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The influence of neoadjuvant chemotherapy response in local recurrence of breast cancer patients undergoing nipple-sparing mastectomy

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Objective: Our study aimed to examine the influence of response to neoadjuvant chemotherapy (NACT) in local recurrence (LR) of a heterogeneous cohort of breast cancer patients who underwent nipple-sparing mastectomy (NSM) with immediate breast reconstruction. **Methodology:** We evaluated 101 breast cancer patients undergoing 194 NSM after NACT between January 2004 and December 2020. The data were retrospectively evaluated by the medical chart, and the patient's follow-up was updated during the appointments. **Results:** The patient's median age was 42.9 years. The majority of patients (90.2%) underwent bilateral procedures, and the reasons for the surgery in the contralateral breast were 18.8% diagnosis of high penetrance gene mutation, 4.9% breast cancer in both breasts, 2% atypia, and 74.3% asymmetry/patient option. Breast reconstruction was performed using silicon prosthetic implants for 98 (97%) patients and with a tissue expander for only 3 (3%) patients. Luminal tumors were more prevalent (43.5%), followed by triple-negative (32.8%), luminal/HER2 (17.8%), and HER2 (5.9%). A complete response to NACT was observed in 23.5% of the patients, and 76.5% presented a partial response. In the mean follow-up of 50 months, 6 (5.9%) patients were diagnosed with LR as the first event, and achieving a partial response to NACT was not correlated to local relapse ($p=0.5$). When analyzing luminal and triple-negative tumors separately, we observed RPC in 9% of luminal and 36.5% of TN tumors, and all LRs occurred in patients with incomplete response. In luminal tumors with incomplete response to NACT was observed 2.5% of LR versus 9.5% in TN demonstrating an increased LR in triple-negative tumors without RPC to NACT. However, the statistical analysis did not demonstrate significance because of the small sample size. **Conclusion:** A complete response to NACT is associated with a better prognosis; however, in our mixed cohort, it does not interfere with the chance of developing LR. Further studies with more patients analyzing separately the breast cancer molecular subtypes are needed to verify this preliminary result.

Keywords: breast neoplasms; neoadjuvant chemotherapy; recurrence; subcutaneous mastectomy; drug resistance.