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28598 – THE USE OF BLUE DYE ALONE FOR SENTINEL LYMPH NODE BIOPSY AFTER NEOADJUVANT CHEMOTHERAPY IN PATIENTS WITH INITIALLY NODE-POSITIVE BREAST CANCER

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Introduction: Sentinel lymph node biopsy (SLNB) is the gold standard for the evaluation of the axilla in upfront surgery for non-metastatic breast cancer, with a similar recurrence rate and lower morbidity compared to axillary dissection, despite a false-negative rate of around 10%. In patients who underwent neoadjuvant chemotherapy (NACT) and who had initially negative axilla (cN0), the false-negative rate is similar to that found with upfront surgery. Conversely, in patients with non-metastatic breast cancer and initially positive axilla at first presentation (cN1/2) and who achieved complete clinical and imaging response, false-negative rates have traditionally tended to be higher. Recently, studies have indeed shown that the false-negative rate of SLNB following NACT is high (>10%) in cases of cN1/2 at first presentation. However, rates would decrease when certain strategies were used, such as clipping the lymph node prior to NACT and then resecting the clipped node; identifying and removing three or more sentinel lymph nodes (SLN); and using a dual tracer of technetium-99 and blue dye to facilitate identification of the lymph nodes. Those studies changed clinical practice, with international guidelines now recommending the use of these strategies to minimize false-negative rates. **Methodology:** This retrospective, observational cohort study was conducted with cT1-4 cN1/2 patients with non-metastatic breast cancer. All patients underwent NACT at a public healthcare facility in Brazil between 2013 and 2023. Patients with inflammatory breast cancer, those with cN0 or cN3 at first presentation, and cases for which data in the hospital records were incomplete were excluded from the study. All the patients who achieved complete clinical response following NACT (ycN0) underwent SLNB using a single tracer (blue dye) without axillary dissection if the SLN was negative (ypN0) at frozen section and confirmed at final pathology. For evaluation of the principal objective, patients who remained cN1/2 following NACT were also excluded from the analysis, as were those who underwent SLNB and in whom the SLN remained positive (ypN+) at final histopathology. The internal review board of the Fortaleza General Hospital, an institute that provides healthcare within the public healthcare network, approved the study protocol prior to its initiation under reference Certificate of Presentation for Ethical Appreciation — CAAE 42697221.8.0000.5040.2. Clinical evaluation and treatment. The patients with clinically positive axilla were diagnosed through ultrasound-guided percutaneous axillary lymph node biopsy. In cases in which there was a strong clinical suspicion in addition to abnormal axillary findings at ultrasound, diagnosis was made without biopsy. Mammography and ultrasound of the axilla were performed prior to and following NACT in all cases, while magnetic resonance imaging of the breasts could be performed or not. Neoadjuvant and adjuvant treatment of non-metastatic breast cancer (either systemic treatment or radiotherapy) was conducted according to international guidelines. None of the patients in the study used trastuzumab emtansine as adjuvant treatment, since this was not available within Brazil's public healthcare system up to the cut-off date for this study. The use of dual anti-ERBB2 therapy (receptor Erb-B2, tyrosine kinase 2 [formerly HER-2], human epidermal growth factor receptor 2) as neoadjuvant therapy is also not universally available within the public sector; however, trastuzumab can be recommended as routine. The decision regarding whether to perform breast-conserving surgery or mastectomy was made at the discretion of the surgical team. The histological subtypes of non-metastatic breast cancer were also recorded, together with the patient's age, initial tumour stage (T1, T2, T3 or T4), initial clinical lymph node status (N1 or N2) and immunohistochemical subtypes: hormone receptor-positive/ERBB2-negative, hormone receptor positive/ERBB2-positive, hormone receptor-negative/ERBB2-positive and triple-negative (absence of hormone receptors and ERBB2). 2.2 Description of the SLNB technique. The tracer, blue dye alone (Patent Blue V sodium 2.5%), was applied by intradermal injection (1–4 points) into the breast (1–2 mL), in the periareolar region or in the upper lateral quadrant, following general anaesthesia. Massage was performed at the site of the injection for at least 1–2 minutes. The occurrence of side effects associated with blue dye, particularly

severe allergic reactions (grade III and IV), was evaluated. A separate incision was made into the axilla to identify the SLN except in cases of simple mastectomy without reconstruction. No minimum number of SLN to be identified and resected was pre-established. Briefly, a negative SLN at frozen section analysis, confirmed at final histopathology, was sufficient to avoid axillary dissection. The median number of SLN resected was analysed. Palpable lymph nodes other than the SLN were only resected if metastasis was suspected. Immunohistochemistry of the SLN was not routinely performed except when required to confirm indeterminate results. All patients with residual disease in the SLN underwent axillary dissection, including those whose diagnosis was made at final histopathology, irrespective of the extent of the metastasis (isolated tumour cells, micro- and macro-metastases). 2.3. Outcome evaluation. The principal oncologic outcomes evaluated were: axillary recurrence, defined as any recurrence in the ipsilateral axilla; lymph node recurrence, which includes recurrence in the axilla and supraclavicular fossa or internal breast; ipsilateral breast recurrence; new primary contralateral; distant recurrence; and death. Follow-up was measured from the time of SLNB surgery. The likelihood of undergoing SLNB alone or axillary dissection was evaluated according to immunohistochemical subtype, initial tumour stage (cT3/T4 versus cT1/2) and axillary lymph node status (cN2 versus cN1). 2.4 Statistical analysis. Categorical data were described as absolute and relative frequencies, while medians and interquartile ranges were used to describe patients' age and the number of SLN removed. Disease-free and overall survival rates were calculated using the Kaplan-Meier method. To evaluate factors associated with undergoing SLNB alone, Poisson models with robust estimation of variance were used to calculate relative risk. Factors with p-values <0.20 in the univariate analysis were included in the multivariate analysis. Only factors with p-values <0.05 remained in the final model. Analysis was performed using the R software, version 4.2.2. **Conclusion:** Performing SLNB using blue dye alone following NACT in patients with initial cN1/2 who achieved complete clinical and imaging response proved feasible according to this analysis, with no axillary recurrence. It would therefore appear to represent a suitable option in institutes with limited access to resources. Results from studies with longer follow-up times, particularly randomized clinical trials, are required to validate these findings.