Prognostic Significance of Oncotype DX (RS) and MammaPrint (MP) in Post-Menopausal Estrogen Receptor-Positive (ER+), Node-Positive (N1) Breast Cancer patients: A Comprehensive Analysis by Race Using the National Cancer Database (NCDB)

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BACKGROUND

Postmenopausal ER+ patients often undergo genomic testing with RS or MP to assess chemotherapy benefits. However, the prognostic value of RS, particularly among ethnic minorities, remains unclear.

OBJECTIVES

- To evaluate the prognostic significance of RS and MP in postmenopausal, ER+ N1 patients using NCDB by race, Black Vs White.
- To identify subgroups within each racial cohort that may exhibit differential survival outcomes even at low genomic risk.

METHODS

- The 2022 NCDB PUF was used to include non-metastatic female BC patients aged more than 50 years.
- Inclusion criteria were N1, M0 patients with T1-4, estrogen and/or progesterone receptor-positive, and HER2-negative, who have undergone either RS or MP.
- They were categorized as African American (AA) or Caucasian (W).
- Associations of tumor and patient characteristics with race were assessed using Wilcoxon rank sum test and chi-square/Fisher's exact tests. Kaplan-Meier estimates of 5-yr overall survival (OS) were determined for AA and W with respect to the results of MP and RS.
- Unadjusted and covariate adjusted hazard ratios (HR) were estimated with Cox proportional hazard regression to assess the association between race and OS. Subgroup analyses were conducted to explore disparities and trends.

CONCLUSION

In patients with low-risk RS, AA had increased risk of death compared to W, while there was no difference for high-risk RS, low or high MP.

Equal endocrine therapy and chemotherapy utilization in low RS suggest there is no apparent gap in care, so these findings indicate a racial difference in prognostication between RS and MP.

Further studies are needed to validate such prognostication tests across different races.

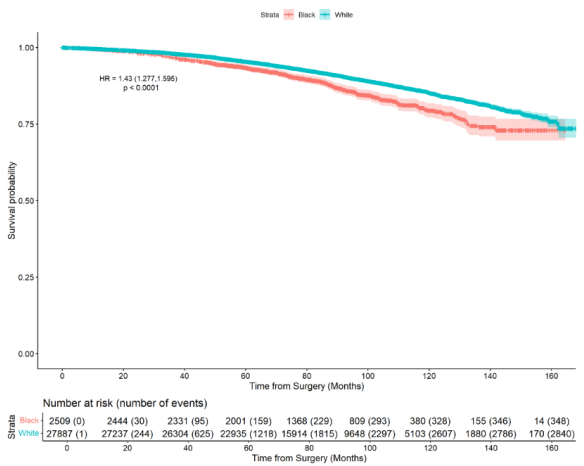
LIMITATIONS

This study's main limitation is its retrospective design, which shows associations but not causality. Long-term prospective studies are needed to determine the true prognostic value of genomic assays in breast cancer treatment. Future research should examine the racial differences to better understand genomic profiling across diverse populations.

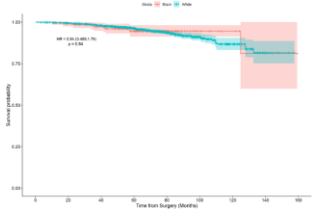
RESULTS

- 37,951 postmenopausal females were identified who met the above criteria, of whom 34,857 had RS and 3,094 had MP results.
- Of all the patients who underwent RS, 87% were categorized as LR (Low Risk, RS < 26) and 13% HR (high risk, RS ≥ 26). In contrast, among those who underwent MP, 64% were categorized as LR (low-risk MP) and 36% as HR (high-risk MP).

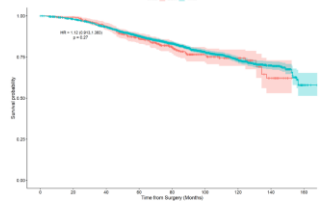
	RS		MP	
	LR (30,398)	HR (4,459)	LR (1,982)	HR (1,112)
AA	2509 (8.25%)	489 (10.97%)	180 (9.08%)	170 (15.29%)
White	27889 (91.75%)	3970 (89.03%)	1802 (90.92%)	942 (84.71%)



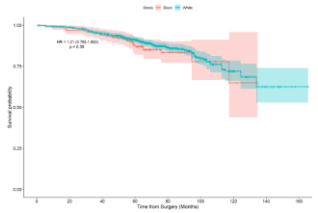
OS in RS < 26 group



OS in low-risk MP



OS in RS ≥26



OS in high-risk MP

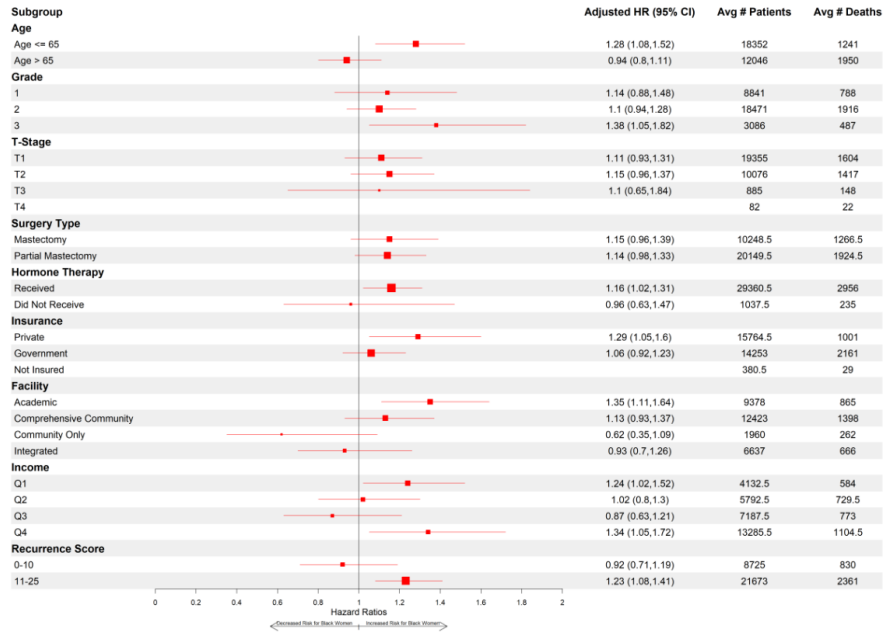
Covariate Adjusted HR (AA vs W)

		HR	95% CI	P-value
RS	LR	1.149	1.02-1.294	0.022
	HR	0.998	0.798-1.248	0.966
MP	LR	0.925	0.469-1.824	0.824
	HR	1.109	0.688-1.788	0.671

RESULTS

- Adjusted survival analyses showed that among patients with RS<26, AA patients had a 15% higher risk of death compared to Whites (HR 1.15 (1.02-1.29), p=0.022). No significant racial differences were seen for patients with high or low MP or for those with RS ≥ 26.
- In subgroup analyses of patients with RS<26, AA patients had higher risk of death if they were age ≤65 [HR 1.28 (1.08–1.52)], had grade 3 tumors [HR 1.38 (1.05–1.82)], or had RS 11–25 [HR 1.23 (1.08–1.41)].
- Receipt of chemotherapy and endocrine therapy was similar in both races in all groups, except receipt of endocrine therapy in AA was less than W in high MP (89% vs 95%, p=0.006).

N1 Post Menopausal Low Risk Oncotype- Black vs White Adjusted Cox Models in Subgroups



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