

Original article:

Study of Lymph node involvement in Colorectal Cancer- A 5 year study in a tertiary care rural hospital

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Abstract

Introduction: Colorectal malignancies are an emerging cause of profound morbidity and mortality throughout the world. In India, rectal cancer is more common than colon cancer. Majority of patients of colorectal malignancies present early with a potential for cure which is facilitated by surgical resection along with radiotherapy/chemotherapy. Adequate lymph node resection and evaluation is extremely important as the prognosis and treatment of these cases is different.

Material and Methods: The study is a descriptive cross sectional study carried out in the Department of Pathology of a tertiary care rural hospital for a period of 5 years (May 2008 to April 2013). Clinically diagnosed cases with proven colorectal malignancies were operated and resected specimen were sent for histopathological examination.

Observation : Total of 217 cases of colorectal lesions were received in the 5 year period, of which majority 125 (57.60%) cases were malignant. Of these cases, lymph node retrieval was possible in 98 cases. A total of 920 lymph nodes were harvested from 98 adenocarcinoma cases. The highest yield of lymph nodes was from the rectum with mean of 10 lymph nodes, followed by sigmoid colon with mean of 14.04 lymph nodes. The number of positive lymph nodes were 288, majority of which were obtained from older patients(69.44%).

Conclusion: The number of lymph node retrieved has relation with patient outcome, as false negative status can be avoided.

Key words: lymphnode,colorectal,malignancy

Introduction

Colorectal malignancies are an emerging cause of profound morbidity and mortality throughout the world. According to studies, it is the second most important cause of cancer deaths in U.S.A.¹ However, the incidence of large bowel malignancies is lower in India as compared to the Western counterparts.² The age standardized incidence of colorectal malignancies is estimated as 4.3/1,00,000(males) and 3.4/1,00,000 (females).^{3,4} On the contrary, incidence of colorectal malignancies in Western countries is 32.9/1,00,000 (males) and 24.4/1,00,000 (females).^{5,6} In India, rectal cancer is more common than colon cancer.²

Majority of patients of colorectal malignancies present early with a potential for cure which is facilitated by surgical resection along with radiotherapy/chemotherapy. An ideal surgical resection includes the affected segments along with

complete resection of draining lymph nodes to the level of the primary blood supply of the segment of bowel.⁷

Adequate lymph node resection and evaluation is extremely important as the prognosis and treatment of these cases is different. The number of lymph nodes harvested and examined is an important factor for accurate staging. However, numerous factors affect the lymph node yield on patient to patient basis. We present our analysis of lymph node involvement in cases of colorectal malignancy presenting to our tertiary care hospital.

Aim and Objectives:

To evaluate in detail lymphnode characteristics retrieved in colorectal cancer patients.

Materials and Method:

The present work is a descriptive cross sectional study carried out in the Department of Pathology of a tertiary care

rural hospital for a period of 5 years (May 2008 to April 2013). Clinically diagnosed cases with proven colorectal malignancies were operated and resected specimen were sent for histopathological examination.

The specimen were studied according to the type, length of specimen, site of tumor, tumor characteristics such as shape, size, extent of invasion, distance to pectinate line, peritoneal reflection and line of resection. Lymph node involvement was studied according to the following parameters.

- I) Number of lymph nodes resected
- II) Number of lymph nodes positive
- III) Size of lymph nodes
- IV) Perinodal spill
- V) Lymph node involvement in relation to individual tumor type

Lymph node involvement in relation to age and sex of the patient

All the specimen were grossed according to standard grossing protocols with lymph node removal. The specimen was kept in formalin overnight and lymph node harvesting was done the following day again.

Observation/ Results:

Total of 217 cases of colorectal lesions were received in the 5 year period, of which majority 125 (57.60%) cases were malignant. Of these cases, lymph node retrieval was possible in 98 cases. Adenocarcinoma including well differentiated, moderately differentiated and poorly differentiated carcinoma comprised of the majority of malignancies 76 (77.57%) . Mucinous adenocarcinoma comprised of 9 (9.18%) cases and signet ring adenocarcinoma 3 (3.06%) cases. (Table 1).

Table 1 .Distribution of cases according to diagnosis.

Diagnosis	Total number of cases
Well differentiated adenocarcinoma	39
Moderately differentiated adenocarcinoma	37
Poorly differentiated adenocarcinoma	10
Mucinous adenocarcinoma	9
Signet ring adenocarcinoma	3

A total of 920 lymph nodes were harvested from 98 adenocarcinoma cases. The highest yield of lymph nodes was from the rectum with a mean of 10 lymph nodes, followed by sigmoid colon with a mean of 14.04 lymph nodes (Table 2). Out of 98 cases, 29 cases were of younger population and 69 cases of older population. Out of the 920 cases resected, majority were resected from older patients (69.13%) cases (Table 3). The number of positive lymph

nodes were 288, majority of which were obtained from older patients 69.44%. When evaluated, lymph node yield was found to be more among younger patients as compared to their older counterparts. The number of lymph nodes which showed metastasis were found to be more in older patients which was seen 31.44% cases whereas younger patients showed lymph node positivity in 30.55% cases.

Table 2. Frequency of lymphnode retrieval according to site.

Site	Number	Lymph node resected
Caecum	11	38
Ascending colon	17	190
Transverse colon	04	09
Descending colon	08	18
Sigmoid colon	21	295
Rectum	37	370
Total	98	920

Table 3. Age wise lymphnode characteristics.

	Young	Old
Total cases (98)	29	69
Lymph nodes resected (920)	284	639
Positive (288)	88	200

The size of the 920 lymph nodes were categorized as < 5 mm, 5-10 mm, >10 mm. Among these, majority 478 (52%) nodes were < 5 mm, 232 (25.21%) lymph nodes were 5-10 mm whereas 210 (22.82%) lymph nodes were >10 mm in diameter. On further evaluation, the cases having lymph node size >10 mm showed better prognosis (Table 4).

Table 4. Size wise distribution of lymphnodes retrieved

Size of lymph node	Number of lymph nodes resected
<5 mm	478 (52%)
5-10 mm	232 (25.21%)
>10 mm	210 (22.82%)

Discussion

Accurate lymph node evaluation is of prime importance for estimating the prognosis and further protocol.⁸ Numerous studies address various factors and co-factors associated with lymph node evaluation in colorectal malignancies. Optimum lymph node retrieval depends upon numerous factors such as tumor type, specimen type, segment of intestine resected, surgical techniques, grossing techniques, size of the lymph node etc. Other factors such as age, sex, BMI, grade, stage of tumor and duration of tumor also play an important role in lymph node evaluation.⁹⁻¹⁴

Lymph node status is a very important predictor of disease outcome and prognosis. The survival rate is better approx.

68% inpatients with node negative status as compared to patients with positive lymph nodes in which survival rate is 40%.¹⁵ Adjuvant therapy is administered in node positive cases to prevent recurrence.¹⁶ According to a study by McCall. J.L. et al, patients with rectal cancer and node positive status show higher recurrence rate.¹⁷

The International Union against Cancer and the American Joint Commission on Cancer (AJCC) have put forth evaluation of minimum 12 lymph node as the criteria of deeming the patient node negative status.^{18,19} False node negative status owing to any of the factors mentioned earlier, can have serious implications in the form of higher local recurrence rate as these patients are not administered

adjuvant chemotherapy which in turn leads to poor prognosis.^{20,21}

More number of positive lymph node are associated with worse prognosis.^{22,23} Lymph node characteristics such as lymph node size, ratio defined as the number of positive lymph node divided by the total number of retrieved lymph nodes, extra capsular invasion help in the prognostication.²⁴⁻³¹

Many studies favored better prognosis in cases having better lymph node yield.³² The lymph node yield is high in patients who are young and having right sided well differentiated tumors.³² In our study, the highest yield was from rectum followed by sigmoid colon. The yield was better in younger population.

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Conclusion

A plethora of factors exist which are associated with lymph node retrieval. Better grossing techniques in the form of application of newer techniques to obtain a high yield should be followed. More the number of lymph nodes retrieved has an effect on with patient outcome, as false negative status can be avoided and true metastatic cases can be better treated. Better surgical techniques combined with accurate histopathological evaluation will reduce patient morbidity as adjuvant therapy helps in improve survival rates.

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