ORIGINAL ARTICLE

Rectal carcinoma under 40 years of age: seven-year post-treatment follow-up at a tertiary care hospital in Pakistan

Naveed Haroon, Salma Khan, Rehman Alvi

Abstract

Objectives: To determine epidemiological characteristics, clinical presentation, histopathological features, and long-term follow-up of patients below 40 years of age with carcinoma rectum.

Methods: The retrospective case series comprised all patients presenting with histopathological diagnosis of carcinoma rectum with age 15-40 years at the Aga Khan University Hospital between January 1994 and December 2004. Details regarding patient demographics, pre-operative assessment, management and tumour grade and stage were obtained from a prospectively maintained database. Continuous and categorical variables in the data were analysed.

Results: Of the 23 patients in the study, 14 (60.89%) were male and 9 (39.13%) were female. Mean age of the subjects was 31±5 years. Overall, 22 (95.6%) patients presented with rectal bleeding and 12 (52%) had altered bowel habit. The most common site for the tumour was lower rectum (n=20; 87%) and 13 (56.5%) required abdominoperineal resection. Local recurrence rate was 13% (n=3) and distant metastasis occurred in 2 (8.6%) patients during the seven year follow-up. Two (8.6%) patients died, and both had distant metastasis.

Conclusion: Carcinoma rectum is uncommon but an important malignancy in patients aged below 40 years. The clinician should have a high index of suspicion in young patients presenting with bleeding per rectum, altered bowel habit and weight-loss.

Keywords: Rectal cancer, Young patients. (JPMA 63: 1460; 2013)

Introduction

Carcinoma rectum is the most common site of gastrointestinal tract malignancy.[1] Rectal cancer is generally considered a disease of old age and up to 90 per cent of patients are aged 55 years or above with an average age of 65 years at the time of diagnosis.[1] However, recently there has been an increasing number of younger patients, aged 40 years or less, diagnosed with rectal cancer with variable reported incidence from different population-based studies.[2-4] O'Connell et al. have evaluated the incidence and characteristics of colorectal tumour from the nationwide Surveillance, Epidemiology and End Results (SEER) cancer registry and, according to them, the age-specific rates of colorectal cancer (CRC) ranges from 0.8 to 7.8% in patients aged 20 to 40 years.[5] This increase in incidence has been observed in the last 25 years with the annual increment of 2.6% in rectal carcinoma vs. 0.2% in colonic carcinoma.[5] It is thought that rectal cancer in younger age group is associated with more aggressive behaviour and advanced stage at diagnosis compared to the older age group, but there are conflicting views about the characteristics and prognosis of this disease in young patients. Several retrospective studies done to discover the clinicopathological characteristics of colorectal cancer in young patients aged less than 40 years, lay emphasis on complete colorectal examination regardless of age if symptoms are suggestive of colorectal disease.[5,6] Till date, very limited data discussing rectal tumour in young patients is available from western countries and none is available from Pakistan to address rectal carcinoma in young patients.

The purpose of this study was to evaluate epidemiological characteristics; clinical and pathological features; and seven-year post-treatment follow-up of patients aged 40 years or below with rectal cancer in our region.

Patients and Methods

The retrospective case series comprised all patients with biopsy-proven carcinoma rectum, aged below 40 years from 1994 to 2004 at the Surgical Department of Aga Khan University Hospital (AKUH), Karachi, Pakistan, with complete 7-year followup. Patients with stage IV disease at the time of diagnosis, those with incomplete medical records, or followup less than 7 years or had partial treatment outside were excluded.

Medical records of all patients who met the inclusion criteria were reviewed. Data was collected on pre-designed proforma based on literature search. Information gathered about baseline variables, including

Department of Surgery, The Aga Khan University Hospital, Karachi.
Correspondence: Salma Khan. Email: dr_salmakhan@yahoo.com

demographics, social and family history, carcinoembryonic antigen (CEA) values at presentation, clinical and pathological staging. Details of operative procedure and information on neoadjuvant and adjuvant treatment were also included. Information on local recurrence and systemic metastasis in seven-year followup was also recorded, and so was 7-year survival and mortality. Continuous variables like age and duration of symptoms were expressed as means with standard deviation, while categorical variables like gender, symptoms, risk factors, diagnostic investigations, were expressed as frequency and percentage.

Results

A total of 28 patients had carcinoma rectum with age ≤40 years, but 5 (17.85%) could not be further evaluated as they were stage IV cases at the time of diagnosis. The study population, as such, was 23 (82.14%). Patients' characteristics were recorded separately (Table-1). The mean age of the subjects was 31±5 years. Nine (39%) of them were female and 14 (61%) were male. The most common clinical presentation was bleeding per rectum (n=22; 95.6%), followed by altered bowel habits (n=12; 52%). Mean duration of symptoms before diagnosis was 9.7±6 months (range: 4-24 months). Smoking was found to be an associated factor as 6 (26%) patients were smokers. Positive family history of colorectal tumour was only present in 4 (17%) patients. Among the diagnostic investigation, colonoscopy (n=20; 87%), computed tomography (CT) scan abdomen and pelvis (n=14; 61%) was the most commonly used modalities. Pre-operative CEA level was raised in 21 (91%) patients.

Table-1: Patient characteristics.

Patient characteristics	(N=23) Mean ±SD/No. (%)
Age (mean)	31±5(18-39)
Gender	
Male	14(60.8%)
Female	9 (39%)
Symptoms	
Bleeding per rectum	22 (95.6%)
Altered bowel habits	12 (52%)
Weight loss	5 (21.7%)
Abdominal pain	5 (21.7%)
Abdominal mass	3 (13%)
Others	3 (13%)
Duration of symptoms (mean)	9.7±6 (4-24)
Risk factors	
Smoking	6 (26%)
Positive family history of CRC	4 (17%)
Diagnostic investigation	
Colonoscopy	20 (87%)
Computed Tomography scan	14 (61%)
Barium enema	3 (13%)
Ultrasound abdomen	9 (39%)
Raised pre-op CEA level	21 (91%)
Chemotherapy	
Neoadjuvant	2 (9%)
Adjuvant	20 (87%)
Both	1 (4.3%)
Postoperative complication	15 (65%)
Adhesive obstruction	4 (17%)
Wound infection	4 (17%)
Parastomal hernia	3 (13%)
Faecal peritonitis	3 (13%)
Erectile dysfunction	1 (4.3%)

CRC: Colorectal cancer. CEA: Carcinoembryonic antigen.

Table-2: Tumour characteristics.

Patient characteristics	(N=23) No. (%)
Location of tumour	
Upper third	1 (4.3%)
Middle third	2 (8.6%)
Lower third	20 (86.9%)
Type of surgical procedure	
Abdominoperineal resection	13 (56.5%)
Low anterior resection	1 (4.3%)
Ultra low anterior resection	9 (39.1%)
Histopathology	
Adenocarcinoma	18 (78.2%)
Mucinous adenoa carcinoma	4 (17.3%)
Signet ring cell carcinoma	1 (4.3%)
Grade of tumour	
Well differentiated	2 (8.9%)
Moderately differentiated	16 (70%)
Poorly differentiated	5 (21.7%)
Histopathological staging	
T2	6 (26%)
T3	17 (74%)
N1	15 (65.2%)
N2	3 (13%)
N3	5 (21.7%)
Lympho vascular invasion	2 (8.9%)
Perineural invasion	1 (4.3%)
Local recurrence	3 (13%)
Distant metastasis	2 (8.6%)

The tumour characteristics were also evaluated (Table-2). The lower rectum was the commonest site for the tumour (n=20, 87%) and 13 (56.5%) patients required abdominoperineal resection (APR). Histologically, the predominant tumour type was adenocarcinoma (n=18; 78%) and most of them were either moderately (n=16; 70%) or poorly (n=5; 21.7%) differentiated. In Tumour, Nodes, Metastases (TNM) classification, patients either had mascularis propria T2 (n=6; 26%) or adventitia T3 (n=17; 74%), involvement and all of them had lymph node

invasion, mostly N1 (n=15, 65.2%) disease.

Despite the younger age group, a significant number of patients (n=15; 65%) developed post-operative complications, the common being post-operative adhesive bowel obstruction (n=4; 17%) and wound infection (n=4; 17%).

Three (13%) patients developed local recurrence within a year after ultra-low anterior resection (ULAR) and required APR. These recurrences were picked up on follow-up CT scans; two (8.9%) in 6 months and 1 (4.34%) in 9 months follow-up. Two (8.9%) patients developed distance metastasis; 1 (4.34%) in the left bronchus and other to the liver. The left bronchus metastasis was identified on CT chest four year after the initial surgery, while liver metastasis was identified after two years on follow-up CT scan. They were treated with systemic chemotherapy. On seven-year follow-up of all patients, two (8.6%) expired and both of these were identified with metastasis. The rest of the patients remained disease-free and are under surveillance.

Discussion

The common perception that rectal carcinoma is mainly the disease of elderly population is not true anymore as there has been an increasing number of young patients diagnosed with carcinoma rectum in the past two decades. According to SEER cancer registry, incidence of colonic tumour in young patients remained static, while incidence of rectal cancer has shown annual increment for the last twenty five years.[3,7] This increased incidence is observed in both genders and all races.[8] Despite this increasing incidence of rectal cancer in young population, little is known about rectal cancer in developing countries, especially Pakistan.

Multiple etiological factors are thought to increase the risk of colorectal cancer.[9] Some investigators have implicated lifestyle changes as the cause for increased incidence of rectal cancer, while others think of genetic factors. None of these authors have been able to find independent factor for this rise in the incidence of rectal cancer compared to colonic cancer.[2,10,11] In the current study, smoking was found to be an important risk factor (n=6; 26%) while none of the patients had familial adenomatous polyposis (FAP) or hereditary non-polyposis colon cancer (HNPCC).

The common clinical presenting features of young patients with carcinoma rectum are bleeding per rectum, altered bowel habit, anaemia and weight-loss.[12] In young patients, these symptoms may not alert the physician to suspect malignancy as these symptoms may be attributed to the common clinical diagnosis of haemorrhoids. Timely diagnosis of young patients with carcinoma rectum is pivotal as it does affect outcomes in these patients. Mean duration of symptoms before diagnosis in our study was 9.7±6 months (range 4-24) as compared to 7 to 9 months in previous studies with patients aged less than 40 years with colorectal cancer.[6] This delay in diagnosis may be attributed to similarity of symptoms in benign and malignant colorectal disease and low index of suspicion in this age group.

A study on clinicopathologic and molecular features of early-onset colorectal carcinoma was done by in 2009[10] and found that young patients with rectal cancer had increased lymphovascular and venous invasion and the tumour had increased infiltrative growth pattern. In this study, majority of patients had infiltrative growth pattern while lymphovascular invasion was found only in 8.9% of the patients.

Studies from Asia, Africa and western countries on tumour (T), lymph node involvement (N), and histological grade of young patients is found to be less favourable compared to the older group.[13,16] Although the current study did not have a comparison group, it found better histopathological features as most of the patients had moderately differentiated (70%), adenocarcinoma (78%), either T2 (26%) or T3 (74) lesion, and N1 involvement (65%).

Lower rectum was found to be the most common site for tumour (86.9%); therefore most of the patients required APR (56.5%) in our study. A series of 102 young patients with rectal cancer from a tertiary care hospital in India also found the lower rectum as the common site for tumour and, as a result, patients were less likely to be candidates for sphincter preservation surgery.[12]

In the current study, local recurrence rate was 13% and distant metastasis was found in 8.6% of the patients in seven-year post-treatment follow-up. To the best of our knowledge, none of the published data on rectal cancer in young patients has discussed local recurrence and systemic metastasis in a seven-year follow-up time period. The local recurrence developed in patients treated with ULAR and they were treated with APR. Post-operative complications were developed in 65% patients despite being a young population, and common complications were adhesive bowel obstruction and wound infection. One explanation for this high complication rate is that malignancy itself is an independent risk factor for post-operative complications. This finding had not been discussed in the available literature.

This study had its own share of limitations. We did not have a comparison group to quantify the clinical and histopathological differences between the young and the elderly patients. Besides, we did not have a proper population cancer registry system, and, therefore, we do not know the incidence of rectal cancer in the general population. It was a retrospective study and had all the limitations associated with such type of a study. Despite these limitations, however, this study does provide a roadmap for further reaserch.

Conclusion

Rectal cancer in young patients present with trivial symptoms of bleeding per rectum and altered bowel habits. The clinician should have a high index of suspicion in young patients, especially if they are smokers and report weight-loss. These patients warrant digital rectal exam and proctosigmoidoscopy as most of the tumours are within the reach of these examinations. We also suggest having our national colorectal cancer registry system for collecting and formulating the necessary data and to know the incidence of colorectal cancer in the general population.

References

1. El Mernissi H, Hrora A, Mrini K, Benamer A, Sebbah F, Raiss M, et al. Rectal cancer on young patient compared with elderly patient about a Moroccan hospital service experience. Arab J Gastroenterol 2009; 10: AB29. doi: 10.1016/j.ajg.2009.07.181
2. Li M, Li JY, Zhao AL, Gu J. Do young patients with colorectal cancer have a poorer prognosis than old patients? J Surg Res 2011; 167: 231-6.
3. Meyer JE, Narang T, Schnoll-Sussman FH, Pochapin MB, Christos PJ, Sherr DL. Increasing incidence of rectal cancer in patients aged younger than 40 years: an analysis of the surveillance, epidemiology, and end results database. Cancer 2010; 116: 4354-9.
4. Cusack JC, Giacco GG, Cleary K, Davidson BS, Izzo F, Skibber J, et al. Survival factors in 186 patients younger than 40 years old with colorectal adenocarcinoma. J Am Coll Surg 1996; 183: 105-12.
5. O'Connell JB, Maggard MA, Liu JH, Etzioni DA, Ko CY. Are survival rates different for young and older patients with rectal cancer? Dis Colon Rectum 2004; 47: 2064-9.
6. O'Connell JB, Maggard MA, Livingston EH, Yo CK. Colorectal cancer in the young. Am J Surg 2004; 187: 343-8.
7. Kam MH, Eu KW, Barben CP, Seow-Choen F. Colorectal cancer in the young: a 12-year review of patients 30 years or less. Colorectal Dis 2004; 6: 191-4.
8. Fancher TT, Palesty JA, Rashidi L, Dudrick SJ. Is gender related to the stage of colorectal cancer at initial presentation in young patients? J Surg Res 2011; 165: 15-8.
9. Gupta S, Bhattacharya D, Acharya AN, Majumdar S, Ranjan P, Das S. Colorectal carcinoma in young adults: a retrospective study on Indian patients: 2000-2008. Colorectal Dis 2010; 12: e182-e9. doi: 10.1111/j.1463-1318.2010.02223.x.
10. Shahir MA, Lemmens VE, van de Poll-Franse LV, Voogd AC, Martijn H, Janssen-Heijnen ML. Elderly patients with rectal cancer have a higher risk of treatment-related complications and a poorer prognosis than younger patients: a population-based study. Eur J Cancer 2006; 42: 3015-21.
11. Ueno H, Mochizuki H, Hashiguchi Y, Shimazaki H, Aida S, Hase K, et al. Risk factors for an adverse outcome in early invasive colorectal carcinoma. Gastroenterology 2004; 127: 385-94.
12. Nath J, Wigley C, Keighley M, Perakath B. Rectal cancer in young adults: a series of 102 patients at a tertiary care centre in India. Colorectal Dis 2009; 11: 475-9.
13. Palmer ML, Herrera L, Petrelli NJ. Colorectal adenocarcinoma in patients less than 40 years of age. Dis Colon Rectum 1991; 34: 343-6.