JOURNAL OF **SURGICAL SCIENCES**

Original Article

Carcinoma of the Rectum: A Clinicopathological Evaluation of Patients in Tertiary Care Hospitals

Mohammad Arif Hossain [1], Md. Jahangir Kabir Bhuiyan [2], Tutul Talukdar [3], Feroze Quader [4]

Abstract

Background: Colorectal carcinoma is the fourth most commonly diagnosed cancer and the third leading cause of cancer deaths worldwide. The rectum is the most frequent site involved. The disease is no less common in our country in comparison to western world. The aim of this study was to determine the incidence and to review the clinicopathological aspects of carcinoma rectum in different ages in our country.

Methods: This is a prospective observational study which includes 50 cases of carcinoma rectum which were admitted under different surgical units of Dhaka Medical College Hospital and Bangabandhu Sheikh Mujib Medical University during the period of November 2007 to December 2008.

Results: The present study showed maximum incidence of carcinoma rectum in the age group 21-30 years. Next common age group was 31-40 years. Incidence declined after 60 years. Majority of victims were male giving a male to female ratio of 1.17:1. As regards the mode of clinical presentation, most patients presented with bleeding per rectum. Majority of patients in this study was moderately anaemic. Curative resection was possible in 54% cases, palliative resection in 38% and palliative end colostomy was done in 4% cases. Only 2% mortality was reported in this study. Histopathological grading showed that poorly differentiated adenocarcinoma of rectum was more common in younger age group.

Conclusion: Younger patients with carcinoma rectum have several distinct clinicopathological features. Since early diagnosis is essential to improve the cure rate for carcinoma rectum, all known procedure tools must be used to detect carcinoma of the rectum in an early stage, in addition to periodic selective investigations of high-risk group.

Key Words: Carcinoma rectum, Bleeding per rectum, Adenocarcinoma

Introduction

Colorectal carcinoma is the fourth most common cancer and the third most frequent cause of cancer deaths worldwide. WHO estimates that over a million of new cases occur yearly, with 639,000 deaths[1]. The rectum is the most frequent site involved[2].

Worldwide incidence of this neoplasm is high with wide variation in geographic and environmental status, living habits, dietary status etc. The incidence increases with age; from 0.39 per 1000 persons per year at age 50 to 4.5 per year at age 80[3]. The 5-year survival is 90% when CRC is diagnosed at an early stage, however, less than 40% cases are diagnosed when the cancer is still localized[4]. The frequency of CRC varies remarkably among different populations. The incidence is highest in developed countries of North America, Australia, and New Zealand, intermediate in Europe and low in Asia, South America and especially in sub-Saharan Africa[5].

Although the disease is not uncommon in our country in comparison to Western countries, there have been almost no large-scale studies regarding the disease in this country. So the exact incidence of this disease in our country has not been evaluated yet. There is also increased incidence of carcinoma rectum found in younger age group in our clinical experience.

1. Junior Consultant (Surgery), Cox's Bazar Medical College Hospital, Dhaka
2. Associate Professor and Head, Department of Surgery Cox's Bazar Medical College, Cox's Bazar
3. Resident Surgeon, Cox's Bazar Medical College Hospital.
4. Professor of Surgery, Universal Medical College, Dhaka.
Correspondence to: Dr. Mohammad Arif Hossain, Junior Consultant (Surgery), Cox's Bazar Medical College Hospital, Cox's Bazar. e-mail: arifk52@gmail.com Cell: +8801818650463

The aim of our study was to evaluate the clinicopathological pattern of carcinoma of the rectum at different age groups.

Materials and Methods

This is a prospective observational study which includes 50 cases of carcinoma rectum which were diagnosed clinically and confirmed histopathologically to be malignant tumor arising from the rectum admitted under the surgical units of Dhaka Medical College Hospital (DMCH) and Bangabandhu Sheikh Mujib Medical University (BSMMU) during the period of November 2007 to December 2008. This study did not include the tumors secondarily involving the rectum, those who were clinically suspected but couldn't be confirmed histologically due to refusal of operative procedure, and became expired before surgical intervention.

Detailed histories of the patients were taken by using a questionnaire and were examined thoroughly. Per rectal examination, proctoscopy and full colonoscopy were done in all cases to confirm the diagnosis and to evaluate the whole colon for any synchronous lesion. In cases where full colonoscopy could not be done, per-operative evaluation was carried out. The findings were recorded in chronological and systematic order.

Routine investigations were done in all cases. CEA level of blood was also estimated to evaluate the postoperative prognosis. Regarding radiological and imaging examinations, plain radiograph of chest and ultrasonography of whole abdomen were done in all cases. In few cases, we have done contrast enhanced CT scan of abdomen to stage the disease.

All cases were operated according to peroperative (Duke's) staging ranging from palliative care to curative excision of the growth. During operation a total survey was made to ascertain the stage and extent of the lesion. Tissue and lymph node for histopathological examination were collected and sent to the laboratory for confirmation of the diagnosis.

Post-operative management was done accordingly. All patients were given adjuvant radiotherapy and chemotherapy according to the opinion of tumor board. Patients were followed up monthly for three months and then six monthly during the period of study.

Results

The statistical data collected from the detailed information of each case have been compiled and presented in tabulated form and different figures. Age of the patients ranged from 16 years to 65 years. Majority of the patients fell in the age group of 21 to 30 years. Next common age group was 31 to 40 years. So, 60% sufferers are within the age of 21 to 40 years. Incidence declined after 60 years (Table-I). Out of total 50 cases of carcinoma of the rectum, 27(54%) cases were male and 23(46%) cases were female. Male to female ratio was 1.17:1(Figure-1).

The majority (84%) of the patients with carcinoma rectum presented with bleeding per rectum. Next frequent presentation was alteration of bowel habit in 30 (60%) patients. There were significant anaemia in 19 (38%) cases. 90 %(45) of the cases with carcinoma of the rectum had positive findings in digital rectal examination and proctoscopy. Colonoscopy was done in 48 patients. There was no synchronous lesion found in rest of the colon. In 2 patients colonoscopy could not be done because of acute intestinal obstruction (Table II). Ultrasonography was done in all cases. Among them rectal growth could be detected in 10 (20%) cases and findings were normal in 30 (60%) cases. CT scan was done in 30 cases and rectal growth was detected in all 30 (100%) cases. Adjacent organ involvement was also detected in 10 (33%) cases (Table III).

Carcinoembryonic antigen (CEA) levels were less than 3.5ng/ml in majority of cases of both age-groups (Table IV). Among all (50) cases both of stage B and D were highest (16, 32%), (Table V). Curative resection could be done in 27 (54%) patients. Palliative resection had been done in 19 (38%) cases. Palliative end colostomy was done in 2 (4%) cases and defunctioning colostomy was done in 2 (4%) cases (Table VII).
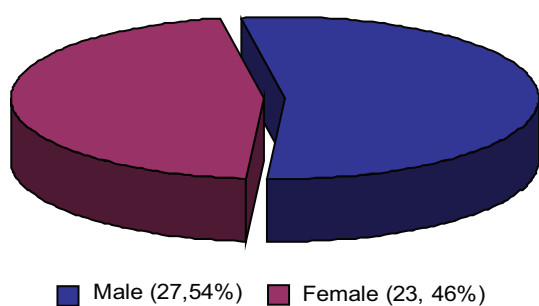
All of the cases of carcinoma of the rectum were adenocarcinoma out of which poorly differentiated adenocarcinoma was more in younger age group which was 26.67%(8) than older age group which was (5%, 01), (Table VII).

Table I. Incidence in different age groups (N=50)

Age (years)	No. of cases	% of cases
Up to 20	2	04
21-30	29	38
31-40	11	22
41-50	4	9
51-60	2	04
61-70	1	02
71-80	1	02

Sex Incidence (N=50)

- Male (27,54%)
- Female (23, 46%)

Fig.-1: *Sex incidence (N=50)*

Table II. *Presentation of carcinoma rectum (N=50)*

Symptoms	No of cases	% of cases
Bleeding per rectum	42	84
Sense of incomplete defecation	15	30
Alteration in bowel habit	30	60
Pain in the perineum	22	44
Pain in the abdomen	08	16
Constipation	09	18
Diarrhoea	06	12
Anorexia	06	12
Weight loss	07	14
Intestinal obstruction	02	04
Anaemia	19	38
Ascites	01	02
Abdominal lump	01	02

Table III. *Ultrasonography and CT scan findings*

Findings	Ultrasonography (N=50)		Computerized tomography (N=30)	
	No of cases	% of cases	No of cases	% of cases
Rectal growth	10	20	30	100
Hepatic involvement	04	8	10	33
Ascites	04	8	10	33
Lymphadenopathy	01	2	03	10
Ureteric involvement / compression	03	6	02	02.67
Normal findings	30	60	0	0
Local invasion	0	0	10	33

Table IV. *Levels of Carcinoembryonic antigen (CEA) in two different age groups with carcinoma of the rectum (n=40)*

CEA (ng/ml)	Younger patients (< 40)	Older patients (40 or more)
<3.5	11 (42.30%)	7 (50%)
3.5 – 10	7 (26.92%)	3 (21.43%)
>10	8 (30.77%)	4 (28.57%)

Table V. *Dukes' staging (N=50)*

Stage	No of cases	% of cases
Stage-A	11	22%
Stage-B	16	32%
Stage-C	7	14%
Stage-D	16	32%

Table VI. *Operative treatment (N=50)*

Operative treatment	No of cases	% of cases
Curative resection	27	54%
Palliative resection	19	38%
Palliative colostomy	2	4%
Defunctioning colostomy before resection	2	4%

Table VII. *Various histopathological Grading of carcinoma rectum*

Tumour grade	Younger patients (< 40)	Older patients (40 or more)
Well differentiated adenocarcinoma	5 (16.67%)	6 (30%)
Moderately differentiated adenocarcinoma	17 (56.67%)	13 (65%)
Poorly differentiated adenocarcinoma	8 (26.67%)	1 (5%)

Discussion

Colorectal cancer has a worldwide distribution with highest death rates in the United States, Australia, New Zealand, and Eastern European countries and lower in South America and Africa[6]. It is the third most frequent type of cancer in males and females worldwide[5]. The incidence of colorectal cancer in Asian subcontinent, United Arab Emirates and Gulf countries is considered to be low due to their vegetarian lifestyle[7]. Recent studies have however shown an appreciable increase in the incidence of colorectal cancer in these low-risk areas especially in younger age groups which is almost the same as in high-risk patients of the West[8]. Naila I. H et al[9] (2009) shows that 44.5% patients in 41-60 years age group and 34.7% in 21-40 years age group with a very high percentage of patients affected by colorectal cancer under 60 years of age (i.e. 79.2%).

In this study, maximum incidence of carcinoma rectum was found among the people of third decade (i.e. 21-30 years age group) which was 38%. 60% sufferers were within 21-40 years. The incidence declined after the age of 60. If indicates an increasing incidence of carcinoma of the rectum in younger population. Iversen et al[10] also found colorectal carcinoma to occur in old age group. Their study was on 15855 patients from 1995 to 1999 in Denmark. Patients aged less than 40 years account for only 2-8 percent of all cases and the pick age of incidence is 61-70 years (39.2%).

In our country both of Islam[11] and Alam[12] reported the maximum incidence of colorectal carcinoma was in the 5th decade of life. Siddique[13] in a series of 53 cases reported the maximum incidence (39.62%) in the 6th decade. Present study shows that incidence is higher in the younger age groups in comparison to both westerns and our country. This shift of the incidence towards the younger age group may be due to geographical variation of the disease in the world and smaller number of cases in this study.

In our study the overall male female ratio was 1.17:1 with a male preponderance. This study supports other studies done in our country. Rashid[14] in 1976 reported M: F = 3:1, Islam[11] in 1980 reported M: F = 4.5:1 and Alam[12] in 2005 reported M: F = 1.73:1. However this is not similar to those of the studies done in western countries. Iversen et al[10] reported that colorectal carcinoma occurs in near almost equally in male and female with a slight female predominance. From the above discussion and comparison we found a male predominance in the occurrence of carcinoma of the rectum in our country whereas a female predominance in the western countries. This is really difficult to comment on this difference from such a study of 50 cases only. Moreover, in our country, the female (especially from the illiterate and remote rural areas) are always neglected or showing less interest for their health care. Poverty is also another important factor against health care especially in females.

Regarding clinical presentation, 60% cases complained of pain which was nearer to report of

Floyd et al[15] which was 70.18%. Altered bowel habit was complained by 60% cases. This finding has similarity with Floyd et al[15] (59.40%). Bleeding per rectum present in 84% cases of present series, which differs from report of Floyd et al[15] (54.35%). Weight loss present in 14% cases of present series, which differs from report of Floyd et al[15] (54.45%). Obstruction present in 4% cases in present series that differs from report of Floyd et al[15] (29.41%). These variations in presentations are due to specific study on carcinoma rectum.

In this study, 38% of the patients were moderately anemic with hemoglobin percentage between 50-75%, but in the series of Floyd et al[15] 27.45% patient were present with anaemia which is smaller than our study group, because, the greater incidence of anaemia in our country in carcinoma rectum may be due to chronic blood loss, diagnosis at the late stage, low socioeconomic condition and malnutrition.

In our series colonoscopy was done in 48 patients which detect growth in all cases but no synchronous lesion was found in rest of the colon. Ultrasonography was done in all cases. Among them rectal growth could be detected in 10 (20%) cases and findings was normal in 30 (60%) cases. CT scan was done in 30 cases and rectal growth was detected in all (30, 100%) cases. Adjacent organ involvement was also detected in 10 (33%) cases. CT scan could not be done in 20 cases due to lack of affordability of the patients.

Liang et al[16] on their study of 2286 patients with colorectal carcinoma shows majority with CEA level more than 10 ng/ml. Present study shows majority with CEA level less than 3.5 ng/ml. This may be due to specific study on rectal carcinoma.

All the 50 cases underwent operation of which curative resection was done in 27(54%) patients. Palliative resection had been done in 19 (38%) cases. Palliative end colostomy was done in 2(4%) cases and defunctioning colostomy was done in 2(4%) cases. In this series staging was done by Dukes' staging on the basis of peroperative findings. Highest 16 (32%) cases were found in both of stage B and D followed by 11(22%) in stage A and 7(14%) cases in stage C.

Galante et al[17] reported in a series of 975 cases of colonic carcinoma, curative resection were possible in 73% cases, palliative resection or colostomy done in 17.5% cases. In the series of Floyd et al[15] performed curative resection in only 39% of cases and palliative or bypass procedures in another 14% of cases. Onho S et al[18] reported that approximately 10-20% of patients with colonic cancer had locally advanced unresectable tumours when first diagnosed. In our country Islam[11] in 1980 reported resectability in 56% and Siddique[13] in 1984 reported curative resectability in 62% cases.

All of the cases were scrutinized with histo-pathological confirmation and all of carcinoma rectum were adenocarcinoma, out of which poorly differentiated adenocarcinoma was more in younger age group which was 26.67%(8) than older age group which was 5%(01).

Liang[16] and Nath[19] showed in their study that younger patients (<40yrs) with colorectal cancer were characterized by poor differentiation. Present study has also shown that poorly differentiated tumor was more in younger population.

Conclusion

Incidence of rectal cancer is more in younger individuals predominantly male who are less than 40 years of age and most patients of carcinoma rectum present with bleeding per rectum. Rectal carcinoma of younger age group is more aggressive regarding both staging and grading. Since, early diagnosis and treatment is essential to improve the cure rate for carcinoma rectum, we must use all known procedures to detect carcinoma rectum in early stage, in addition to periodic selective investigations of high-risk group.

References

1. Colorectal Cancer. In: Boyle P, Levin B, eds. World Cancer Report. WHO: WHO Press, 2008: 374-8.

2. Cancer Research UK. UK Bowel Cancer Mortality Statistics.

3. Clark S. The Rectum. In: Williams NS, Bulstrode CJK, O'Conell PR, editors. Bailey & Love's Short Practice of Surgery. 25th ed. London Arnold with Oxford University Press Inc, 2008: 1219-39.

4. Ries LA, Wingo PA, Miller DS, Howe HL, Weir HK, Rosenberg HM. The annual report to the nation on status of cancer, 1973– 1977, with a special report on colorectal cancer. Cancer. 2000;88:2398–424.

5.   Parkin DM, Whelan SL, Ferlay L, Youn RJ. Cancer incidence in five continents (IARC Sci.Publ.No.143) Series. Lyon, International Agency for Research on Cancer. 1997;143:566–7.

6.   Liu C and Crawford JM (2004) Colorectal carcinoma (The Gastrointestinal Tract): In Robbins and Cotran Pathologic basis of disease, 7th edition. Kumar V, Abbas AK, Fausto N (eds). Elsevier (Saunders), New Delhi, p.864.

7.   Al Jaberi TM, Yagha RJ and El Heis HA Colorectal cancer in young patients under 40 years of age; comparison with old patients in a welldefined Jordanian population. *Saudi Med. J.* 2003, **24**(8): 871-874.

8.   El Hennawy MM, Moussa MEM, el Saeidy MK, Shawky AM, Bessa SS and Badour NM. Rectal cancer in Egyptian patients less than 40 years of age. *Int. Surg* 2003, **88**(3): 137-144.

9.   Naila IH, Nighat K Bushra W and Mohiuddin A Incidence of colorectal carcinoma: Is there a "Shift to the right"? *Pak J Pharmacol* 2009 July 26, No.2, pp.1-5

10. Iversen LH, Pedersen L, Riis A, Friis S, Laurberg S, Sorensen HT. Population-based study of short and long-term survival from colorectal cancer in Denmark, 1977-1999. BJS 2005; 92: 873-880.

11. Islam AKMS. Tumours of large bowel, a clinical review (Dissertation). Dhaka: Bangladesh College of Physicians and Surgeons, 1980.

12. Alam MJ. A clinicopathological study on colorectal carcinoma (Dissertation). Dhaka: Bangladesh College of Physicians and Surgeons, 2005.

13. Siddique AKMZ. Colorectal cancer, a clinicopathological study (Dissertation). Dhaka: Bangladesh College of Physicians and Surgeons, 1985.

14. Rashid MH. Tumours of large bowel, a clinical review (Dissertation). Dhaka: Bangladesh College of Physician and Surgeons, 1976.

15. Floyd CE, Stirling CT, Cohn I Jr. cancer of the colon, rectum and anus; review of the 1687 cases. Ann Surg 1966; 163: 829-37.

16. Liang JT, Huang KC, Cheng AL, Jeng YM, Wu MS, Wang MS. Clinicopathological and molecular biological features of colorectal cancer in patients less than 40 years of age. BJS 2003 Feb; 90: 205-14.

17. Galante M, Dumphy JE, Fletcher WS. Cancers of the colon. Ann surg 1967; 165:732-44.

18. Onho S, Sumiyosi Y, Mori M, Sugimachi K. Hyperthermia for rectal cancer. Surgery 2002; 131(1): 121-2.

19. Nath J, Wigley C, Keighley MRB, Perakath B. Rectal cancer in young adults: a series of 102 patients at a tertiary care centre in India. Colorectal Disease 2009; 11:475-479.