

## Original Research Article

**Investigation of lymph node involvement in breast cancer with different aspects**Aybala Agac<sup>1</sup>, Haluk Ulucanlar<sup>2</sup>, Saadet Akturan<sup>1</sup>, Selcuk Misirligil<sup>3</sup>, Ahmet Alyanak<sup>1</sup><sup>1</sup>General Surgery, Yenimahalle Research and Training Hospital, Ankara, Turkey<sup>2</sup>General Surgery, Ankara Oncology Research and Training Hospital, Ankara, Turkey<sup>3</sup>General Surgery, School of Medicine, Kirikkale University, Ankara, Turkey**\*Corresponding author**

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**Abstract:** Breast cancer is the leading malignancy type seen in females today. Failure to diagnose this condition during early term due to lost time is one of the most important mortality factors. The lymph node status of 393 patients with T1c tumor who underwent Modified Radical Mastectomy(MRM) was investigated retrospectively. In 79 of 393 patients (%20.1) radiologic investigation revealed metastatic lymph nodes, therefore in 314 patients(%79.8) there were no signs of metastatic lymph nodes. 268 of 314 radiologically negative patients(%85.3) were also diagnosed as lymph node negative in respect of histopathologic investigation, but in 46 (%14.6) histopathological examination revealed metastatic lymph nodes. Breast cancer is the most frequent cancer of women among the world. According to literature every 1 of 11 woman has breast cancer. The development time of tumor has been a topic of many studies until now. In breast cancer, doubling time of tumor accepted as 30 days. The doubling time of tumors greater than 2 cm is accepted to be 140 days. This study revealed the importance of investigation lymph node involvement even on T1 tumors.

**Keywords:** breast cancer, axillary lymph node metastasis, lymph node involvement, modified radical mastectomy, lymph node dissection

**INTRODUCTION**

Breast cancer is the most frequent cancer of women among the world. According to literature every 1 of 11 woman has breast cancer. The development time of tumor has been a topic of many studies until now. In breast cancer, doubling time of tumor accepted as 30 days. The doubling time of tumors greater than 2 cm is accepted to be 140 days [1]. In this study our aim is to investigate the lymph node status of patients who are clinically negative for lymph nodes.

**PATIENTS AND METHODS**

The lymph node status of 393 patients with T1c tumor who underwent Modified Radical Mastectomy(MRM) was investigated retrospectively. The patients who showed clinically no sign of pathologic lymph nodes were included the study. Patients who have clinically palpable lymph nodes, who underwent axillary surgery for any reasons, and who have any other disease which may have present with axillary lymph node were excluded. 3 patients who have distant metastasis were also excluded. SPSS 17.0 was used for statistical analyses. Ki-square test was used for evaluation.

**RESULTS:**

In 79 of 393 patients (%20.1) radiologic investigation revealed metastatic lymph nodes, therefore in 314 patients(%79.8) there were no signs of metastatic lymph nodes. 268 of 314 radiologically negative patients(%85.3) were also diagnosed as lymph node negative in respect of histopathologic investigation, but in 46 (%14.6) histopathological examination revealed metastatic lymph nodes. 42 of these 46 patients(%91.3) have metastatic lymph nodes on Level I and II, since 4 patients (%8.6) have metastatic lymph nodes on Level III axillary dissection area.

**DISCUSSION**

Breast cancer is the leading malignancy type seen in females today. Failure to diagnose this condition during early term due to lost time is one of the most important mortality factors.

In early diagnosis of breast cancers, the most commonly used methods include physical examination in addition to imaging studies such as routine USG, mammography and MRG. The most frequently used

minimally invasive surgical interventions for diagnosis are true-cut biopsy, fine-needle aspiration biopsy, excisional biopsy and SNLB (Sentinel lymph node biopsy); which is used more and more every day [2]. Due to a correlation between tumor size and axillary lymph node metastasis in breast cancer, this is an important factor in survival and treatment efficiency rates [1]. There are studies that report a worse prognosis in patients with a large number of axillary lymph node metastases in comparison with smaller number of axillary lymph node metastases seen in breast cancer patients [3].

Although physical examination and annual mammograms are the most commonly used methods for screening breast cancer, fine-needle aspirations are also done on suspicious lymph nodes. When done on suspicious lymph nodes detected on USG (lymph node longitudinal size >2 cm, transverse >1.5 cm, lymph nodes which are lost in central fat density, lymph node cortex thickness >3 cm); fine-needle aspirations increase the specificity of diagnosis [4].

Nowadays, sentinel lymph node biopsy is more widely used approach in detecting axillary metastases during early term of breast cancer. SLNB (Sentinel Lymph Node Biopsy) replaced the previously done axillary dissection in breast cancer patients almost completely. Recurrence rates in patients treated with SNLB are reported to be about 5% in 5-year follow-up periods.

Axillary dissection or sentinel lymph node biopsy is accepted as standard modalities in diagnosing and staging of breast cancer. Until 2000's, axillary lymph node biopsy was the standard surgical treatment approach in operable breast cancer patients. However, today it is limited to select patients due to undesirable side effects such as lymphedema, peripheral nerve damage, limitation in upper limb movements and a general decline in quality of life [5, 6]. Moreover, dissection of tumor negative axillary lymph nodes also causes a negative effect on the immune system of the patient [12]. In addition, no survey differences were seen between conventional axillary lymph node dissection and sentinel lymph node dissection in T1-T2 invasive breast cancer cases [7]. American College of Oncology Group (ACOSOG) reported a study that achieved cure in patients with clinically node-negative axillary T1 and T2 tumors with 1-2 positive sentinel lymph node biopsy results with complete breast radiotherapy and systemic chemotherapy without a need for axillary lymph node dissection in their Z0011 study [8, 9]. Again, there are studies which report effective cure with axillary radiotherapy instead of axillary lymph node dissection in axillary node negative patients [10].

For those reasons, today the surgical treatment consists of either single sentinel lymph node biopsy, sentinel lymph node biopsy combined with axillary lymph node dissection, partial or total mastectomy followed by an optional breast reconstruction. There is still no definitive surgical protocol in treatment steps or approaches in practice, which vary from center to center. USG, BT and PET scintigraphy are commonly used methods to detect axillary metastases. However, usage of those methods is still limited. The controversial usage of USG is due to its low reliability rates, CT due to radiation exposure and PET scintigraphy due to its high costs and its sensitivity to far metastases all limit the daily clinical usage of those imaging methods [11, 12].

Metastases of IMNL (Internal Mammary Lymph Node), which affect survival rates significantly, are seen in about 16.7%-40% of breast cancer patients whereas this rate is about 20.5-29.5% in ALN (Axillary Lymph Node) positive patients [13, 14]. Even though imaging methods such as breast USG, mammography and MRI are used frequently in clinical settings today, there is no clear consensus on imaging IMNL metastases today. Today, the most sensitive imaging method is MRI in breast cancer due to its high selectivity and its ability to clearly present deeply located and contralateral benign and metastatic axillary lymph nodes and is used widely in clinic today [15, 16]. On the other hand, MRI can be insufficient in showing IMNL and its metastases when they are smaller than 5mm. Despite its difficulties such as the need for surgical excision and biopsy, hemorrhage risk, longer waiting periods and requirements for the surgeon to be experienced on the subject, an effective SLNB biopsy provides valuable information about TNM staging, planning the treatment strategy and increasing the effectiveness of adjuvant systemic treatment efficacy.

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