Skin Deep: Evaluating the Impact of Race on Clinical Outcomes of Patients with Acral Lentiginous Melanoma

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Introduction

Acral lentiginous melanoma (ALM) is a rare subtype of cutaneous melanoma, accounting for 2-3% of melanoma cases in the United States.

While the overall incidence of ALM remains low compared to other subtypes, it constitutes the majority of melanoma cases among Black patients, accounting for 19-36% of melanoma diagnoses, while representing approximately 1% of diagnosis in White patients.

Racial disparities in cancer outcomes between White and Black patients are most pronounced in melanoma, with an absolute survival difference of 24%.

Given the impact of ethnic and racial disparities on cancer outcomes and Virginia's high diversity index, we aim to investigate regional population trends and racial disparities in outcomes between Black and White patients.

Methods

We performed a single-institution retrospective review of patients 18 or older with a histologically-confirmed diagnosis of in situ or invasive ALM between 2010-2023.

Our primary outcomes were overall survival (OS), recurrence-free survival (RFS), and melanoma-specific survival (MSS).

Patient demographics, stage at the time of diagnosis, tumor characteristics, treatment modalities, and cancer outcomes were obtained through the review of the electronic medical record.

We performed a two-tailed independent t-test and Fisher's exact test to compare stage at diagnosis, tumor characteristics, and treatment between Black and White patients. OS, RFS, and MSS were summarized with Kaplan-Meier estimates. We conducted log-rank tests to detect significant differences in survival outcomes between Black and White patients.

Results

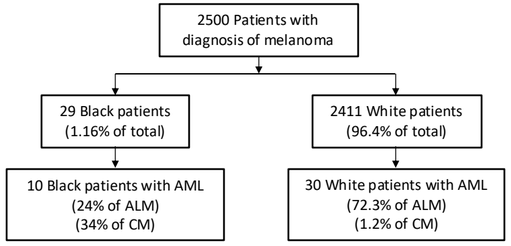


Figure 1. Of the 2500 patients in the Massey Cancer Registry 40 patients were identified to have ALM, 10 Black patients and 30 White patients.

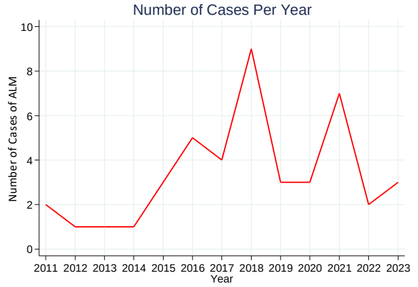


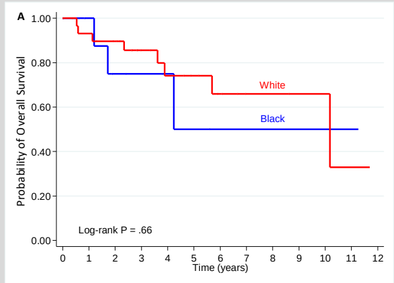
Figure 2. Incidence of ALM cases seen at the Massey Cancer Center

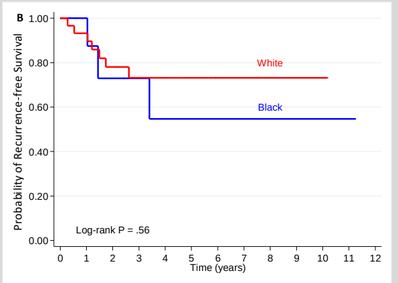
Table 1. Baseline Demographic and Clinical Characteristics

Demographic or Clinical Characteristics	Black (n = 10)	White (n = 30)	P values
Age, mean (SD)	67.3 (10.9)	63.6 (14.5)	0.466
Sex, n (%)			
Male	6 (60)	18 (60)	1
Female	4 (40)	12 (40)	
Insurance, n (%)			0.473
Medicare only	1 (10)	2 (6.7)	
Medicare/private	1 (10)	2 (6.7)	
Medicare/Medicaid	1 (10)	1 (3.3)	
Tricare	0	1 (3.3)	
Private	6 (60)	14 (46.7)	
Not insured	1 (10)	0	
Time to assessment [days], mean (SD)	37.2 (34.0)	29.8 (26.7)	0.482
Clinically Positive nodes, n (%)	2 (20)	1 (3.3)	0.008
Surgery, n (%)			0.791
Amputation	3 (30)	11 (36.7)	
WLE	7 (70)	18 (60)	
None		1 (3.3)	
Regional nodal management			
SLNBx, n (%)	6 (60)	24 (80)	0.398
TLND, n (%)	1 (10)	1 (3.3)	0.589
Margin status, n (%)			1
No residual disease	10 (100)	28 (93.3)	
Residual tumor	0	1 (3.3)	
Unknown	0	1 (3.3)	
Wound Closure, n (%)			**0.015**
Simple	5 (50)	17 (56.7)	
Rotational Flap	1 (10)	0	
Graft	3 (30)	12 (40)	
Tissue rearrangement	1 (10)		
unknown	0	1 (3.3)	
Treatments, n (%)			
Chemotherapy	0	2 (6.7)	
Radiation	0	3 (10)	
Immunotherapy			0.351
Single agent	6 (60)	11 (36.7)	
Dual agent	0	0	
TEVEC	0	1 (3.3)	
Second line therapy	2 (20)	5 (16.7)	
Third line therapy	1 (10)	3 (10)	

Table 2. Pathological Characteristics of patient with ALM

Pathological Characteristics	Black (n = 10)	White (n = 30)	P values
Biopsy Pathology			
Breslow depth, mean (SD)	3.94 (4.21)	1.71 (1.25)	**0.019**
Unknown, n (%)	4 (40)	1 (0.3)	
Upstage, n (%)	6 (60)	7 (23)	**0.042**
Surgical Pathology			
Breslow depth, mean (SD)	7.90 (5.97)	4.84 (11.82)	0.254
Unknown, n (%)	2 (20)	1 (3.3)	
Mitotic rate, mean (SD)	9 (7.69)	4.11 (4.1)	**0.002**
Unknown, n (%)	2 (20)	1 (3.3)	
LVI, n (%)	3 (30)	2 (6.7)	**0.036**
Unknown	2 (20)	3 (10)	
PNI, n (%)	2 (20)	8 (23.3)	0.882
Unknown	2 (20)	4 (13.3)	
TIL, n (%)			0.151
Present, brisk	1 (10)	1 (3.3)	
Present, non-brisk	4 (40)	9 (30)	
absent	2 (20)	20 (66.7)	
Unknown	3 (30)	0	
Regression, n (%)	3 (30)	2 (6.7)	**0.022**
Unknown	3 (30)	3 (30)	
Ulceration, n (%)	7 (70)	8 (26.7)	**0.002**
Unknown	2 (20)	1 (3.3)	
Vertical growth phase, n (%)	6 (60)	19 (36.7)	0.328
Unknown	3 (30)	4 (13.3)	
Intransit/Satelitosis, n (%)	1 (10)	5 (16.7)	0.682
Unknown	2 (20)	4 (13.3)	
Stage, n (%)			
Pathological stage			**0.014**
0	2 (20)	1 (3.3)	
Ia	0	6 (20)	
Ib	0	10 (33.3)	
IIa	1 (10)	1 (3.3)	
IIb	0	3 (10)	
IIc	1 (10)	2 (6.7)	
IIIa	1 (10)	0	
IIIb	0	2 (6.7)	
IIIc	4 (40)	3 (10)	
IIId	1 (10)	0	
IV	0	1 (3.3)	
Unknown		1 (3.3)	





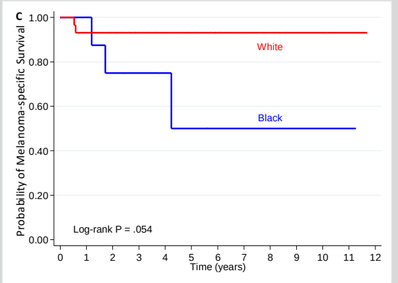


Figure 3. Kaplan-Meier Plots of Estimated Survivals in Black (10) and White (40) patients with ALM. Panel A shows a Kaplan-Meier plot of Overall survival. Panel B shows a Kaplan-Meier plot of Recurrence-free survival and panel C shows a Kaplan-Meier plot of melanoma-specific survival.

Discussion

Although rare, ALM predominantly affects Black patients and has notable disparities in final pathologic stage and disease-specific outcomes. We found that Black patients tend to present at later stages (60% ≥ Stage III at presentation vs. 23.3% in White patients), and although statistically not significant, trended towards worse MSS. Given the small sample size, no statistical significance was not found in OS and RFS.

Despite our small sample size, this is one of the larger single institution series assessing ALM's epidemiology and disparities among Black patients. More efforts are needed to understand the biological and genomic factors influencing ALM outcomes in Black patients, to improve melanoma outcomes in this population.