



Original Article

Anatomic Site Distribution of Colorectal Cancer: A Retrospective Study of 102 Cases in a Tertiary Hospital

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Abstract

Colorectal carcinoma is one of the major cancers in the developed world. It is not uniformly distributed through out the large bowel. Recent studies of patients with colorectal cancer have suggested a shift towards the proximal colon and an increase in incidence of right sided colon cancer. This study aimed to determine the anatomical distribution of colorectal in our tertiary level hospital. A total of 102 patients were selected retrospectively from Department of Gastroenterology in Rajshahi Medical College. Records of patients of colorectal cancer were reviewed for demographic data, histological type and anatomical location of tumour. Tumour located at or proximal to splenic flexure were defined as right sided cancer and tumour arising distal to the splenic flexure were defined as left sided cancer. Out of 102 patients, 74 are male and 28 are female and male: female ratio 2.6:1. The age range was from 21 to 71 years with mean 46.5 ± 13.3 . Approximately seventy eight percent of cancer was left sided and 21% were right sided. Age and sex related distribution of proximal and distal tumors were analyzed but no statistically significant relation has been observed. So it is observed that the anatomical distribution of colorectal cancer has been fairly constant with no evidence of proximal shift of colorectal cancer. However multicenter large volume studies can bring a concrete opinion.

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Introduction

Colorectal cancer (CRC) is the most common gastrointestinal malignancy throughout the developed world and the second leading cause of cancer death in the united states^{1,2}. Despite of slight decrease in its incidence and mortality during past two decades approximately 140000 people are affected annually and about 50000 cancer related death per year³. The incidence of colorectal cancer is considered low in India. But in recent years due to westernization of life styles and nutritional habit, the rate is increasing.⁽⁴⁾ Colorectal cancer is not uniformly distributed throughout the large bowel. In General

two-thirds of colorectal malignancies are localized in the left colon and rectum.

During last two decades many recent studies have depicted an anatomic shift of colorectal cancer toward right side of colon⁵. Some investigators using age- specific and sex specific analysis methods have drawn the conclusions that patients with right sided cancer are older than those with distal colorectal cancer. Women made up a higher percentage of patient with proximal colon cancers^{6,7,8}. So this study is aimed to determine the anatomical site distribution of colorectal cancer in tertiary hospital.

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Material and Methods

A retrospective study was undertaken. Consecutive 102 patients were enrolled from colonoscopy patients' registrar in the Department of Gastroenterology of Rajshahi Medical College Hospital. The study period was March 2007 to Feb2010. Data were reviewed & age, sex and tumour location were recorded for each case. All patients are histologically proven colorectal adenocarcinoma and anatomic sites of involvement were assessed with full colonoscopy. Patients with synchronous cancer, inflammatory bowel disease and familial adenomatous polyposis were excluded from this study. Tumour located at or proximal to splenic flexure was defined as right sided cancer and tumour arising distal to the splenic flexure were defined as left sided cancer⁹.

Data were analyzed with statistical package for social science (SPSS) 12.0 program. Variables were recorded as descriptive frequencies. Differences were reported as statistical significant if the p value was less than 0.05. Data are expressed as mean, standard deviation and 95% CI (confidence interval). Statistical analysis was performed using chi-square (χ^2) are given in SPSS.

Results

All 102 patients were included in this study, of which 74 are male and 28 are female and male: female ratio 2.6:1. The age range was from 21 to 71 years with mean 46.5±13.3. Clinico-demographic profiles have been described in table 1. All patients had abdominal pain or discomfort and also had some sort of bowel alteration. Majority of patients (73.5%) were with rectal bleeding. Distal colon cancer including rectal cancer was overall still common & comprising (78.4%). Among distal cancer recto-sigmoid is the most predominant location (26.4%) (Table 2). Our study revealed proximal cancer is low (21.5%) and did not show any right sided shifting (Table 2). The distribution of colorectal cancer according to age and sex were shown in Table 3 & 4 and no statistically significant relation with either age or sex was observed. Histologically all patients were with adenocarcinoma.

Table 1: Clinico-demographic characteristic of patients with carcinoma colon (n=102)

Age (yr)	46.5±13.3
Sex (male:female)	2.6:1
Residence	
Rural	64(62.7%)
Urban	38 (37.3)
Social status	
Poor(<5000/- Tk/ mon)	43 (42.2%)
Middle (5000-10000/-Tk./mon)	51(50.0%)
Upper class >10000/-Tk./mon)	8 (7.8%)
Positive Family history of colon cancer	2(1.96%)
Abdominal pain	102 (100%)
Bowel habit	
Loose -	78(76.5%)
Constipation-	8(7.8%)
Mixed	16 (15.7%)
Rectal bleeding	
Present	74(73.5%)
Absent	28 (27.5%)
Abdominal lump	
Present	38(37.3%)
Absent	64(62.7%)
Anemia	
Mild-	11 (10.8%)
Moderate	60 (58.8%)
Severe	31 (30.4%)

Table 2: Distribution of Colorectal cancer (n=102).

Location	No (percent)
Rectum	22(21.5%)
Colon	80(78.4%)
Proximal	22(21.5%)
Cecum	12 (11.7%)
Colon ascends	8 (7.8%)
Transverse colon	2 (1.9%)
Distal	58(56.8%)
Colon descends	14(13.7%)
Sigmoid	17(16.6%)
Recto-sigmoid	27 (26.4%)

Table 3: Relation between anatomical distribution with age (n=102).

Age	Distribution of location		Total	P value
	Proximal	Distal		
≤ 40 years	6 (5.8%)	27 (26.4%)	33 (32.3%)	$\chi^2= 0.76$
>40 years	16 (15.6%)	53 (51.9%)	69 (67.6%)	
Total	22 (21.5%)	80 (78.4%)	102 (100%)	

Table 4: Anatomic distribution according to sex (n=102)

Sex	Distribution of location		Total	P value
	Proximal	Distal		
Male	17 (16.6%)	57 (55.8%)	74(72.5%)	$\chi^2= 0.57$
Female	5 (4.9%)	23 (22.5%)	28 (27.4%)	
Total	22 (21.5%)	80 (78.4%)	102(100%)	

Discussion

Colorectal carcinoma is the second most common cancer in the western hemisphere of the world and very important cause of mortality and morbidity. Colorectal carcinoma is not uniformly distributed through out the large bowel. Compared with western countries, the incidence of CRC is low in Asia, but the dietary habits and life styles have influenced greatly the increasing incidence in developing area of world. Rectal and sigmoid cancer accounts for a disproportionately high percentage of cancers in large bowel. The actual mechanism is not clear. Rates of CRC also vary considerably with geography. In recent years, there are some changes in pattern of CRC, such as increasing incidence rate in Japan, Eastern Europe and China with continued development of right ward shift of CRC along with decrease of rectal cancer.^{10,11,12,13,14}. Analysis of our data disclosed that the distribution pattern of CRC is quite stationary.

This rightward shift may be related to improved diagnostic accuracy and varying etiological factors. There may several potential causes for proximal shift of colorectal cancer. . The proximal and distal colon has different embryologic origins, morphology, physiology and functions. Caecum, colon ascends, and proximal two- third of transverse colon derives from mid-gut, whereas the segment comprising the splenic flexure to upper anal canal derived from hind gut. The distinct embryologic origin of each segment are reflected the dual blood supply of normal colon. The proximal colon is primarily involved in water absorption and solidification of fecal content but the distal colon primarily for storage. The metabolic pathways such as that of glucose, butyrates and polyamines are also different .It has therefore been hypothesized that the proximal and distal colon are different organ. It may mean differences in differential sensitivities and exposure to carcinogens for the proximal and distal section of colon and rectum¹⁵.

In low risk countries, rectal cancer accounts for the largest proportion of all colorectal cancer ¹⁶.

Our study findings are making this conformity well. The proportion of rectal cancer among all colorectal cancer is generally less than 40% in Europe and North America, in contrast to 50% or more in Asia ¹⁷. In our study rectum and recto-sigmoid cancer is the commonest site of involvement in Bangladesh.

Several studies reported the predominance of proximal cancer among female patient and in advanced age in developed countries ^{18, 19}. The reasons for age and sex difference, however remains unclear. Risk factors for CRC include genetic and environmental factors such as obesity, insufficient physical activity, alcohol and red meat consumption. Hormone replacement therapy and non-steroidal anti-inflammatory drugs use have a protective effect.²⁰ We have analyzed the age and sex related distribution of proximal and distal tumors but no statistically significant relation have been observed.

So in conclusion the anatomical distribution of colorectal cancer has been fairly stable in this hospital with no evidence of proximal shift of colorectal cancer. However multi-center large volume studies can bring a concrete opinion.

The limitation of this study was that it comprised small number of sample and location has been determined only by colonoscopic means and indeed there is no precise landmark for colonic segment identification by colonoscopic procedure.

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