

<https://doi.org/10.29289/259453942025V36S10967>

967 – Tumor-infiltrating lymphocytes predict pathologic complete response in human epidermal growth factor receptor 2 (HER2)-positive breast cancer treated with neoadjuvant therapy

Karen Lorena Morocho España¹, Cinthya Abigail Apolo Carrion¹, Martina Parenza Arenhardt¹, Cassio Fernando Paganini¹, João Pattussi Bertinatti¹, Tomás Reinert¹

¹Irmandade da Santa Casa de Misericórdia de Porto Alegre, Hospital Santa Rita – Porto Alegre (RS), Brazil.

Introduction: Tumor-infiltrating lymphocytes (TILs) have emerged as a relevant immune biomarker associated with response to systemic therapy in human epidermal growth factor receptor 2 (HER2)-positive breast cancer, with potential implications for treatment personalization.

Methods: A retrospective study was conducted at a tertiary cancer center between January 2021 and June 2025. Thirty-six patients with HER2-positive breast cancer treated with neoadjuvant chemotherapy combined with anti-HER2 therapy were included. TIL levels were assessed in pretreatment biopsy samples according to the International TILs Working Group recommendations. Pathological response was evaluated using the Residual Cancer Burden (RCB) classification, with pathologic complete response (pCR) defined as the absence of invasive disease in the breast and axillary lymph nodes. The association between TIL levels and pCR was analyzed using the Mann–Whitney U test.

Results: The median age was 54 years. Most patients had stage I–III disease, predominantly stage II and high-grade (grade 3) tumors, with 25% hormone receptor positivity. The pCR rate was 69.4% (25/36). TIL distribution was as follows: 30.6% very low (0–10%), 19.4% low (11–20%), 38.9% intermediate (21–50%), and 11.1% high (>50%). Patients who achieved pCR had significantly higher pretreatment TIL levels than those without pCR (mean rank 21.72 *vs.* 11.18; *p*=0.004).

Conclusion: Higher pretreatment TIL levels were significantly associated with an increased likelihood of pCR in HER2-positive breast cancer treated with neoadjuvant therapy. These findings support the role of TILs as predictive biomarkers and reinforce their potential to guide personalized treatment strategies.

Ethics: Research Ethics Committee Approval (CAAE 91378525.2.0000.5335).

Keywords: breast neoplasms; pathologic complete response; neoadjuvant therapy; tumor-infiltrating lymphocytes.