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BRIEF ARTICLE

Age distribution, polyps and rectal cancer in the Egyptian population-based cancer registry

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Abstract

AIM: To describe the clinical and epidemiologic profiles of the disease and to compare the findings with those generated from the previous hospital-based studies.

METHODS: The Gharbiah cancer registry is the only population-based cancer registry in Egypt since 1998. We analyzed the data of all colorectal cancer patients included in the registry for the period of 1999-2007. All medical records of the 1364 patients diagnosed in Gharbiah during the study period were retrieved and the following information abstracted: age, residence, diagnosis date, grade, stage, topology, clinical characteristics, and histology variables. Egyptian census data for 1996 and 2006 were used to provide the general population's statistics on age, sex, residence and other related demographic factors. In addition to age- and sex-specific incidence rate analyses, we analyze the data to explore the incidence distribution by rural-urban differences among the 8 districts of the province. We also compared the incidence rates of Gharbiah to the rates of the Surveillance Epidemiology and End Results (SEER) data of the United States.

RESULTS: Over the 9 year-period, 1364 colorectal cancer cases were included. The disease incidence under age 40 years was relatively high ($1.3/10^5$) while the incidence in the age groups 40 and over was very low ($12.0/10^5$, $19.4/10^5$ and $21.2/10^5$ in the age groups 40-59 years, 60-69 years and > 70 years, respectively). The vast majority of tumors (97.2%) had no polyps and 37.2% of the patients presented with primary lesions in the rectum. Colorectal cancer was more common in patients from urban (55%) than rural (45%) areas. Regional differences in colon and rectal cancer incidence in the 8 districts of the study province may reflect different etiologic patterns in this population. The registry data of Egypt shows a slightly higher incidence of colorectal cancer than the United States in subjects under age 40 years. The results also shows significantly lower incidence of colorectal cancer in subjects over age 40 years compared to the same age group in the United States SEER.

CONCLUSION: Low rate of polyps, low incidence in older subjects, and high rate of rectal cancer in Egypt. Future studies should explore clinical and molecular disease patterns.

Key words: Colorectal cancer; Young-onset; Polyps; Developing countries; Egypt

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INTRODUCTION

Colorectal cancer is a common cancer worldwide. In 2008, Globocan estimated there were 663 000 new cases in men and 571 000 new cases in women[1,2]. With a combined 608 000 deaths worldwide, colorectal cancer represents the fourth most common cause of cancer-related mortality. There is a wide variability in the incidence rates of colorectal cancer, with most incident cases occurring in developed countries[1]. Incidence rates of colorectal cancer for men range from $4.1/10^5$ in Karunagappally, India, to $59.1/10^5$ in the Czech Republic. In women, incidence rates range from $3.6/10^5$ in Karunagappally, India, up to $39.5/10^5$ in New Zealand[2]. Rates for the United States are $34.1/10^5$ for men and $25/10^5$ for women[1].

Westernization is often associated with higher incidence rates of colorectal cancer. 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[2]. While developing countries historically have a low rate of colorectal cancer, the transition to a more Western diet has been associated with increasing rates of disease[3,4].

Our previous hospital-based studies in Egypt showed low incidence of colorectal cancer and high proportion of young-onset disease[5]. In comparing rates of Egyptian colorectal cancer to the Surveillance Epidemiology and End Results Program (SEER) of the United States, Egypt had higher rates up to age 30-34 years, at which point Egyptian rates level out while United States rates increase sharply[5]. Our studies also revealed low rate of polyps, high proportion of rectal cancers among the colorectal cancer tumors, and lack of molecular characteristics of hereditary non-polyposis colorectal cancer (HNPCC) or young-onset or sporadic colorectal cancer in the United States[5-7]. Our studies have also shown intense environmental exposures such as organochlorine pesticide levels, however, these environmental and genetic factors were not related to the young or old onset of the disease[8].

Limitations of the previous studies on colorectal cancer in Egypt included their hospital-based nature and relatively small sample size. Therefore, with the establishment of Egypt's only population-based cancer registry and availability of complete data from 1999-2007, it was intriguing to investigate the epidemiologic and clinical profiles of colorectal cancer and examine the previous findings based on the new population-based registry data.

MATERIALS AND METHODS

The Gharbiah province is in in the center of the Nile delta region about 90 km north of Cairo with a population of about 4 million individuals[9]. It has a male:female ratio of 1.02:1 and age structure approximately equivalent to that of the rest of Egypt[10].

The Gharbiah population-based cancer registry, the only population-based registry in Egypt was founded in 1998[9]. It actively collects information on all cancer cases in the province from 3 main cancer hospitals; Tanta Cancer Center, the Gharbiah Cancer Society Hospital, and the Tanta University Hospital. In addition, information on cancer patients is collected from all private clinics and laboratories throughout the province[9]. The registry receives support and training from the National Cancer Institute (NCI) in Bethesda, Maryland through the Middle East Cancer Consortium (MECC). Technical support, training, and quality control of data are periodically conducted by Rollins School of Public Health, the International Agency for Research on Cancer, and NCI to ensure the high quality of the registry data[9,11].

All colorectal cancers diagnosed from 1999 to 2007 were included in the study. Medical records of 1364 patients were retrieved and the following information abstracted: age, residence, diagnosis date, grade, stage, topology, clinical characteristics and histology variables. Egyptian census data were used to provide the general population's statistics on age, sex, residence, and other related demographic factors. The 1364 cases included in this study over the 9 years from 1999-2007 average out to about 150 cases a year, which is in keeping with the registry's previous preliminary reports[9,12,13].

The student's *t*-test was used to determine the significance of differences in mean values of the study variables. A χ^2 test for independence was used to determine the significance of differences in frequency distributions and proportions of variables. The cut-off value for statistical significance was P value = 0.05. SAS version 9.2 (SAS Institute, Cary, NC) was used.

RESULTS

The results of the study provide a comprehensive profile of colorectal cancer in this population. This profile sheds some lights on the epidemiologic, clinical, and geographic distribution of colorectal cancer in this population. The results also demonstrate the differences in colorectal cancer incidence between the population-based registry of Gharbiah and the SEER registry of the United States.

A total of 1364 cases of colorectal cancer were included in registry from 1999-2007. Table 1 shows the summary characteristics for the colorectal cancer patients.

Table 1 Characteristics of study population and cancer patterns in Gharbiah, Egypt (1999-2007)

Variable	*n* (%)
Total cases	1364 (100.0)
Gender	
Male	737 (54.0)
Female	627 (46.0)
Residence	
Urban	752 (55.1)
Rural	612 (44.9)
Year of diagnosis	
1999	135 (9.9)
2000	149 (10.9)
2001	144 (10.6)
2002	154 (11.3)
2003	151 (11.1)
2004	137 (10.0)
2005	161 (11.8)
2006	171 (12.5)
2007	162 (11.9)
District of residence	
Tanta	437 (32.0)
El Mehalla	355 (26.0)
Kafr El Zayat	118 (8.7)
Zefta	98 (7.2)
Samanoud	82 (6.0)
El Santa	103 (7.6)
Kotour	78 (5.7)
Basyoon	93 (6.8)

Table 2 Age and clinical characteristics of study population in Gharbiah, Egypt (1999-2007)

Variable	*n* (%)
Age(yr)	
<40	300 (22.0)
≥40	1064 (78.0)
Basis of diagnosis	
Histology of primary	1210 (88.7)
Histology of metastases	58 (4.3)
Death certificate only	52 (3.8)
Others[1]	44 (3.2)
Tumor site	
Colon	856 (62.8)
Right	347 (40.5)
Left	331 (38.7)
NOS	178 (20.8)
Rectum	508 (37.2)
Grade	
Ⅰ	96 (7.0)
Ⅱ	702 (51.5)
Ⅲ	155 (11.4)
Ⅳ	61 (4.5)
Unknown	350 (25.7)
Polyps	
Present	38 (2.8)
< 40 yr	9 (23.7)
≥ 40 yr	29 (76.3)
Male	19 (50.0)
Female	19 (50.0)
Not present	1326 (97.2)
Mucinous carcinoma	
Present	318 (23.3)
< 40 yr	102 (32.1)
≥ 40 yr	216 (67.9)
Not present	1046 (76.7)
Histopathology	
Adenocarcinoma	1186 (87.0)
Carcinomas[2]	50 (3.7)
Other specified types of cancers	16 (1.2)
Unspecified types of cancers	112 (8.2)

[1]Others include clinical only (2 cases), clinical/ultrasound/X-Ray (29 cases), exploratory surgery/autopsy (5 cases), specific biochemistry/immunology. test (1 case), cytology/hematology (5 cases), and unknown (2 cases); [2]carcinomas include squamous cell (7 cases) and other carcinomas (43 cases). NOS: Not otherwise specified.

Slightly more than half the cases were males (54%), giving a male:female ratio of 1.2:1. Patients designated as residing in an urban area constituted 55.1% of all patients. In any given year, between 135 -171 new cases of colorectal cancer were included in the registry. The Tanta district of the Gharbiah province had the most cases (32.0%) with the Kotour district seeing the least (5.7%).

The clinical and histopathologic characteristics of the colorectal cancer patients included in the study are illustrated in Table 2. Age and tumor site distribution of cases showed that 22.0% of all cases were under the age of 40 and 62.8% of cases had primary lesions in the colon with 37.2% having primary lesions in the rectum. The majority of tumors were grade Ⅱ moderately-differentiated tumors (51.5% of cases) followed by 11.4% grade Ⅲ. About 25.7% cases had no grade information. The vast majority of patients did not present with polyps (97.2%) though of the 38 patients who had polyps, 76.3% were over the age of 40. Mucinous carcinomas were present in only 23.3% of cases and over two-thirds of those patients (67.9%) were patients over the age of 40 years. Adenocarcinoma was the most common histopathologic type of tumors (87.0%).

Table 3 shows colorectal cancer incidence rates and incidence rate ratios by gender and urban-rural status. For both men and women, living in an urban area significantly increased the risk of developing colorectal cancer (either in the colon or the rectum). The same trend was present looking only at primary lesions in the colon and less pronounced for rectal cancers. Older urban men were more likely to develop rectal cancer while young urban men were more likely to develop colon cancer.

The comparison of the incidence rates and incidence rate ratios of colorectal cancer across the 8 districts are shown in Table 4 for patients under the age of 40 years and those 40 years and older. Compared to the low rates of the Zefta district, living in Tanta and Basyoon districts was significantly associated with increased risk of developing colorectal cancer for both young and old subjects. Living in El Mehalla and Kafr El Zayat was associated with significantly increased risk of developing colorectal cancer for subjects over 40 years only.

Compared to the low rates of colon or rectal cancers in the Zefta district, living in Tanta and Basyoon districts was associated with significantly increased risk of developing both primary colon and rectal cancers. Living in El Mehalla and Kafr El Zayat districts was significantly associated with increased risk of developing colon but not rectal cancer (Table 4).

Table 5 compares age standardized incidence rates by

Table 3 Incidence rates (per 10^5) and incidence rate ratios (95% confidence interval) by gender and urban-rural status for colorectal cancer patients in Gharbiah (1999-2007)

Age (yr)	Urban incidence		Rural incidence		Urban-rural IRR (95% CI)	
	Male	Female	Male	Female	Male	Female
Total						
5-9	0.17	0.00	0.00	0.00	-	-
10-14	0.00	0.35	0.00	0.16	-	2.23 (0.31, 15.82)
15-19	1.00	0.17	0.78	0.52	1.27 (0.47, 3.45)	0.32 (0.04, 2.59)
20-24	2.70	2.29	0.77	0.77	3.50 (1.57, 7.80)	2.97 (1.25, 7.05)
25-29	3.44	2.27	1.29	1.22	2.67 (1.30, 5.47)	1.86 (0.80, 4.30)
30-34	4.47	4.39	3.40	1.16	1.31 (0.74, 2.34)	3.79 (1.74, 8.28)
35-39	6.56	4.55	3.54	3.81	1.85 (1.07, 3.20)	1.19 (0.64, 2.24)
40-44	12.03	17.22	5.60	3.86	2.15 (1.35, 3.42)	4.46 (2.70, 7.35)
45-49	23.67	16.61	7.11	4.47	3.33 (2.22, 4.99)	3.72 (2.24, 6.16)
50-54	33.30	30.36	11.92	10.10	2.79 (1.93, 4.05)	3.00 (2.05, 4.40)
55-59	32.06	24.93	7.65	9.28	4.19 (2.66, 6.60)	2.69 (1.76, 4.11)
60-64	41.86	29.89	13.24	11.55	3.16 (2.03, 4.92)	2.59 (1.60, 4.18)
65-69	49.14	24.40	12.27	9.04	4.01 (2.34, 6.86)	2.70 (1.47, 4.95)
70-74	45.38	39.93	16.36	7.79	2.77 (1.43, 5.39)	5.13 (2.44, 10.77)
75+	40.95	36.28	16.36	11.99	2.50 (1.21, 5.19)	3.03 (1.52, 6.03)
Colon						
5-9	0.17	0.00	0.00	0.00	-	-
10-14	0.00	0.17	0.00	0.16	-	1.11 (0.10, 12.29)
15-19	0.33	0.17	0.50	0.52	0.67 (0.14, 3.21)	0.32 (0.04, 2.59)
20-24	1.80	2.10	0.39	0.43	4.67 (1.60, 13.67)	4.90 (1.70, 14.11)
25-29	1.72	1.59	0.55	0.51	3.12 (1.08, 8.98)	3.12 (0.99, 9.83)
30-34	2.98	2.32	1.70	0.58	1.75 (0.83, 3.70)	4.01 (1.34, 11.97)
35-39	4.56	2.42	2.32	2.45	1.97 (1.01, 3.83)	0.99 (0.43, 2.28)
40-44	7.78	8.61	3.63	2.18	2.14 (1.20, 3.82)	3.94 (2.00, 7.79)
45-49	14.95	10.79	5.69	2.61	2.63 (1.63, 4.23)	4.14 (2.16, 7.93)
50-54	22.38	15.67	7.48	6.59	2.99 (1.89, 4.75)	2.38 (1.44, 3.91)
55-59	22.81	16.97	5.54	5.95	4.12 (2.41, 7.03)	2.85 (1.69, 4.81)
60-64	28.21	21.59	6.62	5.96	4.26 (2.36, 7.70)	3.62 (1.94, 6.75)
65-69	27.30	14.85	6.43	5.24	4.25 (2.04, 8.86)	2.84 (1.29, 6.25)
70-74	26.27	26.04	12.27	4.67	2.14 (0.95, 4.85)	5.57 (2.16, 14.36)
75+	30.03	32.46	10.52	6.85	2.86 (1.18, 6.89)	4.74 (2.04, 10.98)
Rectum						
5-9	0.00	0.00	0.00	0.00	-	-
10-14	0.00	0.17	0.00	0.00	-	-
15-19	0.66	0.00	0.28	0.00	2.34 (0.58, 9.34)	-
20-24	0.90	0.19	0.39	0.34	2.34 (0.68, 8.07)	0.56 (0.06, 4.99)
25-29	1.72	0.68	0.74	0.71	2.34 (0.88, 6.22)	0.96 (0.25, 3.69)
30-34	1.49	2.06	1.70	0.58	0.88 (0.34, 2.24)	3.57 (1.17, 10.90)
35-39	2.00	2.12	1.22	1.36	1.64 (0.62, 4.30)	1.56 (0.59, 4.10)
40-44	4.25	8.61	1.97	1.68	2.16 (0.98, 4.73)	5.13 (2.44, 10.77)
45-49	8.72	5.81	1.42	1.86	6.13 (2.72, 13.85)	3.12 (1.39, 7.03)
50-54	10.92	14.69	4.44	3.51	2.46 (1.31, 4.61)	4.18 (2.28, 7.67)
55-59	9.25	7.96	2.11	3.33	4.38 (1.86, 10.33)	2.39 (1.15, 4.95)
60-64	13.65	8.30	6.62	5.59	2.06 (1.03, 4.13)	1.49 (0.67, 3.31)
65-69	21.84	9.55	5.84	3.81	3.74 (1.70, 8.24)	2.51 (0.97, 6.50)
70-74	19.11	13.89	4.09	3.12	4.67 (1.41, 15.52)	4.46 (1.34, 14.80)
75+	10.92	3.82	5.84	5.14	1.87 (0.50, 6.96)	0.74 (0.15, 3.68)

IRRs: Incidence rate ratios; 95% CI: 95% confidence itervals.

gender of the Gharbiah registry and the United States SEER data. Incidence rate of colorectal cancer was $5.5/10^5$ in Gharbiah ($6.1/10^5$ for males, $4.9/10^5$ for females). These rates were significantly lower than the colorectal cancer incidence rates seen in the United States of $32.0/10^5$ ($37.7/10^5$ for males, $27.4/10^5$ for females). While incidence rate of colorectal cancer for those under age 40 years in Gharbiah was slightly higher than the United States incidence rate for the same age group, the incidence rates for subjects 40 years and older in the United States were significantly higher than the corresponding rates for the same age groups in Egypt.

DISCUSSION

Analysis of the 1364 cases of colorectal cancer collected at the Gharbiah population-based cancer registry from 1999-2007 revealed the following important findings: First, a relatively high incidence of colorectal cancer in young subjects under age 40 years and significantly low

Table 4 Comparison of incidence rates for colorectal cancer patients in the 8 districts of Gharbiah (1999-2007)

	Young (< 40 yr)		Old (≥ 40 yr)		Colon		Rectum	
District	IR	IRR (95% CI)	IR	IRR (95% CI)	IR	IRR (95% CI)	IR	IRR (95% CI)
Tanta	1.52	1.93 (1.23, 3.04)	18.53	2.08 (1.62, 2.67)	3.35	2.25 (1.69, 3.00)	1.98	1.77 (1.26, 2.48)
El Mehalla	0.89	1.13 (0.70, 1.82)	14.85	1.66 (1.29, 2.14)	2.66	1.78 (1.33, 2.38)	1.36	1.21 (0.85, 1.72)
Kafr El Zayat	1.06	1.35 (0.77, 2.35)	12.44	1.39 (1.03, 1.89)	2.17	1.46 (1.03, 2.07)	1.44	1.29 (0.85, 1.95)
Samanoud	0.86	1.09 (0.58, 2.04)	11.40	1.28 (0.92, 1.78)	2.12	1.42 (0.98, 2.07)	1.10	0.98 (0.61, 1.58)
El Santa	0.93	1.18 (0.66, 2.11)	11.28	1.26 (0.92, 1.73)	1.99	1.33 (0.93, 1.91)	1.26	1.13 (0.73, 1.74)
Kotour	1.30	1.65 (0.93, 2.90)	9.56	1.07 (0.75, 1.52)	2.06	1.38 (0.94, 2.02)	1.09	0.97 (0.60, 1.58)
Basyoon	1.63	2.06 (1.18, 3.60)	13.81	1.55 (1.11, 2.15)	2.39	1.60 (1.10, 2.34)	1.97	1.76 (1.15, 2.70)
Zefta	0.79	1.00	8.93	1.00	1.49	1.00	1.12	1.00

IRR: Incidence rate ratio; IR: Incidence rate; 95% CI: 95% confidence interval.

incidence in subjects 40 years and older. Second, high proportion of tumors located in the rectum. Third, a vast majority of tumors (over 97%) did not have polyps. Fourth, living in an urban area was associated with higher rates of colorectal cancer, with variability in rates across the region.

Similar low rates of colorectal cancer in this population in Egypt ($6.9/10^5$ for males and $5.1/10^5$ for females) were reported by the MECC for the short period of 1999-2001[11]. The low rates were also reported from the Gharbiah cancer registry for the period of 2000-2002, where the age-standardized incidence rates for colorectal cancer was $6.5/10^5$ for males and $4.2/10^5$ for females[12]. The relatively high rate in subjects under age 40 years was reported by the MECC report in which Egypt had the highest incidence for both genders combined ($1.4/10^5$) and for males ($1.7/10^5$) than the rate in the same age group among Israeli Jewish and Arab populations, Jordanians and Cyprians[13]. High proportion of young-onset colorectal cancer was also reported in our previous hospital-based studies[5-7,14] that showed about 1/3 of all Egyptian colorectal cancer patients under age 40 years. 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[6,15] or due to intense environmental exposures with more susceptibility among the younger generations[15]. While our previous studies showed no familial aggregation among young patients to suggest HNPCC or similar syndromes[7,16,17], more recent studies of possible mismatch repair gene defects[18-21] or autosomal recessive inheritance[22] are warranted in this population, especially in absence of a strong family history and lack of distinct molecular characteristics among young-colorectal cancer patients in Egypt[7,17].

The high proportion of cancers that are located in the rectum in this study (37.2%) and the low ratio of colon/rectum tumors are characteristic of colorectal cancer in developing countries[23]. The high proportion of rectal cancer was reported in our previous hospital based studies[5-7]. However, the proportion of rectal cancer declined from about 50% to 37% perhaps due to the more accurate nature of the population-based studies or the changing life-style with westernization leading to higher proportions of colon than rectal cancers[23]. However, the proportion of primary rectal colorectal cancers in this study is still high compared to Western countries, where only 27.9% of American colorectal cancers are primary rectum[13]. It is worth noting that recent studies in the United States showed increasing incidence of both young-onset colorectal cancer as well as the proportions of rectal cancers[24].

Table 5 Age standardized incidence rates by gender in Gharbiah, Egypt and the United States Surveillance Epidemiology and End Results Program

	Gharbiah, Egypt 1999-2007			United States SEER 1999-2001			*P* value
	Total	Male	Female	Total	Male	Female	
Total cases	1364	737	627	55 480	27 892	27 588	
Total rate	5.5	6.1	4.9	32.0	37.7	27.4	< 0.0001[1]
< 40 yr	1.3	1.4	1.2	1.2	1.3	1.2	
40-59 yr	12.0	12.8	11.2	37.9	43.3	32.8	
60-69 yr	19.4	22.5	15.8	154.0	185.4	126.4	
> 70 yr	21.2	24.4	18.6	311.3	369.8	270.8	

[1]χ^2 test of total age standardized incidence rates, by age group, Gharbiah, Egypt 1999-2007 *vs* United States Surveillance Epidemiology and End Results Program (SEER) 1999-2001.

The very low rate of polyps reported in this study is unique. The low rate of polyps was also reported in our previous hospital-based studies[6,7]. It is important to note that pathologists in this population in Egypt report very few polyps in other segments of the resected colon not only in the cancer site. Causes of the very low rate of polyps may be related to diet rich in high fiber, legumes, and green vegetables[25,26] which is common in this population[27,28]. Other causes of the low polyp rate may be related to the intake of aspirin or aspirin- like compounds[29-32] which is also common in this population because of self-medication[33,34] or other molecular pathways that do not include polyps in the colorectal carcinogenesis in this population.

There are a number of distinctive environmental and possibly genetic factors that may contribute to the variable rates of urban/rural incidence in this population. Intense exposure to pesticides in this predominately agricultural region[8], industrial pollution[15,35-37], and high rate of consanguinity and first cousins' marriage[16,17] may also

lead to this variable cancer incidence and urban/rural rate risk differences.

The higher incidence rate of colorectal cancer in regions of the province may suggest differences in environmental exposures and/or variable access to medical care for colorectal screening or diagnosis. As there is a fairly reliable access to medical care for diagnosis and no screening facilities are available in the province of the registry[38], differences in risk factors across the region is most likely the cause of the variation in incidence rates. The main occupation in the Gharbiah province is agriculture. Further, pesticide manufacturing in Kafr El Zayat City and textile production in El Mehalla City are also important industries in the province.

This study had the following strengths: (1) the population-based data from the Gharbiah population-based cancer registry and the large sample size give an accurate picture of the state of colorectal cancer in Egypt; (2) the inclusion of key demographic and clinical data allowed for characterization of the clinical profile and suggestions of possible risk factors for colorectal cancer in this population; and (3) previous studies in the same population using hospital-based data were comparable to results from the population-based cancer registry. Weaknesses included inherent nature of population-based cancer registries of limited information on potential risk factors for colorectal cancer, such as diet and lifestyle habits, pesticide exposure, and family history because of lack of interviewing of patients.

In summary this study showed a relatively high incidence of colorectal cancer under age 40 years and a significantly low incidence in the age group of 40 years and older in this population in Egypt. The high proportion of rectal cancers and the vast majority of tumors without polyps are also interesting findings of the study. Regional differences in disease incidence in colon and rectal cancers in the region may reflect different etiologic patterns in this population. Future analytical studies should focus on further understanding of the etiology and pathogenesis of the disease in this population with extensive environmental exposures and possible genetic factors that may modulate the disease risk.

COMMENTS

Background

Previous hospital-based studies in Egypt showed low incidence of colorectal cancer and high proportion of young-onset disease. Egypt has a new reliable resource of a population-based registry in the Gharbiah region of the Nile Delta. The registry data for the period of 1999-2007 was used to examine epidemiologic, clinical and incidence rates of colorectal cancer in this population and to compare that with the results of the United States Surveillance Epidemiology and End Results Program (SEER).

Research frontiers

The vast majority of tumors (97.2%) had no polyps and 37.2% of the patients presented with primary lesions in the rectum. Colorectal cancer was more common in patients from urban (55%) than rural (45%) areas. Regional differences in colon and rectal cancer incidence in the 8 districts of the study province may reflect different etiologic patterns in this population. The registry data of Egypt shows a slightly higher incidence of colorectal cancer than the United States in subjects under age 40 years. The results also shows significantly lower incidence of colorectal cancer in subjects over age 40 years compared to the same age group in the United States SEER.

Innovations and breakthroughs

This study confirms that patients over age 40 years in Egypt have significantly lower incidence of colorectal cancer than subjects in the same age group in the United States. This is the first study on a population-based scale to show the limited proportions of polyps in colorectal cancer patients in Egypt.

Applications

Future clinical and epidemiologic studies should investigate the etiologic factors related to the regional differences of colorectal cancer in this population in Egypt. Studies should also explore clinical and molecular pathways for the district age and polyp distribution of colorectal cancer.

Peer review

The quality of the data set is very important, especially in the population-based cancer registry.

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