

# A report of the frequency of colorectal carcinoma and involved lymph nodes in South-West Iran

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## ABSTRACT

**Context:** The colorectal cancer (CRC) is the most common malignancy between men and women. CRC has considerable morbidity and mortality, with more than 1000,000 new cases and 500,000 annual deaths. Regional lymph nodes are most common sites of metastasis from colon cancer. Lymph node involvement is an essential factor in enabling the accurate evaluation of prognosis in CRC patients. **Aims:** In this study, we focused on the frequency of CRC and involved lymph nodes and adequacy of lymph node dissection in patients who referred to the Oncology and Radiotherapy Department of Golestan Hospital in Ahvaz City located in South-West Iran. **Setting and Design:** We conducted a retrospective study among patients receiving surgical treatment for CRC in the Department of Oncology and Radiotherapy of Golestan Hospital in Ahvaz City located in South-West Iran between 2001 and 2010. **Methods and Materials:** All patients who underwent resection for CRC by open or laparoscopic approaches were included in the study. Data were collected from patients' medical records. **Statistical Analysis Used:** Statistical data were analyzed using SPSS 21. **Results:** A total of 585 cases with CRC aged from 16 to 89 years with mean age of 53-year-old were studied. Average number of dissected nodes was 8 lymph nodes, and lymph nodes were not found in pathology specimen of 61 cases (10.4%). In 199 patients (34.01%), number of dissected lymph nodes was 12 or more and in 386 patients (65.98%), number of dissected lymph nodes was <12. **Conclusion:** This study revealed a large amount of patients that had been under over treatment with radiotherapy and the following inability. Lack of removal of sufficient tissue by the surgeon during surgery or an inadequate sample check by a pathologist might lead to an inability to correct staging of the disease as well as the inability to determine the treatment program of the patients and over treatment with radiotherapy and chemotherapy.

**Key words:** Colorectal cancer, lymph node dissection, lymph node metastasis

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## INTRODUCTION

Cancer is an emerging and major common public health problem in developing countries.<sup>[1]</sup> Colorectal cancer (CRC) has considerable morbidity and mortality, with more than 1000,000 new cases and 500,000 annual deaths.<sup>[2]</sup> This malignancy is considered as the third common cancer in both men and women associated with advancing age, lifestyle, and environmental factors imposing a serious demographic and economic burden worldwide.<sup>[1,3,4]</sup> The International American Joint Committee on Cancer tumor node metastasis staging system is currently considered as the most powerful prognostic parameter for CRC patients.<sup>[5]</sup> The most common sites of metastasis from colon cancer are the regional lymph nodes, liver, lung, and the peritoneum.<sup>[6,7]</sup> Lymph node metastasis carries enormous prognostic weight in the evaluation of colon

cancer and extension of lymph node dissection.<sup>[8,9]</sup> Surgical resection of the primary and regional lymph nodes is still, at this time, the standard treatment of colon cancer.<sup>[10]</sup> There has been considerable discussion in the literature regarding the importance and validity of lymph node retrieval and lymph node count for patients with colon cancer.<sup>[11]</sup> Lymph node dissection has several goals:

1. Staging of cancer at the time of intervention;
2. Improving the chances for complete resection and cure;
3. Evaluating the thoroughness and quality of a particular surgical procedure.<sup>[9]</sup>

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**How to cite this article:** Shahbazian H, Nasuri Y, Hosseini SM, Arvandi S, Razzaghi S. A report of the frequency of colorectal carcinoma and involved lymph nodes in South-West Iran. Indian J Med Paediatr Oncol 2016;37:38-41.

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10.4103/0971-5851.177014

## METHODS

We conducted a retrospective study among patients receiving surgical treatment for CRC in the Department of Oncology and Radiotherapy of Golestan Hospital in Ahvaz City located in South-West Iran between 2001 and 2010. All patients who underwent resection for CRC by open or laparoscopic approaches were included in the study. Data were collected from patients' medical records. Data points included age, tumor stage, total number of lymph nodes recovered, number of lymph nodes involved, and type of surgical approach. The choice of the surgical approach was at the discretion of the surgeon. Approval from the Ethic Committee of Ahvaz Jundishapur University of Medical Sciences was obtained before data collection and review. Statistical data were analyzed using SPSS version 21.

## RESULTS

A total of 585 cases with CRC aged from 16 to 89 years with mean age of 53-year-old were studied. Out of them, 330 patients (56.41%) were male and 255 patients (43.59%) were female. Most common age for CRC was 41-60-year-old in this study with 44.44% of patients in this age group. The least common age group was 0-20 years old with 1.5% of patients. Patients data in different years is summarized in Table 1. Number and percentage of patients with different number of dissected lymph nodes are summarized in Table 2. Average number of dissected nodes was 8 lymph nodes, and lymph nodes were not found in pathology specimen of 61 cases (10.4%). In 199 patients (34.01%), number of dissected lymph nodes was 12 or more and in 386 patients (65.98%), number of dissected lymph nodes was <12.

Number and percentage of patients with different number of involved lymph nodes are summarized in Table 3. Average number of involved nodes was 7 lymph nodes.

In 386 patients with <12 dissected lymph nodes, 40.40% had no involved lymph nodes and 15.8% had unknown number of involved lymph nodes. Percentage of involved

lymph nodes in patients with <12 dissected lymph nodes are summarized in Chart 1.

## DISCUSSION

Surgical resection is the mainstay of treatment for CRC with curative intent.<sup>[12]</sup> Lymph node assessment following CRC operation has received a lot of attention. The lymph node counts are really more associated with the surgeon and pathologist than on the approach.<sup>[13]</sup> Some studies have demonstrated that female gender is a significant independent predicting factor in decreasing lymph nodes involvement. Our study did not show that sex would significantly influence the total number of lymph nodes recovered or the number of involved lymph nodes.

During 2001-2010 the refereed patients with CRC increased that it can be due to familiarity of more people with symptoms of CRC as well as diagnostic facilities and more incidence of the CRC compared to past years.

Average age of CRC incidence is  $\geq 50$  years.<sup>[2]</sup> According to our study, the frequency of CRC in patients older 40 years was 77% (550 patients). This finding is consistent with previous studies that have reported the more frequency of incidence of CRC in patients older than 50 years.<sup>[2,14]</sup> In our study, the patients with CRC were 56.41% male and 43.59% female.

The number of involved lymph nodes is the most important and most effective factor in determining the prognosis and treatment plan that have been mentioned in studies of Jass and the International Association of Colon and Breast Surgery.<sup>[6,7,15]</sup>

In the current study, the average of lymph node counts was 8 lymph nodes. The investigated lymph nodes were 12 with 199 cases (33.68%). The maximum assessed lymph nodes were just in one case which contains 25 nodes, and there were not any dissected lymph nodes

**Table 1: Results of study during 2001-2009**

Year	Number of CRC patients	Included patients	Minimum age	Maximum age	Mean age	Assessed LN	Minimum assessed LN	Maximum assessed LN
2001	40	29	24	80	52	29	0	18
2002	34	29	30	49	49	29	0	24
2003	24	21	27	75	51	21	0	14
2004	43	40	26	80	52	7	0	21
2005	52	41	19	80	51	8	0	24
2006	83	66	19	85	51	7	0	18
2007	83	65	19	81	54	8	0	22
2008	109	90	18	85	52	7	0	18
2009	127	99	16	85	54	3	0	12
2010	135	105	20	92	56	8	0	24

LN – Lymph node; CRC – Colorectal cancer

**Table 2: Number and percentage of patients with different number of dissected lymph nodes**

Percentage of patients	Number of patients	Number of evaluated LNs
10.4	61	0
1.5	9	1
2.7	16	2
5.1	30	3
4.8	28	4
11.5	67	5
7.2	42	6
4.8	28	7
7.5	44	8
1.9	11	9
5.6	33	10
2.6	15	11
15.6	91	12
2.6	15	13
7	41	14
3.9	23	15
1.4	8	16
0.3	2	17
1.7	10	18
0.2	1	19
0.2	1	21
0.2	1	22
0.2	1	23
1	6	24
0.2	1	25

LNs – Lymph nodes

in 61 cases (10.4%). The maximum reported metastasized lymph node was 20 (also in one case) and minimum metastasized lymph node was 0 in 238 cases (40.2%). There were 217 patients (42.5% in total cases) with <12 lymph nodes involvement and without metastasized lymph nodes. This means a large amount of patients that had been under over treatment with radiotherapy and the following inability.

Lack of removal of sufficient tissue by the surgeon during surgery or an inadequate sample check by a pathologist might lead to an inability to correct staging of the disease as well as the inability to determine the treatment program of the patients and over treatment with radiotherapy and chemotherapy.

Our study contains limitations. The retrospective nature of this study is a limiting factor. We were also unable to control for possible differing pathologic preparations of our specimen.

### Recommendations

1. Removing the appropriate amount of tissue by surgeons during surgery and checking more amount of tissue by the pathologist to determine the involved lymph nodes and minimize adjuvant treatments.

**Table 3: Number and percentage of patients with different number of involved lymph nodes**

Percentage of patients	Number of patients	Number of involved LNs
10.4	61	X
40.2	238	0
4.4	26	1
11.3	66	2
8.7	51	3
3.1	18	4
6.2	36	5
1.4	8	6
2.4	14	7
3.3	19	8
0	0	9
2.9	17	10
0.2	1	11
3.8	22	12
0.8	4	13
0	0	14
0.3	2	15
0.2	1	16
0	0	17
0	0	18
0	0	19
0.2	1	20

LNs – Lymph nodes

2. A study must be performed on determining the longevity and survival of these patients after treatments completed.

### Financial support and sponsorship

Nil.

### Conflicts of interest

There are no conflicts of interest.

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