



Comparing Systemic Breast Cancer Metastasis and Survival in White and African American Women

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Introduction

- The average woman in the United States has a 12% lifetime risk of getting breast cancer¹
- African American women (AA) often present with a higher stage of breast cancer (BC) compared to White American (WA) and have an increase risk of death due to breast cancer²
- BC lymph node metastasis is strongly correlated with lymphovascular invasion (LVI) and regional lymph node (RLN) metastasis is a strong predictor of systemic mets³
- We elected to look for differences in LVI and RLN metastasis in BC to account for differences in survival outcomes between AAs and WAs

Method

- Demographic, clinicopathologic, treatment types, and molecular marker data were prospectively collected from BC patients undergoing some form of lymph node surgery (n = 2947) within our tertiary-care hospital system from 1997 to 2017
- Chi-Squared Test of Independence was used for comparison of tumor size, grade, receptor status, LVI, RLN, and systemic metastasis
- Log-rank tests were used to compare Kaplan Meier survival curves between WAs and AAs for the entire cohort and individually for triple negative breast cancer (TNBC) and non-TNBC
- All statistics were performed with SAS 9.4

Results

	Black	White	P-value
LVI			0.8030
Negative	908 (86.1%)	1562 (85.7%)	
Positive	147 (13.9%)	260 (14.3%)	
RLN			0.2583
Negative	860 (79.0%)	1434 (77.2%)	
Positive	229 (21.0%)	424 (22.8%)	
LVI/RLN			0.7837
LVI+/RLN+	765 (72.5%)	1293 (71.0%)	
LVI-/RLN+	67 (6.4%)	114 (6.3%)	
LVI+/RLN-	143 (13.6%)	269 (14.8%)	
LVI-/RLN-	80 (7.6%)	146 (8.0%)	
Systemic Metastasis			0.5091
No	998 (92.2%)	1691 (91.5%)	
Yes	85 (7.9%)	158 (8.6%)	

Table 1. Chi-Squared Test of Independence found no significant difference in occurrence of LVI, RLN or systemic metastasis between AA and WA women

Results

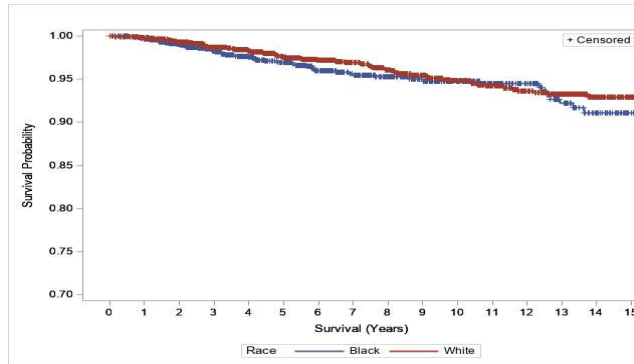


Figure 1. With death from cancer as the event, there was no significant difference between survival curves by race (p=0.3712)

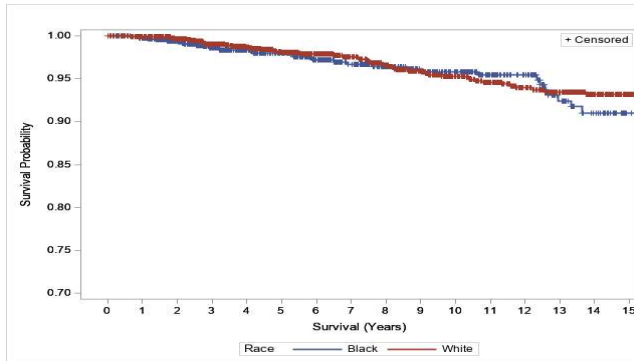


Figure 2. In Non-TNBC breast cancer patients, there was no significant difference between survival curves by race (p=0.5410)

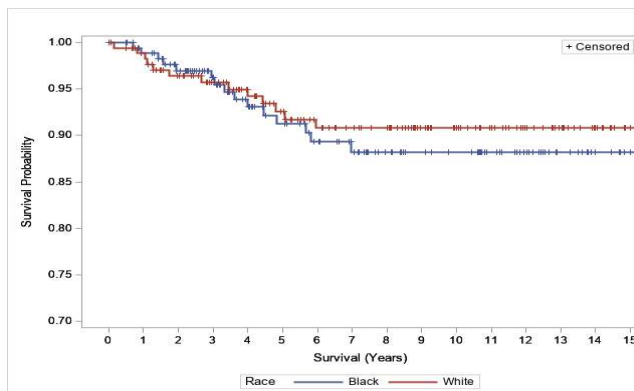


Figure 3. Comparison of survival in TNBC breast cancer patients reveals no significant difference between WA and AA women (p=0.6223)

Results

Variable	Black	White	P-value
Her-2-neu			0.1407
Negative	785 (79.0%)	1362 (81.3%)	
Positive	209 (21.0%)	313 (18.7%)	
ER			<0.0001
Negative	277 (25.7%)	300 (16.3%)	
Positive	801 (74.3%)	1546 (83.8%)	
PR			<0.0001
Negative	359 (33.1%)	413 (22.3%)	
Positive	726 (66.9%)	1436 (77.7%)	
ER/PR/ Her 2			<0.0001
Negative	175 (16.5%)	172 (9.5%)	
Positive	886 (83.5%)	1649 (90.6%)	
Tumor Size (cm)			0.3202
<1	289 (26.9%)	488 (26.5%)	
1-2	442 (41.2%)	809 (43.9%)	
≥2	342 (31.9%)	547 (29.7%)	
Grade			<0.0001
1	239 (22.3%)	483 (26.3%)	
2	463 (43.1%)	877 (47.7%)	
3	372 (34.6%)	480 (26.1%)	
Age			0.7983
< 50	189 (17.4%)	316 (14.0%)	
≥ 50	897 (82.6%)	1539 (83.0%)	

Table 2. Chi-Squared Test of Independence found significant differences in hormone receptor status and tumor grade between AAs and WAs with breast cancer

Discussion

- Our data differs from commonly held beliefs, based on many studies^{2,4}, in that we show no racial differences in survival
- WAs and AAs in our cohort have equal access to high quality BC care, which may not be true of studies that include a much broader array in different population groups^{4,5,6}
- Socioeconomic disadvantage can contribute to BC outcome disparities because of reduced screening and diagnostic delays, as well as creating barriers to comprehensive treatment⁶

Conclusion

- There were no significant differences in LVI, RLN, systemic metastasis, or mortality rate between WA and AA women with BC despite showing significant differences in molecular markers, such as ER, PR and Her2/neu

References

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