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# Colorectal cancer in Egypt is commoner in young people: Is this cause for alarm?



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## KEYWORDS

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**Abstract** *Background:* Colorectal cancer (CRC) is the third most common cancer worldwide after lung and breast cancers with two-thirds of all CRCs occurring in the more developed regions of the world. CRC affects men and women of all racial and ethnic groups, and is most often found in those aged 50 years or older.

*Aim:* The aim of the study was to determine the prevalence of CRC among patients undergoing colonoscopy in Egypt.

*Materials and methods:* This was a descriptive cross-sectional hospital-based study. A total of 412 consecutive patients who underwent planned pancolonoscopy from January 2000 to January 2012 at our institution were assessed. All endoscopic examinations leading to a diagnosis of CRC were evaluated. The following parameters were analyzed: frequency of CRC, patient characteristics, indication for endoscopic examination, endoscopic findings, localization of CRC and histopathology.

*Results:* CRC was diagnosed in 57 patients (14% of all colonoscopies). Fifty-six percent were female. The mean age was  $51 \pm 15$  years (age range: 16–80 years). Twenty-five percent of cancers occurred in patients aged less than 40 years. The most frequent indication for colonoscopy was rectal bleeding (39%). The most common colonoscopy finding was mass (96%). Sixty-eight

*Abbreviation:* CRC, Colorectal cancer.

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percent of CRC were located in the left colon and rectum. Ninety-one percent of CRC were adenocarcinoma.

**Conclusions:** CRC is not uncommon among Egyptian patients subjected to colonoscopy. There are relatively higher CRC rates in patients under 40 years of age than reported in the West. This has implications relating to future epidemiological trends in Egypt. Physicians must have a greater awareness of the potential for CRC in young people in the Middle East.

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## 1. Introduction

Colorectal cancer (CRC) is the third most common cancer worldwide after lung and breast cancers with two-thirds of all colorectal cancers occurring in the more developed regions of the world.<sup>1,2</sup> CRC affects men and women of all racial and ethnic groups, and is most often found in those aged 50 years or older.<sup>3</sup> Colonoscopy plays a central role in the detection and prevention of CRC.<sup>4</sup> In a study of 505 patients who underwent colonoscopy in the United Kingdom, CRC was detected in 2.1% of patients.<sup>5</sup> Estimates are that only 2–6% of CRC cases are found in patients 40 years or younger.<sup>6–8</sup>

Egypt is a developing Middle-Eastern country. Bolak Eldakror Hospital is a secondary-care governmental hospital in Giza, Egypt. The gastrointestinal endoscopy unit was set up in 1999. The aim of the study was to determine the prevalence of CRC among patients undergoing colonoscopy in our catchment's area.

## 2. Materials and methods

This was a descriptive cross-sectional hospital-based study. All patients having CRC detected during colonoscopy were included in the study. Patients were referred from outpatient clinics and the medical department. Two gastroenterologists performed all colonoscopies. Pathological examination was performed by two expert pathologists.

A total of 412 consecutive patients who underwent planned pancolonoscopy from January 2000 to January 2012 at our institution were assessed. All endoscopic examinations leading to a diagnosis of CRC were evaluated. A detailed clinical history was taken. A thorough physical examination was performed. The following parameters were analyzed: frequency of CRC, patient characteristics (age and gender), indication for endoscopic examination, endoscopic findings, localization of CRC and histopathology.

## 3. Results

There were a total of 57 cases of CRC detected during this period, accounting for 14% of all procedures. Fifty-six percent of patients were female. The mean age was  $51 \pm 15$  years (age range: 16–80 years). Peak frequencies were in the 5th and 7th decade (Fig. 1). Twenty-five percent of cancers occurred in patients aged less than 40 years. The age distribution is shown in Fig. 1. None of the affected patients had a history of inflammatory bowel disease or polyposis. One patient (2%) had undergone a previous operation for CRC. Two patients (4%) fulfilled the Amsterdam criteria for hereditary non-polyposis CRC. The most frequent indication for colonoscopy was rectal bleeding in 22 patients (39%). The overall indications for

colonoscopy are shown in Table 1. The colonoscopy findings were mass in fifty-five patients (96%) and stenosis in 2 (4%). Thirty cancers (53%) were located in the left colon (sigmoid colon, descending colon and splenic flexure) and nine (16%) in the rectum (Fig. 2). Eighteen (32%) were sited in the proximal colon (cecum, ascending colon, hepatic flexure and transverse

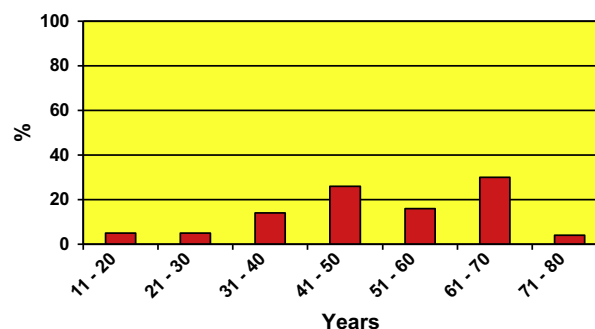


Figure 1 Age distribution in patients with colorectal cancer.

Table 1 Indications for colonoscopy in patients with colorectal cancer.

Indication for colonoscopy	Incidence (%)
Rectal bleeding	22 (39)
Intestinal obstruction	9 (16)
Diarrhea	8 (16)
Abdominal mass	6 (10)
Anemia	6 (11)
Abdominal pain	3 (5)
Constipation	2 (4)
Surveillance colonoscopy	1 (2)

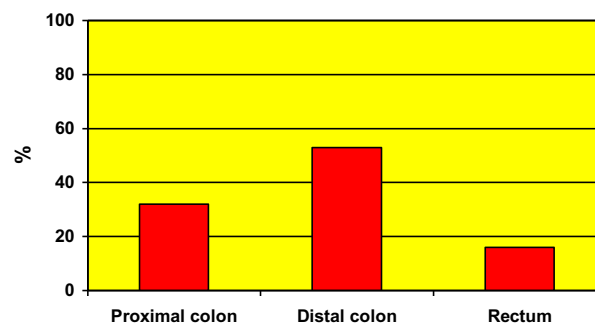


Figure 2 Colorectal cancer incidence by sub sites.

**Table 2** Patient characteristics, indication for colonoscopy, localization and histopathology of CRC in patients aged 40 years or younger.

Number	14
Age range (mean)	16–40 (32) years
Male/female	2.5/1
<i>Indication for colonoscopy</i>	
Rectal bleeding	9 (64%)
Abdominal mass	3 (21%)
Abdominal pain	1 (7%)
Constipation	1 (7%)
<i>Location of CRC</i>	
Distal colon	6 (43%)
Proximal colon	5 (36%)
Rectum	3 (21%)
<i>Histopathology</i>	
Adenocarcinoma	11 (79%)
Mucoid carcinoma	2 (14%)
Signet-ring cell carcinoma	1 (7%)

colon). Synchronous tumors occurred in one patient (2%). Histopathology revealed 52 adenocarcinoma (91%), two signet-ring cell carcinoma (4%), two mucoid carcinoma (4%) and one anaplastic carcinoma (2%). Patient characteristics, indication for colonoscopy, localization and histopathology of CRC in patients 40 years or younger are shown in Table 2.

#### 4. Discussion

CRC is a common cancer worldwide. CRC affects men and women of all racial and ethnic groups, and is most often found in people aged 50 years or older in developed countries.<sup>3</sup> No age group is exempt; an adenocarcinoma of the colon has been reported in a nine-month-old girl.<sup>6</sup>

In our study, CRC accounted for 14% of all colonoscopies performed at our hospital. The mean age of patients was 51 years with 25% of cancers occurring in patients aged less than 40 years. Our data are similar to those reported in other Middle-Eastern countries and are much higher than in Western countries.

Reports from Middle-Eastern countries show a higher prevalence of CRC in patients undergoing colonoscopy than in the West. CRC was detected in 2.1% of patients who underwent colonoscopy in the United Kingdom and 9–11% in Morocco and Sudan.<sup>5,9,10</sup> Also reports from Middle-Eastern and African countries show higher CRC rates in younger patients than in the West. CRC was diagnosed in patients aged 40 years or younger in 2–6% of CRC cases in Italy, France and Taiwan and in 17–36% in Saudi Arabia, Sudan and Iran.<sup>6–8,11–14</sup> In Egypt reports showed that CRC was detected in 11–15% of patients who underwent colonoscopy and diagnosed in 29–31% of patients aged 40 years or younger.<sup>15–18</sup>

Population based studies comparing large populations have shown that rates of CRC differ dramatically among countries, varying by as much as 10-fold, from low-incidence areas in Asia and Africa, to much higher rates in Northern Europe and the United States.<sup>19–21</sup> Globally, the age-standardized incidence rate of CRC is 20.1 per 100,000 males and 14.6 per 100,000

females. The incidences of CRC in the Arab world and Middle East countries are relatively low.<sup>19,20</sup> In Egypt, low rates of CRC ( $6.9/10^5$  for males and  $5.1/10^5$  for females) were reported by the Middle East Cancer Consortium for the period of 1999–2001.<sup>19</sup> The low rates of CRC in Egypt were also reported from the Gharbiah cancer registry for the period of 2000–2002, where the age-standardized incidence rates for CRC were  $6.5/10^5$  for males and  $4.2/10^5$  for females.<sup>21</sup> The exceptionally high CRC rates noted in this and other hospital based studies relate to the relative paucity of screening procedures, even in symptomatic patients compared to the population as a whole.

CRC is common in the Western world and usually ranks high in incidence and mortality among malignancies in those countries.<sup>19</sup> Westernization is often associated with higher incidence rates of CRC. Diet and lifestyle factors are implicated risk factors for the disease. Fruit and vegetable-deficient diet, calorie-dense foods, physical inactivity, obesity, and smoking increase the risk for developing colorectal cancer.<sup>21</sup> While developing countries historically have a low rate of CRC, the transition to a more western diet has been associated with increasing rates of disease.<sup>21</sup> A study from South Africa showed that among patients admitted to hospital with CRC the proportion of African patients under 40 years of age was 19%; but only 4% in the white population.<sup>22</sup> The authors reported that the patients lived in Soweto and Johannesburg. In the urban context described, these Africans have considerably more advantages, socio-economically, dietary and in other respects, than their rural counterparts. The authors suggested that, with ongoing transitional changes – in diet and other factors – the relatively high proportion of younger African patients probably indicates a rising occurrence of CRC in the urban African patients with colon neoplasm. Population based studies as well as hospital based studies in Egypt and Arab countries have shown high CRC rates in patients aged 40 years or younger.<sup>12,13,17,18,20,21</sup> A population based study showed that the incidence rate of CRC for those under 40 years of age in Egypt was slightly higher than the United States incidence rate for the same age group.<sup>21</sup> It is unclear if the high young-onset rate is due to adoption of a more “westernized” lifestyle and diet, particularly in the younger generation or due to intense environmental exposures with more susceptibility among the younger generations.<sup>21</sup>

One concern of CRC affecting the younger population (<40 years old) is the poor prognosis attached to it.<sup>23</sup> Dukes and Bussey suggested a much higher rate of lymphatic metastasis in patients less than 40 years of age due to a more rapid progression of the disease in young patients.<sup>23</sup> Reports from Europe demonstrate that the 5 year survival rate for young patients (30 years old or younger) is only 25–30%.<sup>24,25</sup> The need for early recognition of CRC in young adults is emphasized by the greater incidence of advanced disease and the high treatment failure rate.<sup>26</sup> However, if detected early, young patients with Dukes’ stage A or B lesions have better overall 5 year survival rates.<sup>27</sup> A second concern is that the high incidence of CRC in this younger age group suggests that in the Middle East we may be seeing the start of a birth cohort effect. If so the implication is that as time passes the incidence of cancer in those now aged below 40 will rise higher as they become older and those now in their twenties may have a higher incidence as they age.

All cases of CRC at our institution were referred to the National Cancer Institute for further management but unfortunately the majority was diagnosed at an advanced stage

(unpublished). The factors responsible for delay in detection are underuse of diagnostic tests, late referrals for colonoscopy, under use of surveillance colonoscopy and misdiagnosis.

Detecting CRC at an early, more treatable stage is important for cure and survival. Patients presenting with altered bowel habit, rectal bleeding, anorexia and weight loss should be regarded as having alarm symptoms, suggestive of cancer, and at relatively high risk of CRC. Factors increasing the time to diagnosis are assumption that symptoms are due to hemorrhoids or irritable bowel syndrome, inadequate investigation of iron deficiency anemia and inadequate rectal or abdominal examination. The need to increase awareness about CRC in Egypt is recommended. An awareness campaign should be performed to promote detection of CRC at its earliest and most curable stage by recognizing early symptoms and enabling early referrals for colonoscopy. Those at higher risk should be offered more intensive surveillance. CRC screening can find adenomatous polyps so that they can be removed before turning into cancer. Screening also helps find CRC at an early stage, when treatment often leads to a cure. Tests recommended for CRC screening are fecal occult blood test, digital rectal examination, flexible sigmoidoscopy, colonoscopy and double-contrast barium enema test. Regarding colonoscopy there are wide variations in the expertise available to conduct colonoscopy. An adequate level of training and possibly certification for colonoscopists are required, and national standards for this are desirable. Each screening test has unique advantages, has been shown to be cost-effective, and has associated risks and limitations. Ultimately, patient preferences and availability of testing resources guide the selection of screening tests. Cost of investigations, inadequate referral centers, paucity of trained colonoscopists and cultural issues are other challenges in constructing CRC screening program.

This study showed a high prevalence of CRC in patients who underwent colonoscopy and high CRC rates in patients aged less than 40 years. Larger sample and multi-center studies are required to determine the prevalence and identify causes and risk factors of CRC in Egypt. Also further studies are required to establish criteria for a screening program and if possible to find causes of the occurrence of CRC more frequently in younger population.

In conclusion, our study showed that CRC is not uncommon among Egyptian patients subjected to colonoscopy and CRC rates are high in patients under 40 years of age. Our analysis of daily clinical practice provided valuable information as all consecutive patients of a secondary-care governmental hospital were included. The future needs of this demographic variation must be anticipated. A greater awareness of the potential for CRC in young people must be emphasized to all physicians. Further study is required to be undertaken to find out whether CRC affecting young population is due to regional factors or whether it is indicative of a changing pattern of occurrence of CRC. If the latter, additional studies are required to define genetic factors. Additional studies are also required to determine the value and cost-effectiveness of a screening program and the appropriate age for screening in a developing country like Egypt.

#### Conflict of interest

None declared.

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