

Ethnic differences in tumor proliferation in women with early-stage breast cancer.

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Background: Hispanic women have a higher mortality rate and lower incidence of breast cancer (BC) compared to Caucasian women. Studies report higher tumor proliferation in African American (AA) women compared to Caucasian women. The 21-gene assay (OncotypeDX) Recurrence Score (Score) is based on the expression of 16 cancer related genes, including 5 proliferation genes that are grouped to provide the proliferation axis score (PAS). We evaluated the differences in the Score and PAS between Hispanic and Caucasian women with early-stage BC in a matched cohort analysis. **Methods:** Women with early-stage BC who had a Score obtained from 2005- 2011 were identified. Hispanic women were matched to Caucasians in a 1:2 ratio, based on age (+/- 10 years), stage, and nodal status. Lymphovascular invasion (LVI) and grade were collected. The Score result, 10-year distant recurrence, ER/PR/HER2 expression, and PAS were obtained from the OncotypeDX assay. Assuming equal variances, we expected > 90% power to detect a difference in the mean PAS between Hispanic and Caucasian women. **Results:** We identified 219 women who had OncotypeDX testing (74 Hispanic: 145 Caucasian). Of the 74 Hispanic women, 84% were from the Dominican Republic or Puerto Rico. Mean age was similar between groups (56.3 and 56.8). All but 8 patients were node(-). Mean PAS was higher in Hispanic (5.53, range: 3.9-7.8) vs Caucasian women (5.26, 3.7-7.3) ($p=0.03$, 95% CI: 0.03-0.51). The mean Score was 18.3 (0-54) and 16.3 (1-50) for Hispanic vs Caucasian women. There was no statistical difference in Score ($p= 0.17$) or 10-year distant recurrence ($p=0.13$) between groups. No differences were observed in median ER (9.8% vs 9.9%: Hispanic vs Caucasian), PR (7.3% vs 7.6%), or HER2 (9.1% vs 9.0%) by RT-PCR. Rates of LVI and grade 3 tumors were also not statistically different. **Conclusions:** Similar to higher PAS in AA women, Hispanic women with ER/PR(+), HER2(-) early-stage BC have higher tumor proliferation markers, measured by RT-PCR in the Oncotype DX assay, than Caucasian women. This may contribute to ethnic differences in BC mortality. We plan to evaluate ethnic differences in the 5 single PAS genes (CCNB1, MKI17, MYBL2, BIRC5, AURKA) to determine which are driving proliferation differences.