

Handgrip Strength Predicts Pathologic Complete Response in Breast Cancer Patients Undergoing Neoadjuvant Chemotherapy

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Purpose: Breast cancer (BC) is the most common malignancy worldwide. Neoadjuvant chemotherapy (NACT) has become a standard treatment approach, and achieving pathologic complete response (pCR) is strongly associated with favorable long-term clinical outcomes. Although considerable efforts have focused on identifying tumor-specific predictors of treatment response, the role of host-related factors remains underexplored. In this context, handgrip strength (HGS), as an objective marker of muscle function and overall physiological reserve, may provide clinically relevant insights into treatment tolerance and response. However, evidence regarding its association with pCR in BC patients is scarce.

Methods: A total of 185 BC patients' (Mean age: 50.72 ± 11.15 years) data was analyzed in this retrospective study. Demographic and clinical characteristics (Tumor-related parameters, including Ki-67 index, clinical stage, and HER2 status) as well as baseline HGS were obtained from medical records. "pCR" was defined as the absence of residual invasive disease following completion of NACT.

Results: In the multivariable logistic regression in which Ki-67, HGS, HER2 status were entered as covariates, HGS (OR=1.08, 95% CI=1.00–1.17, p=0.041), Ki-67 index (OR=1.04, 95% CI=1.01–1.06, p<0.001), and molecular subtype (compared to the reference group (Luminal A and Luminal B HER2-negative), patients in the HER2-positive group (isolated HER2-positive and Luminal B HER2-positive) had a significantly higher likelihood of achieving pCR (OR=6.10, 95% CI=2.59–14.33, p<0.001)) were identified as significant predictors of pCR. Model fit index and cumulative variance were acceptable (Hosmer–Lemeshow goodness-of-fit test ($\chi^2=7.893$, p=0.444) and Nagelkerke R² of 0.405).

Conclusion: HGS emerged as an independent predictor of pCR in BC patients undergoing systemic NACT, alongside established tumor-related factors such as Ki-67 and molecular subtype. HGS may reflect patients' physiological reserve and contribute to the prediction of treatment response beyond traditional oncologic parameters. These findings highlight the potential role of functional assessments as complementary tools in clinical decision-making and risk stratification.

Keywords

Breast cancer, Pathological complete response, Chemotherapy, Handgrip strength

Conflict of Interest & Ethical Approval

yes

Abstract submitters declaration

yes

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