

Evaluation of axillary lymph node status after axillary dissection in patients with SLN negative or single SLN positive T1 and T2 breast cancer

 Yavuz Pirhan

Department of General Surgery, Sabuncuoglu Serefeddin Research and Training Hospital, Amasya University, Amasya, Turkey

Copyright@Author(s) - Available online at www.annalsmedres.org

Content of this journal is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License



Abstract

Aim: The most substantial factor determining prognosis in breast cancer is axillary lymph node involvement. Therefore, axillary lymph node status should be evaluated correctly in the staging of the disease and determining the prognosis. In this study, we aim to evaluate the detection rate of metastatic lymph nodes after axillary dissection in patients with negative or single positive sentinel lymph nodes in early-stage breast cancer.

Materials and Methods: We have included patients with sentinel lymph node biopsy and/or axillary dissection diagnosed with early-stage (T1 and T2) breast cancer between 2018 and 2019 in the study. We have evaluated tumor prognostic factors from patient files and the total number of lymph nodes and tumor positive lymph nodes from pathology paraffin specimens.

Results: The study included 29 female patients with an average age of 56 (34-83). Breast-conserving surgery (BCS)+SLNB was performed in 15 patients and BCS+ AD in 11 patients and modified radical mastectomy (MRM) was performed in 3 patients. In 3 patients with positive surgical margin after BCS + SLN, although one patient was positive and the other two patients were negative in SLN, multiple metastatic lymph nodes were detected after axillary dissection due to the patients' request for axillary dissection. Patients were followed-up for an average of 26 months without recurrence or metastasis.

Conclusion: Considering that there may be lymph node metastasis other than the sentinel lymph node in patients with SLNB negatives or single positive sentinel lymph node, we recommend more than one lymph node excision in addition to the stained lymph node.

Keywords: Axillary dissection; early stage breast cancer; sentinel lymph node; sentinel lymph node biopsy

INTRODUCTION

Stage I and II breast cancer are defined as early-stage breast cancers. If there is no clinical and pathological lymph node involvement in early-stage breast cancer, biopsy (SLNB) is recommended (1). Sentinel lymph node (SLN) is a minimally invasive surgical technique that is used as an alternative to axillary dissection (AD) and thought to provide precise and accurate staging in breast cancer patients (2). However, in a significant number of patients, SLN is the only metastatic focus. However, while the accuracy of the SLNB procedure is between 65-100%, there is false negativity of 0-14%. Also, these ratios vary according to the experience of the surgeon (3). Factors such as the application of the method with different approaches, the length of the learning period, the relative lowness of the rate of lymph node presence when painted with blue only, and the effect of biopsies performed before the SLNB procedure are some of the reasons for this variance. At the same time, the surgical technique applied

during SLNB and whether the surgeon's training on the subject is sufficient is reported to be more important than the place and quantity of blue paint (4). The most substantial factor determining the prognosis in breast cancer is axillary lymph node involvement (5). Therefore, axillary lymph node status should be evaluated accurately in staging the disease and determining the prognosis. In this study, we investigated whether the tumor could be detected in patients with T1 and T2 breast cancer despite negative sentinel lymph nodes in the dissection specimen in cases where axillary dissection was performed for any reason after negative sentinel lymph node sampling.

MATERIALS and METHODS

Patients with sentinel lymph node biopsy and/or axillary dissection diagnosed with early-stage (T1 and T2) breast cancer between 2018 and 2019 were included in the study. The files of these patients were analyzed retrospectively. Age, preoperative tumor size, surgical technique, the number of sentinel lymph nodes stained with methylene

Received: 07.07.2020 Accepted: 22.10.2020 Available online: 22.01.2021

Corresponding Author: Yavuz Pirhan, Department of General Surgery, Sabuncuoglu Serefeddin Research and Training Hospital, Amasya University, Amasya, Turkey E-mail: ypirhan@gmail.com

blue, the number of lymph nodes during the sampling, the number of lymph nodes with a positive tumor in frozen, tumor grade, estrogen receptor (ER) status, progesterone receptor (PR) status, CEBB2 status, surgical margin status in postoperative segmental mastectomy, as well as the total number of lymph nodes and tumor positive lymph nodes from pathology paraffin specimens were evaluated.

RESULTS

Twenty-nine female patients with a mean age of 56 (34-83) were included in the study. The mean tumor size detected in the ultrasound (USG) performed for clinical staging was 3 cm (\pm 0.990). Tumor size was T1 in one patient, T2 in 28 patients. No pathological lymph nodes were detected in axillary USG in all patients. Breast conserving surgery (BCS) + SLNB was performed in 15 patients, BCS + AD in 11 patients, and modified radical mastectomy (MRM) in 3 patients. Among the sampled SLNs, While the number of stained lymph nodes found during the operation is one or two, the average number of lymph nodes detected in pathology is four. Of these, tumors were detected in one SLN in 10 patients, two in 2 patients, three in one patient, and five in one patient. No tumor was found in SLN from 15 patients. Postoperatively, T1 in 9 patients, T2 in 18 patients, and T3 in 2 patients were detected, and the average tumor size was 2 cm (\pm 0.576). 5 patients' ER, 6 patients' PR, and 14 patients' CEBB2 were negative, and there were no triple-negative patients. 20.27 (6-44) lymph nodes were removed from 11 patients who underwent AD. Metastasis was detected in 3.36 (1-19) of these lymph nodes. The surgical margin was positive in 3 patients. One of them was applied MRM and the other two BCS+ AD. 15 and 26 lymph nodes were removed from 2 patients with AD. Metastasis was detected in 3 lymph nodes from each of them. After BCS + SLNB was applied to 11 patients, AD was applied because SLN was positive. However, no metastatic lymph node was detected after dissection other than SLN. Two of the three patients who underwent MRM had one metastatic SLN and the other had no metastatic SLN. Also, In 3 patients with positive surgical margin after BCS + SLN, although one patient was positive and the other two patients were negative in SLN, multiple metastatic lymph nodes were detected after axillary dissection due to the patients' request for axillary dissection. However, more than one metastatic lymph node was detected in every three patients in AD performed. Two of the three patients who underwent MRM had one metastatic SLN and the other had no metastatic SLN. The treatment was completed by planning chemotherapy and radiotherapy according to the tumor stages by medical oncology and radiation oncology after surgery. During an average follow-up of 26 months, we found no difference between patients who underwent axillary dissection and those who underwent SLNB in terms of overall survival and disease-free survival. All our patients are followed-up without recurrence and metastasis.

DISCUSSION

The most substantial factor determining the prognosis in breast cancer is axillary lymph node involvement (5).

Sentinel lymph node (SLN) biopsy is a method that provides information about axillary involvement and prognosis (6). The sentinel lymph node is defined as the first lymph node to receive lymphatic flow in the axilla. In the absence of metastatic involvement in SLN, theoretically, it is thought that metastasis will not occur in other lymph nodes in the axilla, called non-sentinel lymph nodes (nSLN). In our study, because of the positive surgical margin in the postoperative specimen of 3 patients with SLN, 2 negative and 1 positive, and several metastatic lymph nodes were detected in axillary dissection performed due to their wishes. For this purpose, Giuliano et al. performed sentinel lymph node sampling for the first time in breast cancer in 1994. In their study, sentinel lymph node biopsy (SLNB) was performed in 174 patients, Sentinel lymph nodes were found in 114 patients (65.5%), and it was shown that the sentinel lymph node provided accurate information about axillary involvement in 109 patients (95.6%)(4,7). Although SLN biopsy has emerged as an alternative method to routine axillary dissection, the development in this area has been rapid. It has been determined that SLN biopsy enables a more accurate and precise determination of adjuvant therapy, shortening of hospital stay, reduction in cost rates, as well as reduction of complications such as lymphedema, arm pain, and numbness related to routine axillary dissection (6). In the postoperative follow-up of our patients, no complications were observed during dissection in patients without AD. With this development and the results of studies to date, sentinel lymph node dissection (SLND) has now been applied instead of routine axillary lymph node dissection (ALND) in early-stage breast cancers. We performed SLNB in all our patients and detected SLN stained in all patients. The use of the SLNB technique is a critical improvement that will reduce the complications associated with the surgical dissection of the axillary region. It also has an increasingly accurate rate of nodal involvement of the axilla (8). However, the accuracy of the SLNB procedure varies between 65 and 100%, and has a false negativity rate between 0 and 14%, and varies from surgeon to surgeon (9). Also, false negativity of SLN was found as 9.1% in patients using only dyes, 10.9% in patients using only radiocolloid, and 6.7% in combined technique in large series such as the ALMANAC study (10). These two conditions led to controversy about the reliability of SLN and it was thought that they would affect local recurrence and survival in long-term follow-up. However, in the study published by Veronesi et al. in 2009, 5-year survival was 97.6% and axillary recurrence was observed less than 1% (31 patients) within 4-11 years of follow-up in 3548 patients with negative sentinel lymph node biopsy (11). Similarly, in many studies, it has been stated that there is no difference in terms of overall survival, disease-free survival, and axillary recurrence among patients who are SLNB negative in early-stage breast cancer and patients who undergo routine axillary lymph node dissection, and SLNB is reliable in this patient group (12-14). We found no difference between patients who underwent axillary dissection and those who underwent SLNB in terms of overall survival and disease-

free survival during an average of 18 months of follow-up. All our patients are followed-up without recurrence and metastasis. Factors such as the application of the method with different approaches, the length of the learning period, the relative lowness of the rate of lymph node presence when painted with blue only, and the effect of biopsies performed before the SLNB procedure are some of the reasons for this variance (15). At the same time, the surgical technique applied during SLNB and whether the surgeon's training on the subject is sufficient is reported to be more important than the place and amount of blue dye administration (16). Only blue dye was used in our patients. Therefore, accurate evaluation of the axillary lymph node status is required in staging the disease and determining the prognosis.

CONCLUSION

As seen in our study, lymph node metastasis other than the sentinel lymph node was detected in the axillary dissection performed for any reason in patients with negative SLNB or single positive sentinel lymph node. That raises doubts about the reliability of the sentinel lymph node biopsy. Considering the facts about the sentinel lymph node in the literature, we think of this result as a mistake made in the histopathological evaluation or removal of a single sentinel lymph node. In this regard, we strongly recommend removing at least two more lymph nodes in addition to SNL while performing SNLB and reconsidering this issue with studies that have larger case numbers.

Acknowledgements: We thank to Mr. Ali Duran for excellent language assistance.

Conflict of interest : The authors declare that they have no competing interest.

Financial Disclosure: There are no financial supports.

Ethical approval: Ethics committee approval was received from Non-invasive Clinical Research Ethics Committee of University of Amasya(2020-2-07).

REFERENCES

1. Telli Melinda L, William J, et al. NCCN guidelines updates: breast cancer. J Natl Compr Canc Netw 2019;17:552-5.
2. Stein Roland G, Firicker R. Evaluation of Sentinel Lymph Node Biopsy and Axillary Lymph Node Dissection for Breast Cancer Treatment Concepts-a Retrospective Study of 1,214 Breast Cancer Patients. Breast Care 2017;12:324-8.
3. Bergkvist L, Frisell J. Multicentre validation study of sentinel node biopsy for staging in breast cancer. British J Surgery 2005;92:1221-4.
4. Chung A, Giuliano AE. Lymphatic mapping and sentinel lymphadenectomy for breast cancer. The Breast Elsevier 2018;1:604-30.e606.
5. Mohammed, Ayad Ahmad. Predictive factors affecting axillary lymph node involvement in patients with breast cancer in Duhok: cross-sectional study. Annals of Med and Surgery 1999;44:87-90.
6. Noguchi, Masakuni. Current controversies concerning sentinel lymph node biopsy for breast cancer. Breast Cancer Res Treat 2004; 84:261-71.
7. Giuliano Armando E, Kirgen DM, et al. Lymphatic mapping and sentinel lymphadenectomy for breast cancer. Ann Surg 1994;220:391.
8. Sakorafas George H, Adelais G, et al. Axillary lymph node dissection in breast cancer: current status and controversies, alternative strategies and future perspectives. Acta Oncologica 2000;39:455-66.
9. Flett MM, Going JJ, Stanton PD, et al. Sentinel node localization in patients with breast cancer. British J of surgery 1998;85: 991-3.
10. Goyal A, Newcombe RG, Chhabra A, et al. Factors affecting failed localisation and false-negative rates of sentinel node biopsy in breast cancer—results of the ALMANAC validation phase. Breast Cancer Res Treat 2006;99:203-8.
11. Veronesi U, Galimberti V, Paganelli G, et al. Axillary metastases in breast cancer patients with negative sentinel nodes: a follow-up of 3548 cases. Eur J Cancer 2009;45:1381-8.
12. Krag DN, Anderson SJ, Julian TB, et al. Sentinel-lymph-node resection compared with conventional axillary-lymph-node dissection in clinically node-negative patients with breast cancer: overall survival findings from the NSABP B-32 randomised phase 3 trial. The Lancet Oncology 2010;11:927-33.
13. Veronesi U, Viale G, Paganelli G, et al. Sentinel lymph node biopsy in breast cancer: ten-year results of a randomized controlled study. Ann Surg 2010;251: 595-600.
14. Mansel RE, Fallowfield L, Kissin M, et al. Randomized multicenter trial of sentinel node biopsy versus standard axillary treatment in operable breast cancer: the ALMANAC Trial. J Natl Cancer Inst Monogr 2006;98:599-609.
15. Kern, Kenneth A. Sentinel lymph node mapping in breast cancer using subareolar injection of blue dye. J Am Coll Surg 1999;189: 539-45.
16. Cody III HS, Hill AD, Tran KN, et al. Credentialing for breast lymphatic mapping: how many cases are enough?. Ann Surg 1999;229:723.