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Prediction of recurrence after neoadjuvant chemotherapy in early triple-negative breast cancer

Gabriel Berlingieri Polho[1], Laura Testa[1,2], Romualdo Barroso de Sousa[3], Daniel Negrini Batista[1], Renata Colombo Bonadio[1,2]

[1]Cancer Institute of the State of São Paulo, Universidade de São Paulo.
[2]D'Or Institute of Research and Education.
[3]Group DASA.

Objective: This study aimed to explore the clinical and pathological biomarkers to predict recurrence after neoadjuvant chemotherapy (NACT) in triple-negative breast cancer (TNBC). **Methodology:** We retrospectively reviewed our institutional database to identify patients with TNBC who underwent NACT with anthracyclines and taxanes. Medical charts were analyzed to extract data. Log-rank was used to compare survival estimates and Cox proportional hazard to determine effects on survival. Approval from the Ethics Committee was obtained before the study procedures. **Results:** We identified 110 TNBC patients receiving NACT. The median age was 48 years, 60% had stage III tumors, and 30.9% achieved pathologic complete response (pCR). One-year disease-free survival (1y-DFS) was 74.6% (95% confidence interval [CI] 65.3–85.3). A higher risk of recurrence was observed in patients with residual disease (RD) (hazard ratio [HR] 5.0, 95%CI 1.17–21.52), stage III disease (HR 2.7, 95%CI 1.02–7.48), and neutrophil-to-lymphocyte ratio (NLR) >2 (HR 2.66, 95%CI 1.03–6.87). In a subgroup analysis, the percentage of tumor-infiltrating lymphocytes (TILs) ≥30% was a favorable prognostic factor in stage II disease (no patients recurred after a median follow-up of 13.2 months) but did not impact prognosis in stage III. Among patients with pCR, those who had NLR >2 had a significantly worse prognosis (1y-DFS: 100% vs. 75%, p=0.039), while TIL levels did not predict the risk of recurrence. The prognosis of patients who had RD after NACT was not related to TILs ≤30% (p=0.56) or NLR >2 (p=0.34). **Conclusion:** After NACT, patients with RD and those with high NLR despite pCR have a significant risk of recurrence. TIL levels did not discriminate recurrence risk within the subgroups of pCR or RD. As a readily available biomarker, NLR should be further explored to tailor treatment decisions.

Keywords: triple-negative breast neoplasms; drug therapy; survival analysis.