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Mini Review

Sentinel Node in Breast Cancer after Neoadjuvant Chemotherapy

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Abstract

The treatment for patients with breast cancer is constantly evolving, less invasive surgeries and procedures with less morbidity are being sought. Neoadjuvant chemotherapy is the standard treatment strategy for patients in locally advanced stage. The introduction of sentinel lymph node dissection provided surgeons with a less morbid alternative to axillary lymph node dissection for lymph node staging. Currently, the controversy continues as to whether it is sufficient to perform the sentinel node after neoadjuvant chemotherapy in patients with lymph node involvement, since the false negative rate has been heterogeneous in most of the studies.

Mini Review

The treatment for patients with breast cancer is constantly evolving, less invasive surgeries and procedures with less morbidity are being sought. Neoadjuvant chemotherapy (NAC) is the standard treatment strategy for patients in locally advanced stage [1], which has an increasing rate of pathological complete responses (pCR), this has motivated its use depending on factors adverse events and/or receptor status. As a result, some patients become candidates for breast-conserving surgery with results equivalent to those who undergo a mastectomy [2]. Other advantage of NAC is the opportunity to evaluate early the effectiveness of systemic therapy. The B-18 trial of the National Surgical Adjuvant Breast and Bowel Project (NSABP) is one of the first large randomized trials of NAC [3]. This trial demonstrate no difference in survival but an increase in breast conserving surgery in patients who underwent NAC.

The use of intraoperative sentinel node biopsy to detect hidden lymph node metastases in the treatment of breast cancer was initially described by Giuliano, et al [4]. Since then, a series of advantages associated with the use of this technique have been described, such as the shorter duration and costs of the procedure, and it has been found to be less morbid than full axillary dissection for lymph node statistics. The status of the axillary lymph nodes is an important prognostic indicator for patients with breast cancer. The introduction of sentinel lymph node dissection (SLN) provided surgeons with a less morbid alternative to axillary lymph node dissection (ALND) for lymph node staging. Several large studies have confirmed its accuracy and decreased morbidity, and SLN dissection is now standard practice for axillary staging in clinically node-negative patients [5-6].

Currently, the controversy continues as to whether it is sufficient to perform the sentinel node after neoadjuvant chemotherapy in patients with lymph node involvement, since the false negative rate has been heterogeneous in most of the studies. NAC modifies the lymphatic drainage of breast tumors, which can cause a decrease in the rate of sentinel node identification (IR) and an increase in the false negative rate (FNR) [7]. A meta-analysis showed a 90% identification rate (IR) of the SLN after patients underwent NAC [8]. An analysis of patients from the National Surgical Adjuvant Breast and Bowel Project (NSABP) trial B27, which included patients with unknown axillary status prior to NAC, showed a false negative rate (FNR) of 10% when axillary lymph node dissecting was performed [9]. Considering patients with initially positive axillary nodes before NAC, a recent meta-analysis showed a combined IR of 91% and a combined FNR of 13% [10].

The American College of Surgeons Oncology Group (ACOSOG) trial Z1071 [11] enrolled patients with biopsy-proven node-positive breast cancer who underwent NAC, with the goal of determining the FNR for SLNB after NAC; the FNR was 12.6%. This did not meet the pre-specified threshold and therefore it was concluded that SLNB should not be used as an alternative to ALND. The German Sentinel NeoAdjuvant (SENTINA) trial [12] was a prospective multicenter cohort study designed to assess the optimal timing of SLNB in patients undergoing NAC. The identification rate was 80.1% and the FNR was 14.2%.

Likewise, the Ganglion Sentinel Apres Chimiotherapie NeoAdjuvant 2 (GANEA 2) study [13] was designed to evaluate the precision and safety of the sentinel lymph node after NAC in patients with breast cancer the FNR was 11.9%. Multivariate analysis showed predictive results of axillary lymph node involvement, such as the residual size of the breast tumor after CAP ≥ 5 mm and lymph-vascular invasion. A study that showed a FNR within the limit considered acceptable, 8.4%, it was the Sentinel Node Biopsy Following Neoadjuvant Chemotherapy (SNFNAC) with an IR of the SNB was 87.6%. With this result, a sentinel node biopsy can be considered in breast cancer with positive nodes proven by biopsy after CAP, as long as the use of immunohistochemistry is routine.

Moreover, the Sentinel Lymph Node Biopsy guidelines for patients with early breast cancer: Update of the clinical practice guidelines of the American Society of Clinical Oncology [15] recommend the performance of sentinel node biopsy in women with cancer. of operable breast and multicentric tumors, with ductal carcinoma in situ (DCIS) who will undergo mastectomy, who previously underwent breast and/or axillary surgery, or who received preoperative / neoadjuvant systemic therapy, except those women who have cancer of the locally advanced or large invasive breast (T3 / T4 tumor size), breast cancer or DCIS (when breast-conserving surgery is planned), or those who are pregnant.

The recommendation for performing SNB after NAC is to utilize double technique (blue dye and isotope) and obtain at least three sentinel noses. If there are nodes involved with metastasis proved by FNA biopsy before NAC, the nodes should be retrieved at the moment of the SNB.