

Lymph Node Number in Postoperative Total Mesorectal Excision Specimen

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ABSTRACT

Background: proper rectal cancer staging is a vital step in management and prognosis of the disease depending on the tumour, nodal state and distant metastasis (TNM). Sufficient number of lymph nodes detected in postoperative TME specimen is a corner stone in staging. Lymph node number detected should not be less than 12 lymph nodes. **Material and methods:** 37 Egyptian patients diagnosed to have rectal carcinoma included in a retrospective study. 28 patients received neoadjuvant chemoradiation therapy while the remaining 9 cases did not. Total mesorectal excision was done by the same colorectal surgeon. The specimens of TME were examined to retrieve the lymph nodes. **Results:** lymph nodes harvested in the neoadjuvant group, maximum number was 23, minimum number was 1 while the median was 7. The group did not receive neoadjuvant therapy, maximum number was 34, minimum number was 11 while the median was 11. The P value was statistical significant less than 0.000. **Conclusion:** lymph nodes number detected in TME specimen post neoadjuvant rectal cancer decreased markedly so it is not the standard number of LN (12). A new staging system should be developed for the prognosis.

Key words: Rectal carcinoma, neoadjuvant chemoradiotherapy, lymph nodes and total mesorectal excision.

INTRODUCTION

Proper staging of rectal cancer is needed for adequate treatment ⁽¹⁾. Harvest of >12 lymph nodes is a central indicator for proper resection of rectal cancer ⁽²⁾. Lymph nodes Number retrieved shows wide variability ⁽³⁾. Small numbers of lymph nodes retrieved means that surgeon left lymph nodes during resection or the pathologist during specimen preparation ⁽⁴⁾. The American Joint Committee on Cancer (AJCC) and International Union Against Cancer (IUAC) recommendations require the harvest of at least 12 lymph nodes in TME specimen to approve the competence of surgery for rectal carcinoma. This 12 lymph nodes has been approved as the standard in the treatment of rectal cancer ^(5,6,7). Lymph node status are affected by age of the patient, obesity, site of the tumor, neoadjuvant therapy, surgical procedure and technique, and pathologist's management of the specimen ^(8,9). It is considered that patient with a fewer number of detected lymph nodes in surgical specimens has bad prognosis, most likely due to inadequate lymphadenectomies ⁽¹⁰⁾.

The objective of our study is to evaluate the number of detected lymph nodes in rectal cancer patients underwent curative surgery with or without neoadjuvant chemoradiotherapy.

PATIENTS AND METHODS

This was a retrospective study that included 37 patients suffering from rectal carcinoma of age ranging from sixteen to sixty eight years old and from both sexes at Cairo University hospitals surgery department during the period from October 2012 to May 2014. The data were collected and the patients were allocated into two groups, first group had advanced rectal carcinoma for which they received neoadjuvant chemoradiation therapy, and the second group had early rectal carcinoma so they were operated upon. All the patients were subjected to routine laboratory tests, tumour markers, needed metastatic work up, and local staging of rectal cancer by Endorectal ultrasound and MRI of rectum and anal canal. Patients with T1, 2 N0 M0 went for TME, while patients with T3, 4 N1, 2 M0 neoadjuvant chemoradiation therapy was given followed by TME. Neoadjuvant chemoradiation therapy was taken according to the guidelines in Kasr Alainy oncology center. TME in both groups was performed by the same colorectal surgeon in the colorectal unit, surgery department, faculty of medicine, Cairo University. All patients with upper, middle or lower rectum were included in the study. Patients with metastatic rectal carcinoma or carcinoma of

the anal canal recurrent cancer, and previous pelvic irradiation, patients who underwent local excision of their rectal cancer were excluded from the study. Surgery was done 8 to 10 weeks after neoadjuvant therapy to allow proper down staging. The specimens of TME were examined with retrieval of the lymph nodes.

Data were statistically described in terms of mean \pm standard deviation (\pm SD), median and range, or frequencies (number of cases) and percentages when appropriate. Comparison of numerical variables between the study groups was done using Mann Whitney *U* test for independent samples. For comparing categorical data, Chi square (χ^2) test was performed. Exact test was used instead when the expected frequency is less than 5. *P* values less than 0.05 was considered statistically significant. All statistical calculations were done using computer programs SPSS (Statistical Package for the Social Science; SPSS Inc., Chicago, IL, USA) version 15 for Microsoft Windows.

RESULTS

This prospective study included consecutive patients with all stages of rectal cancer who were admitted to the Department of Surgery, faculty of Medicine, Cairo University between October 2012 and May 2014.

Demographic Data of the Studied Cases:

a. Age:

The mean age of the patients in this study 45.16 ± 13.35 yeas ranged from (16- 68) years. The mean age of Neoadjuvent therapy group in this study 44.21 ± 12.7 yeas ranged from (22 - 68) years. The mean age of surgery only group in this study 48.11 ± 15.5 yeas ranged from (16 - 67) years.

b. Gender:

This study included 37 patients 22 (59.4%) female and 15(40.5%) male table 1. There was 9 patients did not receive Neoadjuvent therapy of them 5(55.5%) females and 4 (44.4 %) with no statistically significant difference $p=0.783$. in this study 28 patients received Neoadjuvent therapy 17 (60.7%) females and 11 (39.2%) with $p=0.783$.

Table 1: Age distribution among the study groups

<i>Gender</i>	<i>Neoadjuvant group</i>	<i>Surgery only group</i>	<i>Total</i>
Female	17 (60.7%)	5(55.6%)	22(59.5%)
Male	11(39.3%)	4 (44.4%)	15(40.5%)

Statistical Data of the Studied Cases

a. Sit of the tumor

In this study 29 (78.4%) patients had the carcinoma in lower rectum while 8 (21.6%) had the carcinoma in the upper rectum. Of The Neoadjuvant group patients 25 patients (89%) had the rectal carcinoma in lower rectum whereas 3 patients (10.7%) had the carcinoma in the upper rectum. In the surgery only group four patients (44.44%) had the carcinoma in lower rectum whereas 5 patients (55.55%) had the carcinoma in upper rectum the difference was statistically significant, difference between the groups $p=0.012$

b. Type of operation

In this study 11 (29.7%) patients had APR operation while 25 (67.6%) had LAR operation and only one patient (2.7%) had Posterior pelvic exentration due to uterine infiltration. Of The Neoadjuvant group patients 11 patients (39.3%) had APR operation whereas 16 patients (57.1%) LAR operation only one patient (3.6%) had Posterior pelvic exentration. In the surgery only group all patients 9 (100%) had LAR difference was statistically not significant, difference between the groups $p=0.058$.

c. Lymph nodes

In this study the maximum number of lymph nodes retrieved was 34 while the minimum number of lymph nodes was 1. Among the neoadjuvant group the maximum number was 23 while the minimum was 1 with median number 7. In the surgery only group the maximum number was 34 while the minimum was 11 with median was 16 fig 1,2. By comparison of both groups the difference was statistically significant, difference between the groups $p=0.000$ tab 2.

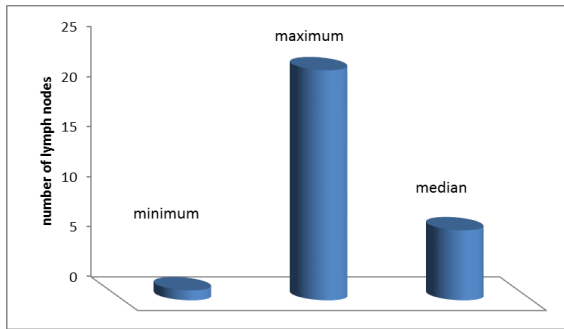


Fig. 1: Number of lymph nodes in neoadjuvant group

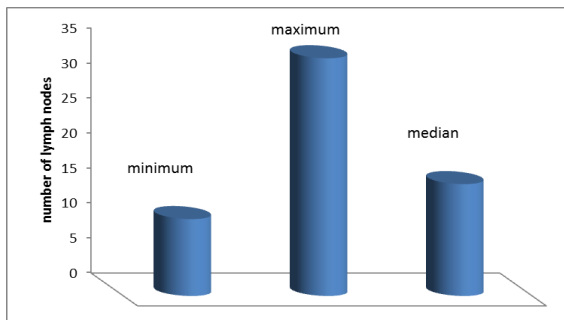


Fig. 2: Number of lymph nodes in surgery first group

Table 2: P value of the lymph nodes between both groups

	Total LN	Positive LN
Mann-Whitney U	19.500	74.000
Wilcoxon W	425.500	480.000
Z	-3.779	-1.861
p value	0.000	0.063

DISCUSSION

The lymph nodes harvested from a specimen of rectal carcinoma usually fluctuate. Pathologist should retrieve a minimum of 12 LN. Experience of the surgeons and carefulness of the pathologists are two important factors that improve lymph node retrieval. Neoadjuvant chemoradiotherapy can yield in less number of nodes⁽⁸⁾.

With a standardized surgical technique and pathologic evaluation, the number of lymph nodes present after neoadjuvant chemoradiation and total mesorectal excision for rectal cancer varies greatly⁽²⁾.

In a study conducted by Paulo et. Al on 255 patients of rectal carcinoma, the median one of the number of dissected lymph nodes was bigger in the group without neoadjuvant radiochemotherapy (15 versus 9, $p < 0.001$)⁽¹⁰⁾.

In a study was done in 2012, nearly an equal percentage of patients had ≤ 5 lymph nodes (23%) as had ≥ 12 lymph nodes (28%). The mean lymph node harvest was 10.1. The importance of this study lies in founding a high variability of lymph nodes retrieved after neoadjuvant chemoradiation therapy in TME specimens for rectal cancer⁽¹¹⁾.

In this study the maximum number of lymph nodes retrieved was 34 while the minimum number of lymph nodes was 1. Among the neoadjuvant group the maximum number was 23 while the minimum was 1 with median number 7. In the surgery only group the maximum number was 34 while the minimum was 11 with median was 16. By comparison of both groups the difference was statistically significant, difference between the groups $p = 0.000$. These findings show an excellent agreement between our study and the literature.

This may be explained that the irradiated lymph nodes are smaller and less likely to be malignant. The lymph nodes may be replaced by fibofatty tissue. The result may be decrease in size of lymph node or the lymph node become unrecognizable by examination. This means enriched response to neoadjuvant chemoradiation rather than poor oncologic resection or pathologic examination.

CONCLUSION

Lymph nodes number detected in TME specimen post neoadjuvant rectal cancer decreased markedly so it is not the standard number of LN (12). A new staging system should be developed for the prognosis.

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