

Factors Associated with the Decision to Decline Chemotherapy in Patients with Early-Stage, ER+/HER2-ve Breast Cancer and High-Risk Scoring on Genomic Assays

Nadeem Bilani MD*, Leah Elson MS, Elizabeth Blessing Elimimian MD, Hong Liang PhD, Maroun Bou Zerdan MD, Diana Saravia MD & Zeina Nahleh MD FACP
Department of Hematology-Oncology, Maroone Cancer Center, Weston, *Cleveland Clinic Florida*

BACKGROUND

- The 21-gene Oncotype DX assay predicts a risk of disease recurrence in patients with estrogen receptor (ER)-positive breast cancer.¹
- MammaPrint, on the other hand, is a 70-gene panel that predicts a risk of early metastasis.²
- Patients with early-stage, ER+/HER2- BC but high risk as per OncotypeDX/MammaPrint should receive systemic therapy with chemotherapy followed by endocrine therapy – versus endocrine therapy alone – for optimal long-term outcomes.
- Despite evolving precision medicine practice, some patients are reluctant to receive recommended treatments.

METHODS

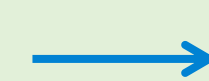
- Using the *National Cancer Database* (2004-2017 dataset), we identified a cohort of patients with early-stage (AJCC clinical staging I-II), ER+/HER2- breast cancer, a high-risk designation as per Oncotype DX (Recurrence Score >25) or MammaPrint, and documented data on use of chemotherapy.
- We explored significance of socio-demographic characteristics and consent / refusal to undergo chemotherapy through bivariate chi-squared testing, followed by inclusion of significant variables ($p < 0.05$) in a multivariate logistic regression model.

Age, race and insurance status were significant predictors of a patient's decision to decline chemotherapy despite genomic assays indicating a higher risk of recurrence (OncotypeDX) or distant metastasis (MammaPrint) in early-stage, ER+/HER2-ve breast cancer.

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*Corresponding author:

Nadeem Bilani, MD
BILANIN@ccf.org
twitter.com/BilaniMD

RESULTS

- N=43,533 cases in the National Cancer Database documented receptor status, genomic assay, and chemotherapy data.
- N=38,606 (88.7%) were considered high-risk as per ODX (Recurrence Score >25), while n=4,927 (11.3%) were considered high-risk as per MP.
- N=4,415 (10.1%) patients declined chemotherapy despite recommendations by the patient's physician.
- Significant predictors of refusal of recommended chemotherapy include:
 - **Age:** Patients **>70** compared to those aged <50 (OR: 3.41, 95% CI: 2.96-3.92, $p < 0.001$)
 - **Race:** **Black** patients compared to white patients (OR: 1.17, 95% CI: 1.05-1.29, $p = 0.004$);
 - **Insurance status:** **Uninsured** (OR: 1.65, 95% CI: 1.23-2.22, $p = 0.001$), Medicare (OR: 1.38, 95% CI: 1.21-1.59, $p < 0.001$), or Medicaid (OR: 1.64, 95% CI: 1.51-1.79, $p < 0.001$) versus private insurance.
- Ethnicity (Hispanic versus non-Hispanic), education level, Charlson/Deyo comorbidity scoring and setting (urban versus rural) were *not* significantly associated with patient consent or refusal of chemotherapy.

REFERENCES:

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2. Slodkowska EA, Ross JS. MammaPrint™ 70-gene signature: another milestone in personalized medical care for breast cancer patients. *Expert review of molecular diagnostics*. 2009 Jul 1;9(5):417-22.