7%) from total sample being younger than 45 years as seen in (figures 1&2). The younger age was 21years and the maximum age was 82 years old. For the collected cases there was slight male predominance with male: female ratio was 1.3:1 (males =51 and females = 45).

Table (1) show the distribution of patients according to site, types of colorectal cancer, the grades, depth of invasion of tumor and involvement of lymph nodes by malignant

cells. According to this table the predominant site of the tumor is colon in a percentage of (75%) of cases followed by rectum (17.7%). The most common type was adenocarcinoma (82.1%) followed by mucinous type 14(27.3%), most patients presented with grade I (61.5%. In the majority of patients the depth of invasion of malignancy reaching the peri-colic fat (54.5%). Over all about (43.6%) of patients presented with N1 and (50.9%) with stage III followed by stage II in (30.9%).

According to table (2), for all cancer grades, the frequency of CRC was higher among patients > 45 years with the majority of patients (7 out of 11 cases) with grade III being younger than 45 years, so the younger age group presented with higher histological grades and this make a significant difference between both categories, (P=0.043). With respect to the depth of invasion, those with advance disease (T3), 17 out of 30 cases were younger than 45 years, thus there was significant difference between 2 age groups. However; regarding nodal status there was no significant difference between these two age group.
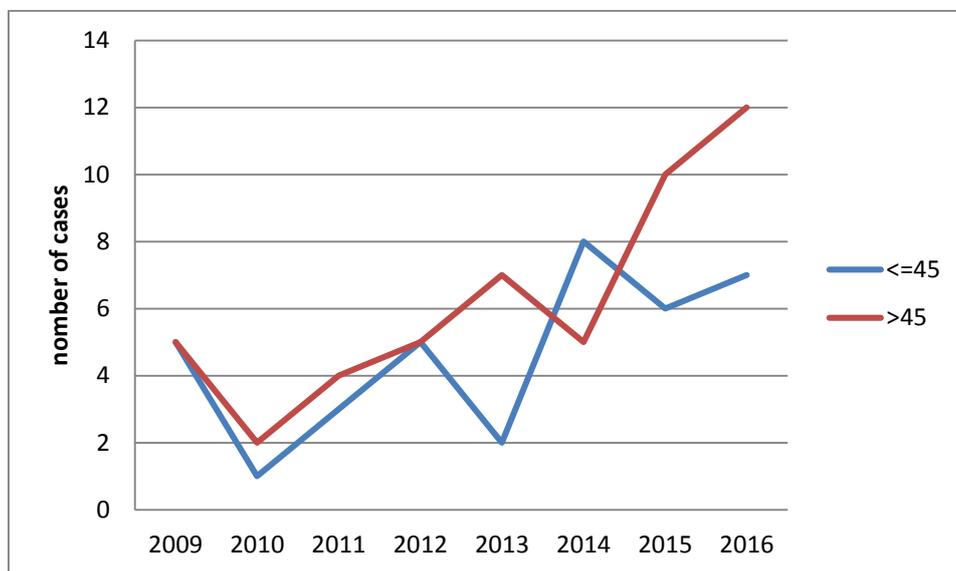

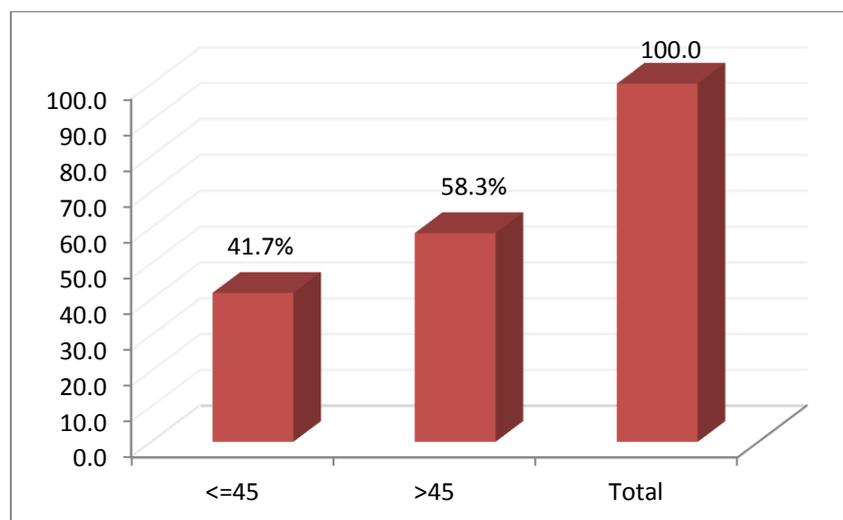**Figure 1.** cases of colorectal cancer per year.

Figure 2. the percentage of patients distributed in both age groups, those who are less than or equal to 45 years and those who are older than 45 years.

Table1. distribution of patients with colorectal cancer according to Clinico-pathological variables.

variables	Number (%)	Total
Site		
Colon	72 (75%)	
Sigmoid	7 (7.3%)	**96**
Rectum	17 (17.7%)	
Types		
adenocarcinoma	78 (82.1%)	
mucinous	14 (27.3%)	**96**
signet ring	4 (3.2%)	
Grades		
grade 1	59 (61.5%)	
grade 2	26 (27.1%)	**96**
grade 3	11 (11.5%)	
Depth of invasion		
mucosa and submucosa	1 (1.8%)	
muscularis properia	15 (27.3%)	**55**
peri-colic fat	30 (54.5%)	
peritoneum	9 (16.4%)	
Lymph nodes status		
N0	23 (41.8%)	
N1	24 (43.6%)	**55**
N2	8 (14.5%)	
Stages		
stage 1	9 (16.4%)	
stage 2	17 (30.9%)	**55**
stage 3	28 (50.9%)	
stage 4	1 (1.8%)	

Table 2. Differences between the Age Groups with Regards to grade and the advanced disease presented as nodal status and the depth of invasion.

variables	Age <= 45	Age>45	Total (n)
Grades p value (0.043)			
G1	27	32	59
G2	6	20	26
G3	7	4	11
	40	56	96
Depth of invasion p value (0.046)			
T1	2	0	2
T2	4	10	14
T3	17	13	30
T4	2	7	9
	25	30	55
Nodal status p value (1.00)			
N0	11	12	23
N1	10	13	23
N2	4	5	9
	25	30	55

Discussion

Colorectal cancer (CRC is persistently presenting a major health dilemma and it ranks sixth among the most common 10 cancers in Iraq. [14] this study was highlighted on colorectal cancer in young age patients and its relation with

clinicopathological parameters in this group who presented in Imam AL-Hussein general teaching hospital in Karbala province. The analysis of data in the current study reflects the trend of CRC in a period from January 2009 to December 2017. Accordingly; the incidence of colorectal was estimated to be generally increased in both groups (those who are above and below 45 years) with a significant percentage of (41.7%) being younger than 45 years. This result is compatible to that conducted by AL-Janabi [13] at 2016 in Karbala who stated that there is a considerable increment in the incidence rate of certain cancers including colorectal carcinoma. Another Iraqi studies concerning the trend, the early diagnosis and managements of colorectal cancer were recorded that 35.5% and 17.5% of patients included in these studies were under the age of 40 years respectively. [15,16]. A recent study in AL – Najaf province reviled that (35.5%) of the newly diagnosed colorectal cancer cases were younger than 50 years. [17] Similar observations have been made in other regional studies, including those that were conducted in the Kingdom of Saudi Arabia, Iran [8,18] while records from western countries estimate that the highest distribution of colorectal cancer patients was detected in the seventh and eighth decades of life. [19]

Many influences can explain this prevalence in young. High body mass index and obesity, absence of physical activities and sedentary life and bad nutritional habits like loss of dietary fibers and consumption of heavy fatty meals. However; It is evident that the ecological and genetic influences can raise the probability of acquiring colorectal carcinoma. [20] The younger patients with CRC in fact have a unique genetic portray distinctive from that of late-onset CRC cases. However; presently, those older and younger than 45 years are dealt with and treated similarly, but with a best recognition and grasping of the molecular aspects and pathways involves in the emerging of such

atypical odd malignant cells in such young age it will be accessible to design and adapt a special screening programs and clinical planning for management of such sector of patients in an attempt to upgrade their response to treatments and clinical outcomes. [21]

According to the results of this study the mean age of the patients at the time of diagnosis was (51.68) and this come in congruency with other Iraqi study which records that the mean age of colorectal cancer patients was 56.5 [16] and that from Kingdom of Saudi Arabia which records that the mean age of patients at time of diagnosis was 58 years. [8] in Turkish population the mean age at presentation in a recent study was 58.9 [22] In comparison with additional studies from developed countries, the mean age at diagnosis of CRC is lower in present study. [23, 24] In developing countries, this divergence and upgrading in the rate of colon cancer in young patients can't be interpreted by the dependency on the screening programs, hence these programs are either restricted or just recently introduced in addition to the fact that young patients are not involved in such epidemiological and preventive measures and strategies. [25, 26] However; this could be attributed to a period of fresh epidemiological changes [27]. In that, such arise in the incidence of CRC among young adults can be significantly due to comparative lower incidence of cancer in the older population. So, while the rates was constantly low in elderly, CRC rate has increased in a manner as to be worthy for attention in the newer generations. [28]

The results of this study showed that the younger age group presented with higher histological grades and advanced disease at time of diagnosis regarding the depth of invasion. This come in congruency with reports from adjacent states that partake the same climatic and topographic settings with our country which revile that patients below 45 years of age are presented with more advanced disease at the time of diagnosis in comparison with those above 45 years. [29,

[30] This community of young patients presenting with early-outset advanced colon cancer are expected to attain a higher risk of long dated mortality in comparison to controls of same age group. [31, 32]

Conclusions

The incidence of colo-rectal cancer is upgrading in those younger than 45 years in the last decade and this fact make this question to emerge; is this finding comes by a chance or is early onset CRC an actual epidemy? However; to answer this question we need further studies with larger sample sizes and involving many health centers and many risk factors must be looked for in these cases like dietary factors, overweight, smoking, hereditary and molecular profile of such group of patients. In this study the age at the time of diagnosis was low when compared with reports from developed countries. patients diagnosed with early onset colon cancer presented with higher grades and advanced disease. So public health policies, such as screening and awareness programs about colon cancer were recommended to be arranged for early detection of this aggressive neoplasm.

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