

Identification of cardiovascular disparities among Black and Hispanic survivors of adolescent and young adult (AYA) lymphoma

Tori Tonn, Elizabeth Rodriguez, Midhat Jafry, Branko Cuglievan, Sairah Ahmed, John Andrew Livingston, Michael Roth, Michelle Hildebrandt
Cancer Prevention Research Training Program, Departments of Lymphoma-Myeloma, Pediatrics, and Sarcoma Medical Oncology

Background

Though cure rates for adolescent and young adult (AYA) cancer patients have improved in recent decades, treatments such as anthracyclines and chest radiation therapy carry adverse cardiotoxic risks, predisposing this survivor population to **early-onset cardiovascular dysfunction**. To date, **research on treatment-related cardiotoxicity has primarily focused on survivors of pediatric and adult cancers, particularly of European ancestry**. Importantly, Black and Hispanic individuals exhibit higher cardiovascular disease risk factors within the general population, potentially augmenting the risk for adverse cardiac outcomes after cancer treatment. Therefore, **it is critical to determine the cardiovascular burden among diverse AYA cancer survivors**. Here, we aim to assess prevalence of cardiovascular endpoints in a cohort of Black and Hispanic AYA lymphoma survivors, addressing a crucial knowledge gap in cancer survivorship.

Methods



Results

- 322 AYA survivors were included in the study, 280 with detailed clinical data
- Total anthracycline dose and chest radiation exposure differed between groups
- Black survivors had [increased number of deaths](#)

Self-identified

- Black: ↑ cardiovascular burden hypertension, pericardial effusion, cardiomyopathy, heart failure
- Hispanic: ↑ hyperlipidemia

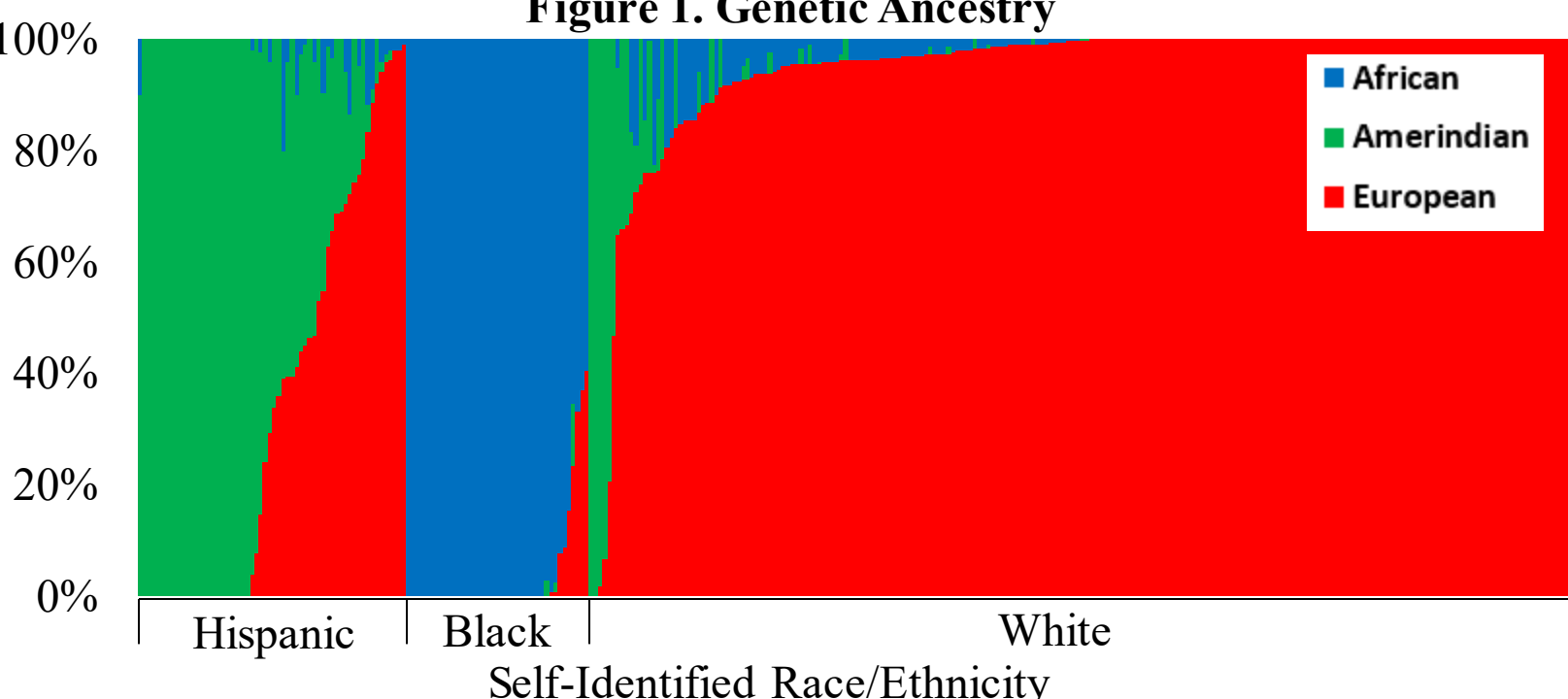
<4 % European ancestry

- Majority (95.2%) identified as non-White
- ↑ hypertension, pericardial effusion, cardiomyopathy, heart failure

	Hispanic	Black	White	Total	P-value
TOTAL	60	41	221	322	
Gender, n (%)					0.462
Female	31 (51.7)	26 (63.4)	119 (53.9)	176 (54.7)	
Male	29 (48.3)	15 (36.6)	102 (46.1)	146 (45.3)	
Age at diagnosis, mean (SD)	32.0 (5.6)	32 (5.4)	27.5 (6.7)	29.0 (6.7)	<0.001
Cancer Type, n (%)					
Hodgkin Lymphoma	10 (16.7)	2 (4.9)	170 (76.9)	182 (56.5)	
Non-Hodgkin Lymphoma	48 (80.0)	35 (85.4)	51 (23.1)	134 (41.6)	
Other	2 (3.3)	4 (9.7)	0 (0.0)	6 (1.9)	
Radiation Exposure, n (%)					0.267
No	32 (57.1)	18 (50.0)	84 (44.9)	134 (48.0)	
Yes	24 (42.9)	18 (50.0)	103 (55.1)	145 (52.0)	
Chest Exposure, n (%)					<0.001
No	8 (33.3)	9 (56.3)	9 (9.0)	26 (18.6)	
Yes	16 (66.7)	7 (43.7)	91 (91.0)	114 (81.4)	
Total anthracycline dose (mg/m²)					0.006
Patients with data	50	25	175	250	
Mean (SD)	288.4 (69.0)	276.4 (80.0)	254.5 (66.9)	263.5 (69.9)	
Follow up (years)					0.469
Patients with data	60	40	221	321	
Mean (SD)	9.0 (6.6)	9.3 (7.1)	9.8 (4.2)	9.6 (5.11)	
Vital status, n (%)					0.004
Alive	52 (86.7)	32 (78.1)	207 (93.7)	291 (90.4)	
Dead	8 (13.3)	9 (21.9)	14 (6.3)	31 (9.6)	

	Self-Identified Race/Ethnicity				P-value	Genetic Ancestry		P-value
	Hispanic	Black	White	Total		<4% European	≥4% European	
TOTAL	60	41	221	322		63	259	
BMI Change (kg/m²)					0.036			0.301
Patients with data	32	17	146	195		30	165	
Mean (SD)	2.0 (4.8)	-0.4 (4.5)	2.3 (3.9)	2.0 (3.9)		1.3 (3.5)	2.1 (4.2)	
Hypertension, n (%)					0.005			0.026
No	47 (83.9)	24 (66.7)	165 (88.2)	236 (84.6)		42 (75.0)	194 (87.0)	
Yes	9 (16.1)	12 (33.3)	22 (11.8)	43 (15.4)		14 (25.0)	29 (13.0)	
Hyperlipidemia, n (%)					0.025			0.205
No	42 (75.0)	30 (83.3)	167 (89.3)	239 (85.7)		45 (80.4)	194 (87.0)	
Yes	14 (25.0)	6 (16.7)	20 (10.7)	40 (14.3)		11 (19.6)	29 (13.0)	
Pericardial Effusion, n (%)					0.026			0.010
No	53 (94.6)	32 (88.9)	183 (97.9)	268 (96.1)		50 (89.3)	218 (97.8)	
Yes	3 (5.4)	4 (11.1)	4 (2.1)	11 (3.9)		6 (10.7)	5 (2.2)	
Cardiomyopathy, n (%)					0.002			0.002
No	55 (98.2)	30 (83.3)	183 (97.9)	268 (96.1)		49 (87.5)	219 (98.2)	
Yes	1 (1.8)	6 (16.7)	4 (2.1)	11 (3.9)		7 (12.5)	4 (1.8)	
Congestive Heart Failure, n (%)					0.017			0.027
No	56 (100.0)	33 (91.7)	186 (99.5)	275 (98.6)		53 (94.6)	222 (99.5)	
Yes	0 (0.0)	3 (8.3)	1 (0.5)	4 (1.4)		7 (12.5)	1 (0.5)	
Any Cardiac Diagnosis, n (%)					0.002			0.002
No	50 (89.3)	24 (66.7)	166 (88.8)	240 (86.0)		41 (73.2)	199 (89.2)	
Yes	6 (10.7)	12 (33.3)	21 (11.2)	39 (14.0)		15 (26.8)	24 (10.8)	

Figure 1. Genetic Ancestry



Analysis of genetic ancestry [revealed highly diverse genetic backgrounds in self-identified Hispanic AYA survivors](#)

Conclusions

- Despite improvements in AYA cancer survival, **adverse effects like poor cardiovascular health remain prevalent**.
- The results of this analysis help to **delineate the increased cardiovascular burden in a Black and Hispanic AYA lymphoma survivors**, with variation depending on genetic ancestry.
- With research largely limited to pediatric and adult patients of European ancestry, **assessment of cardiovascular outcomes in a more representative population of AYA cancer survivors has the potential to inform clinical follow-up for this at-risk group of survivors**.