RESEARCH COMMUNICATION

Distribution of Cancer and Adenomatous Polyps in the Colorectum: Study in an Iranian Population

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Abstract

Objective: There is consensus that the majority of colorectal carcinomas (CRCs) arise from adenomatous polyps. Therefore, for management of colorecatl cancer, diagnosis and endoscopic resection of adenomas is advised. If the same etiologic factors are operating for polyps and cancers their anatomical distributions should be the same. The present study was conducted to determine whether the distribution of adenomas is consistent with that of CRCs and for comparison with other studies, especially in Western populations. Materials and methods: We reviewed, retrospectively , endoscopically reported anatomic sites of all adenomatous polyps and CRCs which were histologically confirmed from Jan 1992 to Dec 2005 in Tabriz, the North-west of Iran. One hundred and forty-three CRC's and 180 adenomatous polyps (in 145 patients) were found. Patients with polyposis syndromes were excluded the analysis. Age and sex of patients, size and anatomic sites of polyps and cancers were studied. Results: The average ages of patients with adenomas and cancers were 46.3(SD 14.7) and 53.9(SD 13.3)years, with 55.5% and 62.2% in males, respectively. In both cancer and adenoma cases the most common presenting symptoms were rectal bleeding and bloody diarrhea (52.4% , 16.9% and 39.2% , 15.8% for cancers and adenomas, respectively)without any significant difference(0>05). The vast majority of adenomas (85%) and cancers (81.7%) were left sided (p>0.05). The propensity for polyps to be found in the descending colon was of corderline significance (p=0.07). The cecal segment uniquely demonstrated cancers(p=0.01) without any polyps. Conclusion: A similar anatomic distribution pattern and left shift of colorectal adenomas and cancers in this Iranian population is compatible with most other Asian countries . However, because of the occurrence of the neoplasms in the right colon total colonoscopy should still be considered for screening purposes.

Key Words: Polyp - adenoma - colorectal cancer - polypectomy

Asian Pacific J Cancer Prev, **7**, 65-68

Introduction

Colorectal cancer (CRC) is both common and relatively fatal. The overall 5 year survival rates are only 40 – 45%, mainly because 40% of all CRCs are detected in an asymptomatic localized stage (Johnson et al., 1990). But it is highly curable or even largely avoidable if current preventive, screening, and surveillance recommendations are followed (Bond, 2000) .

A colorectal polyp is defined as a mass protrudes into the lumen of the colon (Kim and lance, 1997) . It is widely accepted that the majority of CRCs arise from neoplastic adenomatous (adenoma) polyps (Bond, 2000a;2000b; Bersentes et al., 1997) , through what is known as the adenoma – to – carcinoma sequence (Ikeda et al., 1999). Case control studies have suggested that endoscopic polypectomy decreases the subsequent incidence of cancer in the segment of the colon by 50 – 79% (Hixson et al., 1994; Muller and Sonnenbery, 1995; Rex, 1995), with protective influence lasting up to 6 years. Large international differences for the rate of CRC in different countries are due to environmental, especially diet , rather than genetic causes (Willett et al., 1990). It is suggested that distribution of large adenomas and cancers in colorectum is the same (Steren, 2002). Most of the data about etiologic factors of CRCs are from Western populations. Asia is generally a low incidence region for CRCs (Parkin et al., 1997),with demographic differences from Western patients (Goh et al., 2005). Based on a recent comparative review of risk factors for CRCs,between US and Asian populations, Moore et al suggested that determination of changes in sub-sites and stage distribution,as well as age at diagnosis,and size of colon and rectal cancers over time would be an important pointer for future research (Moore et al., 2005).There are reports of sharp increase in the incidence of CRC in Iran during the last 2-3 decades (Babaei et al., 2005) and baseline data of changes over time are available (Mostafa et al., 2004). In a review of English language articles in Medline up to 2005,

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we could not find any data on distribution of CRCs in Iranians. The aim of this study was thus to determine whether the distribution of adenomas is consistent with that of CRCs. We compared the distribution pattern of adenomas with that of cancer , in the colorectum in an Iranian population.

Materials and Methods

We reviewed the charts of a consecutive series of 145 patients with 180 colorectal adenomatous polyps and 143 cases with cancer lesions in patients presenting with either adenomatous polyps or cancer at the Department of Gastroenterology of Tabriz University of Medical Sciences, Tabriz, Iran, between Jan.1992 and December 2005.Total colonoscopy was performed in all adenoma cases,but failed to reaching to cecum in 8 cases who underwent flexible sigmoidoscopy (FS) up to the splenic flexure, and DCBE 1-7 days afterwards for synchronous lesions. Cold biopsy was taken in 4 patients with large sessile polyps (1.5-2.5 cm in diameter) and 14 cases with polyps less than 5 mm. In 5 patients with large polyps (2-3 cm) piecemeal endoscopic resection by snare was performed. All other polyps detected during endoscopy, including one of the larger polyps in a multiple polyp case, were removed by snare polypectomy. Polyp histology was determined by standard criteria.The size of each polyp was established with open biopsy forceps, or by ruler with polypectomized specimens.

In patients with cancer, total colonocopy was done in 104 cases (72.7%), due to narrowing of the lumen or presence of colonic contents, including 20 cases of whom colonoscopy was performed because of distal adenomas. The remainder (39cases) were suspected by clinical features and DCBE findings,and diagnosed post-operatively. The anatomic areas were divided as follows: first 12 cm of distal colon, rectum; 12-25 cm, sigmoid colon, and the remainder according to anatomic landmarks (i.e splenic and hepaticure and cecum).

Patients with polyposis syndromes were excluded.

Statistics

Analysis was performed on 120 patients with solitary adenomatous polyps and cancers for age ,and in 180 polyps and cases with CRCs for and anatomic distribution in 145 patients. Chi Square calculations with MSTSTC software (Michigan University, Version 1.42) were used to determine differences between percentages of age decades and anatomic segments. The same software was also used to calculate the mean age of the patients. The Students t-test and F-test were used to compare the mean age of two groups and for assessing the homogeneity of groups, respectively. P-values of <0.05 were considered to be significant in all cases.

Results

In a total of 145 patients with adenomas 180 polyps were detected. The average age of patients with adenomas and cancers were 46.3(SD 14.7) and 53.9(SD 13.3)years, with 55.5% and 62.2% males,respectively.The age of the patients with adenomas and CRCs is summarized in table 1.Adenomas were significantly more frequent in 3th decade than cancers(p=0.05) with no significant difference in other age groups(p>0.05).

Table1 – Age of the Patients with with CRCs and Adenomas

Decade	3	4	5	6	7	8	9	Total
Cancers	5	14	43	25	39	15	2	143
(%)	(3.5)	(9.8)	(30)	(17.9)	(27.3)	(10.9)	(1.4)	
Polyps	16	21	37	16	23	6	1	120
(%)	(13.3)	(17.5)	(30.8)	(13.3)	(19.2)	(5)	(0.8)	
P-value	0.005	NS	NS	NS	NS	NS	NS	

In both cancer and adenoma cases the most common presenting symptoms were rectal bleeding and bloody diarrhea (52.4% , 16.9% and 39.2% , 15.8% for cancers and adenomas, respectively)without any significant difference(0>05). Histologic examination of all cancers was revealed primary adenocarcinoma apart from one metastatic adenocarcinoma in a known case of gastric adenocarcinoma . One of the primary cases was clear cell type of adenocarcinoma . Adenomas were classified histologically as tubular in 81 (67.5%) , villous in 13(10.8%) , and tubulo-villous in 26(27.7%) cases,the tubular type significantly more common than two other types(p=0.0001) . The size of polyps were as follows : 44(36.7%);≤ 5mm , 47(39.2);6 – 10 mm , 20(16.7%);11-20 mm , and 9(7.5%);> 20 mm,smaller than 11 mm the most frequent(p=0.006) .
The size of 96(80%) of tubular type and 21(17.5%) of tubulo-villus type was less than 1 cm. All of the villous adenomas measured >1 cm. Coexistent malignancy was identified in 16 (13.3%) cases with adenomas. The anatomic distribution of adenomas and cancers is demonstrated in Table 2. The vast majority of both adenomas (85%) and cancers (81.7%) were left sided (p>0.05). Propensity of polyps to descending colon was nearly significant (p=0.07) in comparison with cancers. Cecal segment was unique for cancer (p=0.01) without any polyps.Thus in our study otherwise than a propensity of cancers for cecal area, there was not any significant difference in distribution pattern of colorectal adenomas and cancers for all remaining segments.

Table 2. Distribution of Adenomatous Polyps and Cancers

Site	Rectum	Sigm	Desc	Trans	Ascend	Cecum
Adenoma	63	57	33	16	11	—
(%)	(35)	(31.7)	(18.3)	(8.9)	(6.1)	
Cancer	61	43	13	5	12	9
(%)	(42.6)	(30)	(9.1)	(3.5)	(8.4)	(6.3)
P-value	NS	NS	0.07	NS	NS	0.01

Sigm, sigmoid colon ; Desc , descending colon and splenic flexure; Trans, transverse colon; Ascend, ascending colon and hepatic flexure

Discussion

The prevalence of adenomas within a population, and the prevalence of people with multiple adenomas, geographically parallels the prevalence of colon cancer (Correa, 1978). The frequencies of both cancer and adenoma increase with increasing age , with the highest increase in the age group of 50 – 59 years (Peipins and Sandler, 1994; McCashland et al., 2001) . In our study the mean age of patients with colorectal polyps was a decade lower than CRCs. Men may have a higher prevalence of colon polyps and tumors than women, but women had a greater number of pure right – sided polyps and tumor development (McCashland et al., 2001). In our study both adenomas and cancers were more frequent in males (55.2% and 62.2%, respectively). Based on most epidemiologic studies, when the data on adenomas are stratified by age and sex , a pattern similar to that of cancer emerges (Peipins and Sandler).

CRC usually arises from adenomas (Viner et al., 2002). Incidence and anatomic distribution of colorectal polyps, including adenomas, in high and low risk areas for CRCs are different (Ali et al., 2001) , most of them are left sided in Asian population (Waitayakul et al., 2004). For CRCs , over the last two decades time trends in incidence rates, and changes in the anatomic subsite distribution have been reported in some Western countries, with a shift to the right colon (Scheiden et al., 2005; Patel and Hoffman, 2001). Among the US population, a proximal migration of colon cancer over time was identified for all age groups by Mostafa et al (2004). In the African continent left sided preponderance of CRC has been shown. However , in a study by Mcfarlane et al , a proximal shift in recent years in the Jamaican population has been identified (McFarlane et al., 2004). In Asia , there is some discrepancies about subsite distribution of CRCs . In a report from Malaysian patients by Goh KL et al (2005) tumors were mainly left sided. A comparative study by Wu et al (2004) in Asians and Pacific Islanders (API) , American whites and African Americans identified a significantly higher rectal cancer incidence rate in API males than in white and African Americans , and a higher rate of rectal cancer than the rates of proximal and distal cancers in API populations. In another study by Rasul KI et al (2001) in Qatar, in 120 patients with CRCs, descending and sigmoid colon was the most common anatomical site affected. In Japanese registries, there is considerable variation in the relative incidences of colon as apposed to rectal cancers over the last 25 years (Takada et al., 2005). CRC with age-standardized rate (ASR) of 6-7.9 /100,000/year is the fourth most common cancer in Iran (Sadjadi et al., 2003). During the last 30 years a sharp increase in the incidence of colon cancer has been occurred (Yazdizadeh et al., 2005) in this country. Based on study by Pahlavan PS et al (2005) some provinces of Iran have a highest ASR among Asian countries, except for Israel. They have suggested that these findings probably indicate more westernization in Iranian diet in recent years, with a genetic influence.

In the present study we found a similar distribution of colorectal adenomas and cancers ($p>0.05$), except of a significant cancer preponderance to cecum($p<0.05$) . Distal shift of colorectal neoplasms is consistent with status which in US and some Western countries in 2-3 decades ago. Moore et al (2005) and others have been suggested that diet /lifestyle are probably important factors in the genesis and subsite distribution of CRCs. Thus, it is estimated that with westernization of diet in some Asian countries, including Iran, a future trend to proximal migration of adenoma and cancers could be occurred. Our findings are in contrast of study results of Ikeda Y et al in Japanese population in 1991-95 (1999). They identified that the incidence of CRCs , significantly increased with a distal shift in comparison with that of adenomatous polyps , and appear to have a different malignant potential for cancer development. This may be due to a different Japanese diet /lifestyle, suggested by Wu et al (2004).

In conclusion, a similar anatomic distribution pattern and left shift for colorectal adenomas and cancers exists in this Iranian population, compatible with data for most of the other Asian countries. However, because of occurrence of the neoplasms in the right colon, total colonoscopy should still be considered for screening purposes.

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