

## Lymph node metastasis after neoadjuvant chemotherapy

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Neoadjuvant therapy refers to the systemic treatment of breast cancer prior to definitive surgical therapy (ie, preoperative therapy). Neoadjuvant chemotherapy is offered to patients with locally advanced breast cancer and also those breast cancer patients who may benefit from size reduction before conservation therapy. Response to neoadjuvant chemotherapy is evaluated by the change in tumor size from pretreatment clinical and/or radiologic measurement to post-treatment status. The spectrum of response to neoadjuvant chemotherapy varies from complete response, partial response, to non-response. This concept is the same in breast tumors as well as axillary lymph nodes. The presented case is a known case of Triple Negative Invasive Ductal carcinoma with Axillary involvement Right Breast since November, 2020 and had undergone Neoadjuvant Chemotherapy till February 2021, followed by surgical intervention in October 2022.

**Keywords:** Triple Negative Breast carcinoma, Axillary Lymph node metastasis, Neoadjuvant Chemotherapy, Defaulter

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## Introduction

Breast cancer is the most frequent neoplasia in women. The breast lies between the subdermal layer of adipose tissue and the superficial pectoral fascia the lymphatic flow from the breast, 75% is directed into the Axillary Lymph nodes and hence the most common location for breast cancer metastasis [1].

Axillary lymph node involvement (ALNI) has been known to be a major BC prognostic feature for decades.

However, Axillary lymph node metastasis after NeoAdjuvant Chemotherapy in breast cancer is a poor prognostic factor.

Thus, the prediction of lymph node metastasis is important to estimate the prognosis of breast cancer patients after NAC [1-3].

## Case Report

A 66 years old menopausal female diagnosed with Right Invasive Ductal carcinoma in November, 2020 years had

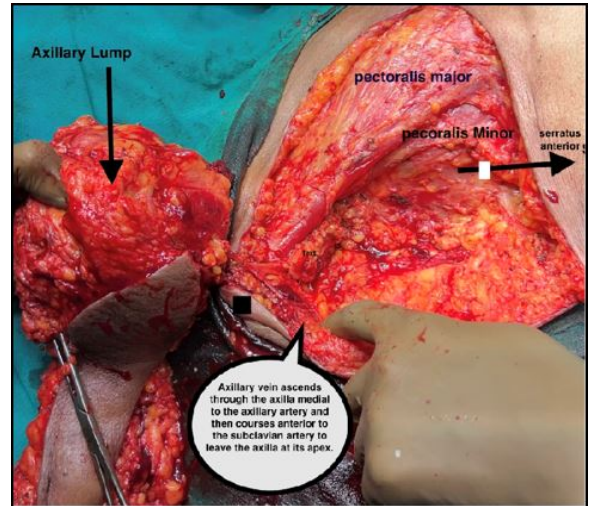
Underwent NACT (Neoadjuvant chemotherapy) in form of 4 cycles of Paclitaxel followed by 4 cycles of Adriamycin and Cyclophosphamide from November 2020 to February, 2021 followed by surgical intervention in October,2022. (Figure 1)



**Figure 1**

On F.N.A.B Right breast lump, features are consistent with invasive Carcinoma Right Breast. Her Sonography of both Breast reveals there is a large mass measuring approximately 82x69mm involving glandular tissue of right breast in upper outer quadrant with internal vascularity, there are multiple enlarged

Lymph nodes seen in retro-pectoral and axillary regions with areas of central necrosis and altered fatty hilum, measuring 36x25mm suggestive of right breast mass BIRADS-V with metastatic lymph nodes.



**Figure 2**



**Figure 3**

Left breast tissue showed normal glandular pattern. Immunohistochemical examination and fluorescence in situ hybridization of the tumor cells showed negative results for estrogen receptor, progesterone receptor and HER2, indicating that her breast tumor was a triple negative breast.

The axillary lump showed conglomerate lymph nodal mass shows metastatic carcinoma in Histopathology. Immunohistochemical evaluation of receptor of lesions were categorized as triple-negative breast cancers, (TNBC).

She underwent Modified Radical Mastectomy. The tumour was engulfing in pectorals minor reaching upto level 2. Axillary lymph nodes dissected followed by preservice of axillary veins and vessels followed by repair of the wound. The axillary lump showed conglomerate lymph nodal mass shows metastatic carcinoma in Histopathology.

## Discussion

Our patients a known case of Triple Negative Invasive Ductal carcinoma with Axillary involvement Right Breast since November, 2020 and started her chemotherapy from November 2020 till February 2021, followed by surgical intervention in October 2022.

Time interval between completion of NACT and surgery within 2 and 6 weeks after the completion of last chemotherapy is recommended.

Surgery after 6 weeks results in significantly lower pathological complete response rate with the possibility of tumour cell rebound growth after a long period of chemotherapy wash out [5,6].

**Sanford et al** analyzed data from a single institution, The University of Texas MD Anderson Cancer Center, of 1,101 patients who were treated with neoadjuvant chemotherapy. Time interval between completion of neoadjuvant chemotherapy and surgery was divided into three groups:  $\leq 4$ ,  $>4-6$  and  $>6-24$  weeks. Patients in all three groups had no difference in overall survival, recurrence-free survival and locoregional recurrence-free survival. However, sensitivity analysis comparing  $\leq 8$  weeks to a small group of 8–24 weeks (6.4%) presented worse outcomes when surgery was performed after over 8 weeks [6].

The incorporation of NACT showed significant tumor shrinkage of TNBC showing disease progression during standard NAC, But time interval of 1 YEAR AND 8 MONTHS has led to the recurrence of tumour cell occurred in axillary lymph nodes.

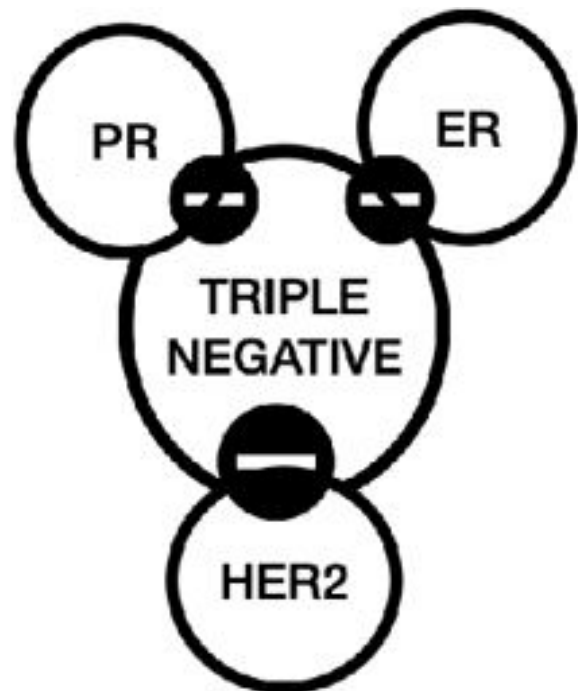
The prognosis of our patient before starting treatment was particularly poor, not only because her tumour did not express the ER, PR, or HER2 receptors, but also because she had stage T4 N2a Mo-IIIB disease.

Triple negative breast cancers (TNBC) are a heterogeneous group of tumors defined by negative immunohistochemical staining for estrogen receptor (ER) and progesterone receptor (PR) and lack of human epidermal growth factor receptor 2 (Her2/neu) overexpression. [6,7]

Patients with TNBC do not benefit from hormonal or trastuzumab-based therapy because of the loss of target receptors such as ER, PGR, and HER-2.

Hence, surgery and chemotherapy, individually or in combination, appear to be the only available modalities [6].

Neoadjuvant therapy refers to the systemic treatment of breast cancer prior to definitive surgical therapy (ie, preoperative therapy). Neoadjuvant chemotherapy is offered to patients with locally advanced breast cancer and also those breast cancer patients who may benefit from size reduction before conservation therapy, the breast lies between the subdermal layer of adipose tissue and the superficial pectoral fascia the lymphatic flow from the breast, 75% is directed into the axillary lymph nodes. Response to neoadjuvant chemotherapy is evaluated by the change in tumor size from pretreatment clinical and/or radiologic measurement to post-treatment status. The spectrum of response to neoadjuvant chemotherapy varies from complete response, partial response, to non-response. This concept is the same in breast tumors as well as axillary lymph nodes.



Anthracycline- and taxane-based chemotherapy are recommended as standard NAC [2,3] among patients with triple- negative breast cancer (TNBC), however, approximately 5% of the cases show disease progression during NAC [2,4,5]. If patients have inoperable disease, next-line chemotherapy is considered to create the opportunity

For curative surgery and local control. Providing chemotherapy prior to surgery has shown beneficial to reduce microscopic metastatic disease, Minimise drug resistance, enhance efficacy of the treatment also because vascular system has not been disrupted by surgery, and allow for evaluation of the response to treatment in vivo [1]

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