Racial Disparities in Treatment Patterns and Outcomes Among HER2-low Metastatic Breast Cancer Patients Treated in US Community Oncology Practices

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Objective

- To assess treatment patterns and outcomes among racial groups in patients with HER2-low (IHC 1+, IHC 2+/ISH-) mBC who received ≥2 lines of systemic treatment

Conclusions

- Racial disparities may exist in treatment utilization and clinical outcomes in patients with HER2-low mBC
- The effect of sociodemographic and clinical characteristics on adoption of novel therapies warrants further investigation

Plain language summary

Why did we perform this research?
In the US, African American (AA) patients are more likely to die from mBC compared with other racial groups.[1,2] They also represent a higher proportion of mBC patients with HER2-low expression compared to IHC 0 mBC patients.[5] Therefore, it is important to understand how AA patients with HER2-low mBC are treated in US community oncology practices.

How did we perform this research?
This retrospective cohort study was conducted using the PQ-Integra deidentified database. We assessed AA and White HER2-low mBC patients characteristics, what treatment they received after completing their first line of treatment and how long they were on the subsequent treatments.

What were the findings of this research and what are the implications?
Results from this study provide insights on racial disparities regarding mBC treatment utilization and associated poor clinical outcomes observed in US patients with HER2-low mBC. AA patients had higher rates of chemotherapy use irrespective of HR status and had a shorter TTD compared with White patients. The effect of sociodemographic and clinical characteristics on adoption of novel therapies warrants further investigation.

Acknowledgments

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References

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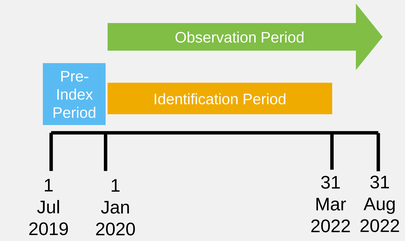
Introduction

- AA patients are at greater risk of early onset of BC and are often diagnosed with more aggressive forms of the disease compared with White patients[1]
- Approximately 50% of patients with BC express low levels of HER2 (HER2-low), defined as IHC 1+ or IHC 2+/ISH-[2-4]
- AA patients represent a higher proportion of BC patients with HER2-low disease compared to patients with IHC 0 disease.[5]
- Given the known adverse impact of BC in AA patients, it is important to understand how AA patients with HER2-low mBC are treated in US community oncology practices

Methods

- A retrospective chart review was conducted using the PQ-Integra deidentified oncology electronic medical records (EMR) database (**Figure 1**)
- The study sample included 500 randomly selected patients with HER2-low mBC who met the following criteria:
  - Confirmed diagnosis of mBC
  - Met HER2-low criteria close to mBC diagnosis date and with available HR status
  - ≥2 visits documented in the database at any time
  - ≥18 years of age on mBC diagnosis date
  - Completed 1L systemic treatment after mBC diagnosis and had initiated a subsequent LOT from January 1, 2020–March 31, 2022
- HR status closest to 2L initiation was used to classify patients as HR+ or HR-
- Patients meeting the following criteria were excluded:
  - Received systemic treatment for another primary cancer (except non-melanoma skin cancer) during the study observation period
  - Participated in a clinical trial during the study observation period
  - Had no record satisfying HER2+ criteria prior to initiation of 2L therapy (IHC 2+/ISH+, IHC 3+)
- Demographics, clinical characteristics, and treatment patterns were analyzed descriptively
- TTD per LOT was estimated via Kaplan-Meier methods

Figure 1. Study Design



Results and Interpretation

Patient Characteristics

- Of 500 patients with HER2-low mBC, 358 (72%) were White, 76 (15%) were AA, 8 were Asian (2%), and 58 (12%) were Other races (documented status as "Other" in the EMR; the Asian and "Other" race groups were not included in subsequent analyses)
- mBC onset was earlier in AA compared with White patients (median age: 57 vs 66 years) (**Table 1**)
- Compared with White patients, a greater proportion of AA patients were:
  - Self-paying for care (8% vs 3%)
  - HR- (51% vs 34%)
  - Pre-menopausal (49% vs 26%)

Table 1. Patient Characteristics

	White n=358	AA n=76
Age at mBC diagnosis, median (IQR), y	65.5 (56.0, 73.0)	56.5 (46.8, 68.0)
Gender, n (%)[a]		
Female	352 (98)	75 (99)
Male	4 (1)	1 (1)
Not documented	2 (<1)	0 (0)
Payer type, n (%)[a]	n=352	n=75
Commercial	63 (18)	18 (24)
Medicare/Medicaid	128 (36)	25 (33)
Self pay	10 (3)	6 (8)
Other	151 (43)	26 (35)
Location, n (%)[a]		
Urban	285 (80)	73 (96)
Rural	17 (5)	0 (0)
Not documented	56 (16)	3 (4)
Region, n (%)[a]		
Central	58 (16)	22 (29)
Northeast	62 (17)	4 (5)
South	211 (59)	49 (64)
West	27 (8)	1 (1)
HR status[b]		
HR+	237 (66)	37 (49)
HR-	121 (34)	39 (51)
BMI at 2L initiation	n=324	n=68
Median (IQR)	27.3 (24.1, 31.6)	29.8 (24.2, 38.9)
Menopausal status, n (%)[a]		
Pre-menopause	94 (26)	37 (49)
Post-menopause	257 (72)	38 (50)
Not documented	7 (2)	1 (1)

[a] Because of rounding, percentages may not total 100.
[b] HR status closest to initiation of 2L was used to classify patient as HR+ or HR-; 30 patients in the data had a change in HR status prior to initiation of 2L therapy.

Figure 2. First-Line Treatment Utilization by HR Status and Racial Group

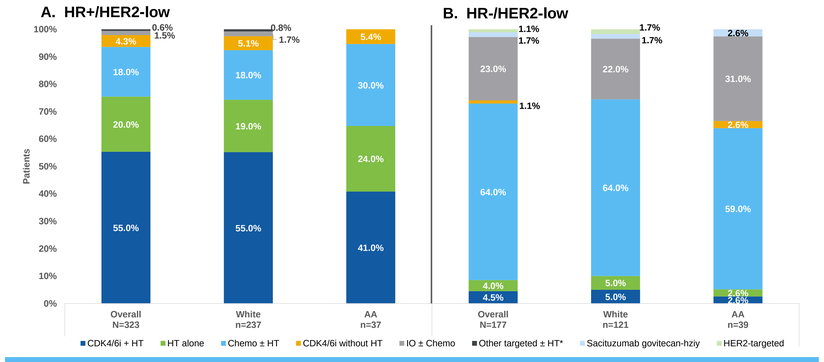


Figure 3. Second-Line Treatment Utilization by HR Status and Racial Group

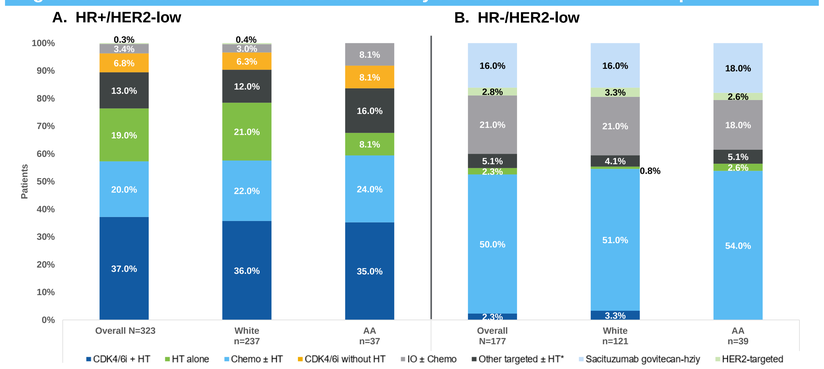


Figure 4. Third-Line Treatment Utilization by HR Status and Racial Group

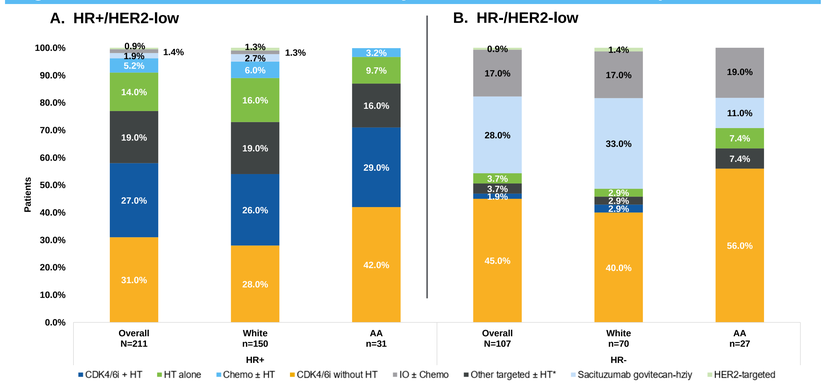


Table 2. Time to Treatment Discontinuation

	HR+/HER2-low mBC		HR-/HER2-low mBC	
	White	AA	White	AA
2L, n	237	37	121	39
2L TTD, median (95% CI), mo	6.8 (5.0–9.2)	3.5 (2.7–5.1)	4.9 (3.9–7.0)	3.4 (2.7–5.5)
3L, n	150	31	70	27
3L TTD, median (95% CI), mo	5.5 (4.1–7.8)	3.7 (2.8–11.8)	5.0 (3.4–8.3)	3.4 (2.1–NR)

Treatment Patterns

- Among HR+/HER2-low patients:
  - 1L: AA patients had lower use of CDK4/6i ± HT (46% vs 60%) and higher use of chemo (30% vs 18%) compared with White patients (**Figure 2A)**
  - 2L: AA patients had slightly higher use of chemo (24% vs 22%) and lower use of HT alone (8% vs 21%) compared with White patients (**Figure 3A**)
  - 3L: AA patients had higher use of chemo (42% vs 28%) and lower use of HT alone (9.7% vs 16%) compared with White patients (**Figure 4A**)
- Among HR-/HER2-low patients:
  - 1L: AA patients had lower use of chemo alone (59% vs 64%) and higher use of IO (31% vs 22%) compared with White patients (**Figure 2B**)
  - 2L: AA patients had slightly higher use of chemo (54% vs 51%) and lower use of IO (18% vs 21%) compared with White patients (**Figure 3B**)
  - 3L: AA patients had higher use of chemo (56% vs 40%) and lower use of sacituzumab govitecan-hziy ADC (11% vs 33%) compared with White patients (**Figure 4B**)

Time to Treatment Discontinuation

- Within a median (IQR) follow-up of 11.2 months (6.3-17.9) from 2L initiation, 76% (n=58) of AA and 61% (n=220) of White patients moved to 3L (**Table 2**)

Limitations

- The study results are limited to
  - Information available in the PQ Integra de-identified EMR database; the potential for missing/coding errors exists
  - Missing information on further socioeconomic and other factors (e.g., income level, detailed geographical location, insurance coverage, education, tumor staging) and smaller sample size didn't allow us to further understand factors contributing to observed difference and/or conduct matching adjusted statistical comparisons

Abbreviations

1L, first line; 2L, second line; 3L, third line; AA, African American; ADC, antibody drug conjugate; BC, breast cancer; BMI, body mass index; CDK4/6i, cyclin-dependent kinase 4/6 inhibitor; chemo, chemotherapy; EMR, electronic medical record; HER2, human epidermal growth factor receptor 2; HR, hormone receptor; HR-, hormone receptor negative; HR+, hormone receptor positive; HT, hormonal therapy; IHC, immunohistochemistry; IO, immunotherapy; IQR, interquartile range; ISH, in situ hybridization; LOT, line of treatment; mBC, metastatic breast cancer; mo, months; TTD, time to treatment discontinuation; US, United States; y, years