A comparison of clinical features and treatment outcomes in breast cancer and leptomeningeal metastases between African American and Caucasian: A single institution experience

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Introduction

Leptomeningeal disease (LMD) affects up to 5% of breast cancer patients, with poor survival, typically 3-4 months[1].

Limited literature describing clinical variables of breast cancer and LMD in African Americans (AA).

Patient demographics at Henry Ford Health is unique, and we present comparative analysis of AA and Caucasian patients with breast cancer and LMD.

Methodology

Retrospective review of breast cancer patients diagnosed with LMD at Henry Ford Health from August 2014 to August 2024.

LMD diagnosis followed ESMO criteria[2], and treatment response assessed using modified RANO-LM criteria[3].

We describe: patient and disease characteristics; treatment patterns; outcomes (EFS and OS); and factors predicting outcomes.

Results

Total number of patients: **41**

Caucasian: 44% (18/41)

African American (AA): 41% (17/41)

Others: 15% (6/41)

1.Pellerino A, Internò V, Mo F, et al. Management of Brain and Leptomeningeal Metastases from Breast Cancer. *Int J Mol Sci*. 2020;21(22):8534.

2. Chamberlain M, Junck L, Brandsma D, et al. Leptomeningeal metastases: a RANO proposal for response criteria. *Neuro Oncol*. 2017;19(4):484-492.

3. Rhun EL, Weller M, Bent M van den, et al. Leptomeningeal metastasis from solid tumours: EANO–ESMO Clinical Practice Guideline for diagnosis, treatment and follow-up☆. *ESMO Open*. 2023;8(5).

Results

Patient and Disease characteristics

Characteristics	AA (n=17)	Caucasian (n=18)	
Age at LMD Dx	52 (26 – 75)	51 (33 – 76)	
Receptor status	**HR+: 35% (6/17)** **TNBC: 35% (6/17)** **HER2+: 29% (5/17)**	**39% (7/18)** **17% (3/18)** **44% (8/18)**	p=0.419
Histology	IDC: 71% (12) ILC: 12% (2) Others/NA: 17% (3)	65% (11) 35% (7)	p=0.18
Stage at diagnosis	**I: 41% (1)** **II: 12% (2)** **III:18% (3)** **IV: 24% (4)**	**6% (1)** **0** **28% (5)** **67% (12)**	**p=0.012**
ECOG	**0-1: 44% (7)** **2: 13% (2)** **3-4: 43% (7)**	**11% (2)** **39% (7)** **50% (9)**	**p=0.015**
Type of CNS mets	**LMD only: 24% (4)** **LMD and brain: 76% (13)**	**61% (11)** **39% (7)**	**p=0.041**
Prior brain mets	Yes: 35% (6)	33% (6)	p=0.8
Prior CNS RT	Yes: 24% (4)	33% (6)	p=0.054
LMD Dx modality	MRI: 71% (12) LP only: 0 Both: 29% (5)	56% (10) 6% (1) 39% (7)	p=0.47

Treatment after LMD Diagnosis (Systemic)

Treatments	AA (n=17)	Caucasian (n=18)
Systemic therapy	Yes: 47% (8)	39% (7)
Systemic regimens	HER2 TKI: 3 Capecitabine: 2 Other chemotherapy: 3	Capecitabine: 3 HER2 TKI: 1 HER2 Ab/ADC: 1/1 Hormone therapy: 1

Results

Treatment after LMD Diagnosis (CNS)

Treatments	AA (n=17)	Caucasian (n=18)
CNS RT	Yes: 41% (7) WBRT: 7 Spine RT: 0 Both: 0	44% (8) 3 2 3
Intrathecal therapy	Yes: 29% (5) Median Rx: 5 Common drug: MTX (3)	39% (7) 9 MTX (4)
No any therapy	24% (4)	33% (6)

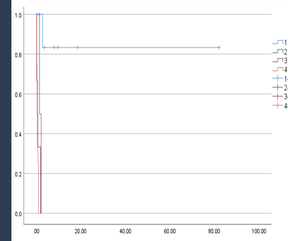
Outcomes

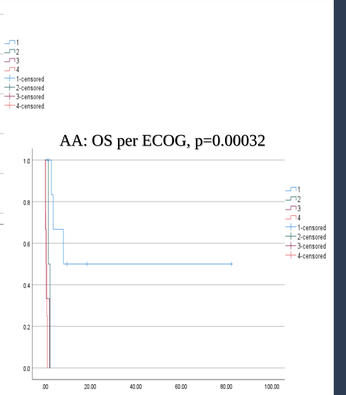
Outcomes	AA (n=17)	Caucasian (n=18)	P- value
ORR	44%	25%	0.30
DCR	78%	75%	0.84
mEFS	2.2 months	1.7 months	0.459
mOS	2.2 months	1.6 months	0.592

Factors predicting outcomes (Univariate analysis)

- **Performance status (ECOG)** predicted worse EFS and OS in AAs but not in Caucasians.
- Other variables: receptor subtype, histology, grade, stage at diagnosis, time to onset of LMD, metastatic burden – did not predict outcomes in both populations.

Results





Conclusion

- ***Clinical differences noted between AAs and Caucasians in: performance status, type of metastases, and stage at diagnosis.***
- ***Performance status predicted outcomes in AAs.***
- ***AAs had numerically better response rates. Survival was poor in both populations..***