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Original Article

A Hospital Based Clinical Study on Patients with Colorectal Carcinoma Stage I

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Abstract

Background: Colorectal carcinoma is a common surgical condition in India. The prognosis is good in Stage I but depends on the lymphovascular involvement which represents an important prognostic factor. Lymphovascular invasion is used as a criterion in assessing the aggressiveness of the carcinoma.

Aim of the Study: The aim of the study was to study, identify high-risk factors in recurrences of Stage I colorectal carcinoma patients, using lymphovascular invasion as a working tool.

Materials and Methods: A retrospective study on 43 patients undergoing curative surgery for colorectal carcinoma Stage I between 2008 and 2016 in a tertiary teaching hospital. The number of years with disease-free status is taken as an endpoint cure. Clinical and pathological factors which included lymphatic invasions were used to assess and analyze (univariate analyzes) the disease-free survival (DFS) period.

Observations and Results: A total of 43 patients with Stage I colorectal carcinoma out of 138 patients (31.15%) with different stages of colorectal carcinoma were studied. Patients aged between 45 and 74 years were included with a mean age of 56.25 ± 3.60. Males were 32 and females were 11. The mean age in the females was 60.80 ± 2.70 and in males the mean age was 58.35 ± 2.40. The male to female ratio was 2.90:1. The univariate analysis showed that lymphovascular invasion was the only independent factor statistically significant and affecting the 5 years DFS. All the other factors such as age, gender, carcinoembryonic antigen values, lymph node involvement, tumor depth, and tumor location were not significant as the *P* value was above 0.05.

Conclusions: In the present study, only the lymphovascular invasion was identified as an independent factor which was statistically significant in determining the 5 years DFS in patients with colorectal carcinoma Stage I undergoing curative resection. All the other factors were insignificant. The probable cause for the recurrence and metastases may be due to an undetected or undetectable local or systemic residual of the tumor at operation.

Key words: Carcinoma, Chemotherapy, Colorectal, Lymphatic invasion, Recurrence, Stage I

INTRODUCTION

Colorectal carcinoma is one of the most common malignant tumors all over the world.[1,2] Presence or absences of lymph nodes, as well as their degree of invasion, vascular invasion and depth of primary tumor, are useful in determining the chemotherapy and further surveillance of patients.[3,4] Not only the presence but also the 12 nodes or more must be examined to adequately assess the degree of lymph node metastasis.[5,6] Their number available to be examined depends on the extent of resection, recovery from the specimen, and counts of slides, and can, therefore, vary widely among patients, hospitals, and countries.[7,8] Surgery is the mainstay of treatment in majority of the colorectal carcinoma Stage I patients. Whether Adjuvant chemotherapy is used or not in the patients with colorectal carcinoma Stage I varies from country to country. Lymphovascular invasion is usually used in assessing the aggressive nature of colorectal cancer.[9,10] 10% of the colorectal carcinoma patients develop recurrence and metastases in spite of excellent prognosis quoted in the literature.[11] For follow-up such high-risk tumor recurrence patients should be identified.[12]

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The present study was conducted to find the correlation between lymphatic invasion and lymph node metastasis and incidence of recurrence.

Aim of the Study

The aim of the study was to study identify high-risk Stage I colorectal carcinoma patients using lymphovascular invasion as a working tool.

Period of Study

This study period was from August 2008 to 2016 (9 years).

Institute of Study

General Hospital attached to Kannur Medical College, Anjarakandy, Kannur, Kerala.

MATERIALS AND METHODS

A total of 43 patients diagnosed with colorectal carcinoma Stage I and underwent surgery at General Hospital attached to Kannur Medical College, Anjarakandy, a tertiary teaching hospital were included in this retrospective study. Institutional Ethical committee clearance was obtained for the study. All the data were retrieved from the medical records section of the hospital.

Inclusion Criteria

1. Patients with the diagnosis of colorectal carcinoma Stage I were only included.
2. Patients of all age groups were included.

Exclusion Criteria

1. Patients with colorectal carcinoma other than Stage I were excluded.
2. Patients with metastases were excluded.
3. Patients who have received chemotherapy were excluded.

All the case sheets were looked for detail history and complaints with which the patients presented. Patients with bone pain had been investigated further with estimation of carcinoembryonic antigen (CEA). Such patients were subjected to whole body scan to rule out bone metastases. Clinical signs recorded in the cases sheets were site of the lesion, size, gross appearance, and staging. On histopathology of the biopsy specimen, the cell differentiation was noted. The surgical treatment adopted was noted; type of operation, lymph node involvement, complications, recurrence, and follow-up conditions. Staging of the disease was done by determining tumor-node-metastasis (TNM) classification system of the American Joint Committee on Cancer.[12] All the patients were flowed up for 5 years at 3 monthly intervals for initial 2 years and later on yearly for 3 years. During follow-up X-ray chest, abdominal ultrasound and/or computed tomography (CT) scan abdomen were undertaken. Every 6 months or 1-year colonoscopy was performed up to 3 years. In patients with increased levels of CEA were performed unscheduled CT, a whole-body bone scan, or PET scan was performed. National Comprehensive Cancer Network clinical practice guidelines in oncology were used to identify the risk factors in the study.[13] They included emergency surgery, lymphovascular involvement, poorly differentiated histology, lymph nodes harvested <12 in number, and a high CEA levels. All the data were analyzed using standard statistical methods.

OBSERVATIONS AND RESULTS

In the present study, 43 patients with Stage I colorectal carcinoma were selected out of a total 138 patients with different stages of colorectal carcinoma. Stage I patients accounted for 31.15% of the total 138 patients. The age group involved was between 45 and 74 years with a mean age of 56.25 ± 3.60. There were 32 (74.41%) male patients and 11 (25.8%) female patients. The mean age in the females was 60.80 ± 2.70 and in males the mean age was 58.35 ± 2.40. The male to female ratio was 2.90:1 [Table 1].

Histopathology studies showed adenocarcinoma in 39 patients (67.44%), mucinous adenocarcinoma in 10 (23.255), malignant lymphoma in 3 (6.97%), and neuroendocrine in 1 (2.32%) [Table 2].

Involvement of colon was observed in 22 (51.16%) patients and rectum in 21 (48.83%) patients. T1 was found in 20 (46.51%) patients and T2 in 23 (53.48%) patients. The serum CEA levels were more than 5 ng/mL was observed in 34/43 (79.06%) patients and <5 ng/mL in 9 (20.93%) patients. All the patients underwent curative surgical resection of the tumor and lymph node dissection with a mean of 13.54 ± 0.45 nodes removed in the study. Lymph node involvement was identified in 21 patients (48.83%). Lymphovascular invasion was found in 7 (16.27%) patients and not found in 36 (83.72%) patients. In 19 (44.18%) patients below 12 lymph nodes were harvested and in 24 (55.81%) patients more than 12 lymph nodes were harvested. The mean lymph node collection per specimen resected was 13.54 ± 0.45 [Table 3]. Follow-up of patients

Table 1: The age and gender incidence (*n*=43)

Age groups	Male (%)	Female (%)	Total percentage
45–55-10	8 (18.60)	2 (4.65)	23.25
55–65-15	11 (25.58)	4 (9.30)	34.88
65–75-18	13 (30.23)	5 (11.62)	42.86

for 5 years were done for 5 years and among 43, 12 patients developed recurrence (27.90%). The 5-year survival rate was observed in 31 patients (72.09%). Out of 12 patents that developed recurrence 5 had liver metastasis, 4 patients had lung metastasis, and 3 patients' peritoneal metastases. The univariate analysis of the data collected showed that lymphovascular invasion was the only independent factor that was statistically significant and affecting the 5-year disease-free survival (DFS). All the other factors such as age, gender, CEA values, lymph node involvement, tumor depth, and tumor location were not significant as the *P* value was above 0.05 [Table 3].

DISCUSSION

Compared to the Western world, the incidence rates of colorectal cancer are low in India. It varies for colon cancer from 0.7 to 3.7/100,000 among men and 0.4 to 3/100,000 among women, and for rectal cancer from 1.6 to 5.5/100,000 among men and 0 to 2.8/100,000 among women.[14] The annual incidence of colorectal carcinoma in India is about 4/100,000 while the developed Asian countries such as Japan, Korea, and Singapore who have adopted a Western lifestyle, have an incidence of about 40/100,000.[13] The annual incidence of colorectal cancer in Kerala state is about 5.5/100,000 because the Kerala population eats more meat than the rest of the Indian population.[15] In a hospital based study by Cherian *et al.*,[16] among 98 patients with colorectal carcinoma, adenocarcinomas constituted 98%, and other tumors were two cases of lymphoma, one neuroendocrine carcinoma, and one sarcoma. The demographic details of the remaining 94 patients showed 79% were above the age of 50. The male:female ratio was about 2:1. The Christians were 40%, the Hindus 39%, and the Muslims 21%, more or less similar to the religious divisions in this region. Of the 98 cases, 75% were in the left colon or rectum, and 25% were in the right colon or transverse colon. 62 cases, 84% had a pathological staging of T3 or above, and 16% had a pathological staging of less than T3 according to the TNM classification. Lymph node metastases were diagnosed in 34 of 62 cases, and the average lymph node collection per specimen was 15. In this study, 43 patients with Stage I colorectal carcinoma were selected out of 138 colorectal carcinoma patients. The age group involved was between 45 and 74 years with a mean age of 56.25 ± 3.60. There were 32 (74.41%) male patients and 11 (25.8%) female patients. The mean age in the females was 60.80 ± 2.70 and in males the mean age was 58.35 ± 2.40. The male to female ratio was 2.90:1. Lymph node involvement was identified in 21 patients (48.83%). The average lymph node collection per specimen resected was 14. The serum CEA levels were more than 5 ng/mL was observed in 34/43 (79.06%) patients. Patients with Stage I CRC have an excellent prognosis after oncologic resection, with reported 5-year survival rates of about 90%.[9,17] In this study, the 5-year DFS of Stage I CRC patients was 72.09% which was compatible with the results of previous studies.[9,11,17] The univariate analysis of the data collected showed that lymphovascular invasion was the only independent factor that was statistically significant and affecting the 5-year DFS. All the other factors such as age, gender, CEA values, lymph node involvement, tumor depth, and tumor location were not significant as the *P* value was above 0.05 [Table 3].

Table 2: The type of histopathology (*n*=43)

Histopathology report	Number (%)
Adenocarcinoma	29 (67.44)
Mucinous adenocarcinoma	10 (23.25)
Malignant lymphoma	3 (06.97)
Neuroendocrine	1 (02.32)

Table 3: Univariate analysis for 5 years DFS, (*n*=31)

Observation	Number	5 years survival rate - %	*P* value
Age (years)			
<60	13/18	72.22	0.476
>60	18/25	72.00	
Gender			
Male	24/32	75.00	0.476
Female	07/11	63.63	
Tumor location			
Colon	16/22	72.72	0.082
Rectal	15/21	71.42	
Tumor depth			
T1	16/20	80.00	0.075
T2	15/23	65.21	
Pre-operative CEA levels			
<5 ng/mL	09/09	100.00	0.324
>5 ng/mL	22/24	91.66	
Lymphovascular invasion			
Yes	02/07	28.57	0.016
No	29/36	80.55	
Lymph nodes harvested			
<12	14/19	73.68	0.547
>12	17/24	70.83	

DFS: Disease-free survival, CEA: Carcinoembryonic antigen

CONCLUSIONS

In this study, only the lymphovascular invasion was identified as an independent factor which was statistically significant in determining the 5-year DFS in patients with colorectal carcinoma Stage I undergoing curative resection. All the other factors were insignificant. The probable cause for the recurrence and metastases may be due to an undetected or undetectable local or systemic residual of the tumor at operation.

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