

Clinical importance of preoperative detection of the apical lymph node metastasis in patients with breast carcinoma

Güven HE, Bulak H, Turanli S, Oral S

ABSTRACT

Introduction: According to the revised staging system for breast cancer, the infraclavicular node status has become more important because the involvement of the apical nodes now changes the stage of the disease for all tumour sizes. In this study, we analysed the stage migration among our patients treated with mastectomy for breast cancer.

Methods: 44 patients who were treated with modified radical mastectomy for breast cancer in our department during 2003 were reviewed for their clinicopathological features, including the status of the axillary lymph nodes.

Results: 11 patients (25 percent) were reclassified as stage IIIC according to the new Tumour, Node and Metastasis (TNM) classification system of American Joint Committee on Cancer that was revised in 2002. The mean age was 40.2 years and the mean tumour size was 5 cm.

Conclusion: Patients with breast cancer should be properly staged preoperatively for choosing appropriate individual treatment, and more accurate evaluation of the infraclavicular region for metastatic lymph nodes should be done.

Keywords: apical lymph nodes, axillary lymph nodes, breast neoplasm, infraclavicular lymph nodes, lymphatic metastasis, modified radical mastectomy

Singapore Med J 2007; 48(1):31–33

INTRODUCTION

The stage of the disease is the combination of important prognostic factors and the most reliable individual data to select the appropriate treatment modality and estimate

the outcome in patients with breast carcinoma. Thus, continuous effort is being made on staging the patients more accurately. The latest staging system for breast carcinoma is the revised version that was accepted by American Joint Committee on Cancer (AJCC) in 2002⁽¹⁾. Clinically, the most important aspect of this staging system is to identify the patients with infraclavicular (apical) axillary lymph node metastasis at the time of presentation in order to optimise the treatment method. In this study, we aimed to investigate stage migration to stage IIIC according to the new Tumour, Node and Metastasis (TNM) classification in patients who were operated during 2003 for breast carcinoma and to determine the importance of preoperative detection of apical axillary lymph node (Level III) metastasis.

METHODS

44 patients who were treated with modified radical mastectomy for breast cancer in Ankara Oncology Research and Education Hospital, Third General Surgery Department in 2003 were analysed, and 11 of them (25%) in whom the stage migration was observed, were enrolled in the study. Patients were retrospectively evaluated for their clinical and histological features. Tumour size, lymph node status and the axillary metastasis patterns were analysed to compare the disease stage according to the new AJCC system with the previous system. Modified radical mastectomy was performed in all patients and included the dissection of all axillary levels (I, II, III), and periaxillary areolar tissue by dividing the pectoralis minor muscle from its insertion but not removing it. Both lateral and medial pectoral nerves were sacrificed. Long thoracic and thoracodorsal nerves were preserved in all cases.

RESULTS

Among 44 patients who were operated on, 11 patients were classified as stage IIIC according to the new TNM classification system that was revised in 2002. The mean age was 40.2 (29–72) years at the time of diagnosis. Nine of 11 patients (81.8%) were premenopausal. Histopathologically, ten patients (90.9%) had invasive ductal carcinoma, while only one (9%) had invasive

Third General
Surgery
Department,
Ankara Oncology
Research and
Training Hospital,
Demetevler,
Ankara 06200,
Turkey

Güven HE, MD
General Surgeon

Bulak H, MD
General Surgeon

Turanli S, MD
General Surgeon

Oral S, MD
General Surgeon and
Chief

Correspondence to:
Dr H Erhan Güven
Tel:
(90) 31 2222 2998
Fax:
(90) 31 2409 4488
Email:
heguven@gmail.com

lobular carcinoma. Mean tumour size was 5 (1.5–11) cm. According to the tumour size; two patients (18.1%) had T1, four (36.3%) had T2 and five (45.4%) had T3 tumours. None of 11 patients was given chemotherapy in the neoadjuvant setting.

When the axillary dissection materials were reviewed, the mean number of dissected lymph nodes from the 11 patients was 25.9, and the mean number of metastatic lymph nodes was 12.7. Seven patients (63.6%) had ten or more metastatic lymph nodes. All patients had both apical axillary and level II or I metastatic lymph nodes present. Three of them (27.2%) had additional lymph node metastasis in the Rotter's ganglions (Table I). On the immunohistochemical stain evaluation, eight patients (72.7%) were oestrogen receptor positive, six (54.5%) were progesterone positive, five (45.4%) were C-erb B2 positive and seven (63.6%) were p53 positive.

DISCUSSION

According to the new classification of the breast cancer revised in 2002 by AJCC, infraclavicular (apical) and axillary lymph node involvement in breast cancer is categorised as N3, and these patients were staged as IIIC because the survival of these patients were similar to those who had supraclavicular lymph node metastases⁽¹⁾. Lerouge et al reported 120 patients staged as locally-advanced breast carcinomas according to the new classification system, and that overall survival was strongly associated with the extend of the regional disease and the level of the metastatic lymph nodes⁽²⁾. Kuru et al reported that apical metastasis was an independent predictor of survival in node-positive patients with breast carcinoma and was associated with poor survival rates in a series of 1,277

patients⁽³⁾. Since stage IIIC falls into the locally-advanced breast cancer category, the recommended therapy consists of administration of neoadjuvant chemotherapy and then individualising the treatment for the patient. After the response to the chemotherapy is observed, continuation of chemotherapy, neoadjuvant radiotherapy or surgery is the treatment choice⁽⁴⁾.

Infraclavicular lymph node metastasis causes migration to stage IIIC, even in early stage patients with T1 tumours, and shifts these patients to an inoperable stage. In our study, among 44 patients who were treated with mastectomy, 11 patients (25%) were reclassified as stage IIIC because of the infraclavicular lymph node metastasis. Seven of these patients (63.6%) were stage I or II, according to the previous staging system but became locally advanced according to the latest system. And of these, two had tumours that were smaller than 2cm in size (Table II). Therefore, care should be taken to classify breast cancer patients as accurately as possible at the time of diagnosis to employ appropriate treatment modalities.

Ultrasonography of the axilla is promising in detecting infraclavicular lymph node involvement preoperatively in patients with breast carcinoma. Oruwari et al showed the success of ultrasonography combined with fine needle aspiration biopsy in determining apical node metastasis but they concluded that accessing apical region of the armpit was difficult for routine evaluation⁽⁵⁾. Newman et al showed that patients with apical lymph node metastasis detected by ultrasonography alone had worse disease-free and overall survival compared with those without⁽⁶⁾. While ultrasonography is safe and relatively inexpensive, prospective studies are needed to determine its reliability in detection of apical node involvement. Other imaging

Table I. Clinicopathological features of our stage IIIC patients.

Age (years)	Tumour size (cm)	ER	PR	C-erbB2	p53	Level 3*	Level 2*	Level 1*	Rotter*	Total*
43	2	–	–	–	+	3/14	4/12	–	0/1	7/27
35	6	+	–	+	–	4/14	1/11	7/8	–	12/33
41	3	+	+	–	+	4/13	0/7	9/11	0/1	13/32
33	8	+	+	+	+	2/7	–	3/13	0/3	5/23
41	1,5	+	+	–	–	1/7	0/1	2/8	–	3/16
31	5,5	+	+	+	+	3/3	1/1	6/14	–	10/18
47	3	–	–	+	+	10/12	0/3	14/17	–	24/32
72	4	+	–	–	–	4/7	0/3	8/14	–	12/24
29	11	+	+	–	–	9/10	1/1	11/12	1/1	22/24
37	4	–	+	+	+	1/13	1/8	1/2	1/3	4/26
34	7	+	–	–	+	7/7	–	20/22	1/1	28/30

ER: Oestrogen receptor status; PR: Progesterone receptor status; *: number of lymph nodes, metastatic/dissected

Table II. Distribution of Stage IIIC patients according to the AJCC 1997 classification system.

Stage (AJCC 1997)	Number of patients staged as IIIC
I	1
IIa	3
IIb	3
IIIa	4
Total	11

technologies should be similarly investigated for better preoperative staging and improved outcomes.

The new system makes radical changes in breast carcinoma staging. Considering recurrence, disease-free and overall survival rates, the new stage IIIC is quite sensible. However, a staging system should also provide sufficient, evidence-based data for the clinicians to plan and employ optimal treatment for a best outcome. There are not enough data in the English literature regarding the optimal treatment protocol for stage IIIC patients. Detecting patients with apical lymph node involvement during initial staging is challenging, and even if they are

detected the treatment approach is unclear. The survival of such patients has been shown to be poorer. Therefore, outcomes of different modalities, surgery, chemotherapy or radiotherapy alone or in combination, should be clarified and the best treatment protocol determined for these patients.

REFERENCES

1. Singletary SE, Allred C, Ashley P, et al. Revision of the American Joint Committee on Cancer Staging System for breast cancer. *J Clin Oncol* 2002; 20:3628-36. Comment in: *J Clin Oncol* 2002; 20:3576-7.
2. Lerouge D, Touboul E, Lefranc JP, et al. Combined chemotherapy and preoperative irradiation for locally advanced noninflammatory breast cancer: updated results in a series of 120 patients. *Int J Radiat Oncol Biol Phys* 2004; 59:1062-73.
3. Kuru B, Camlibel M, Dinc S, Gulcelik MA, Alagol H. Prognostic significance of axillary node and infraclavicular lymph node status after mastectomy. *Eur J Surg Oncol* 2003; 29:839-44.
4. Shenkier T, Weir L, Levine M, et al. Clinical practice guidelines for the care and treatment of breast cancer: 15. Treatment for women with stage III or locally advanced breast cancer. *CMAJ* 2004; 170:983-94. Comment in: *CMAJ* 2004; 171:219-20; author reply 221-2.
5. Oruwari JU, Chung MA, Koelliker S, Steinhoff MM, Cady B. Axillary staging using ultrasound-guided fine needle aspiration biopsy in locally advanced breast cancer. *Am J Surg* 2002; 184:307-9.
6. Newman LA, Kuerer HM, Fornage B, et al. Adverse prognostic significance of infraclavicular lymph nodes detected by ultrasonography in patients with locally advanced breast cancer. *Am J Surg* 2001; 181:313-8.