

Racial and Ethnic Differences in Diffuse Large B-Cell Lymphoma Survival in an Underserved, Urban Population



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BACKGROUND

- Non-Hodgkin lymphoma (NHL) is the 7th most common cancer type among men and women in the United States, with an estimated 102,810 incident cases in 2021 [1].
- It is comprised of a group of heterogeneous lymphoid malignancies of which the three major subtypes – diffuse large B cell lymphoma (DLBCL), follicular lymphoma (FL), and chronic lymphocytic leukemia (CLL) – make up ~75% of mature NHL neoplasms [2].
- Although non-Hispanic Whites have higher incidence of DLBCL, CLL and FL compared to non-Hispanic Blacks and Hispanics, less is known about racial and ethnic differences in survival [3].

OBJECTIVES

- To investigate racial/ethnic differences in DLBCL survival in relation to demographic and clinical factors that may influence their outcomes.

METHODS

Study Population

- Incident DLBCL cases diagnosed between 2005 and 2016 (n=764) were identified at Montefiore Medical Center in the Bronx, NY. Race/ethnicity were categorized as non-Hispanic White (n=136), non-Hispanic Black (n=106), and Hispanic (n=162).
- Patients < 18 years old (n=8), HIV positive (n=132), and/or had no follow up (n=20) were excluded.

Study Design

- Retrospective cohort study.

Statistical Analysis

- All-cause mortality was calculated from age at diagnosis to age at death. Living patients were censored at age at last contact.
- Survival curves were estimated using Kaplan-Meier method and compared using the log rank test.
- Cox Proportional Hazards regression assessed univariate and multivariate associations between race/ethnicity and all-cause mortality. Hazard ratios (HRs) with 95% confidence intervals (CIs) were estimated.

RESULTS

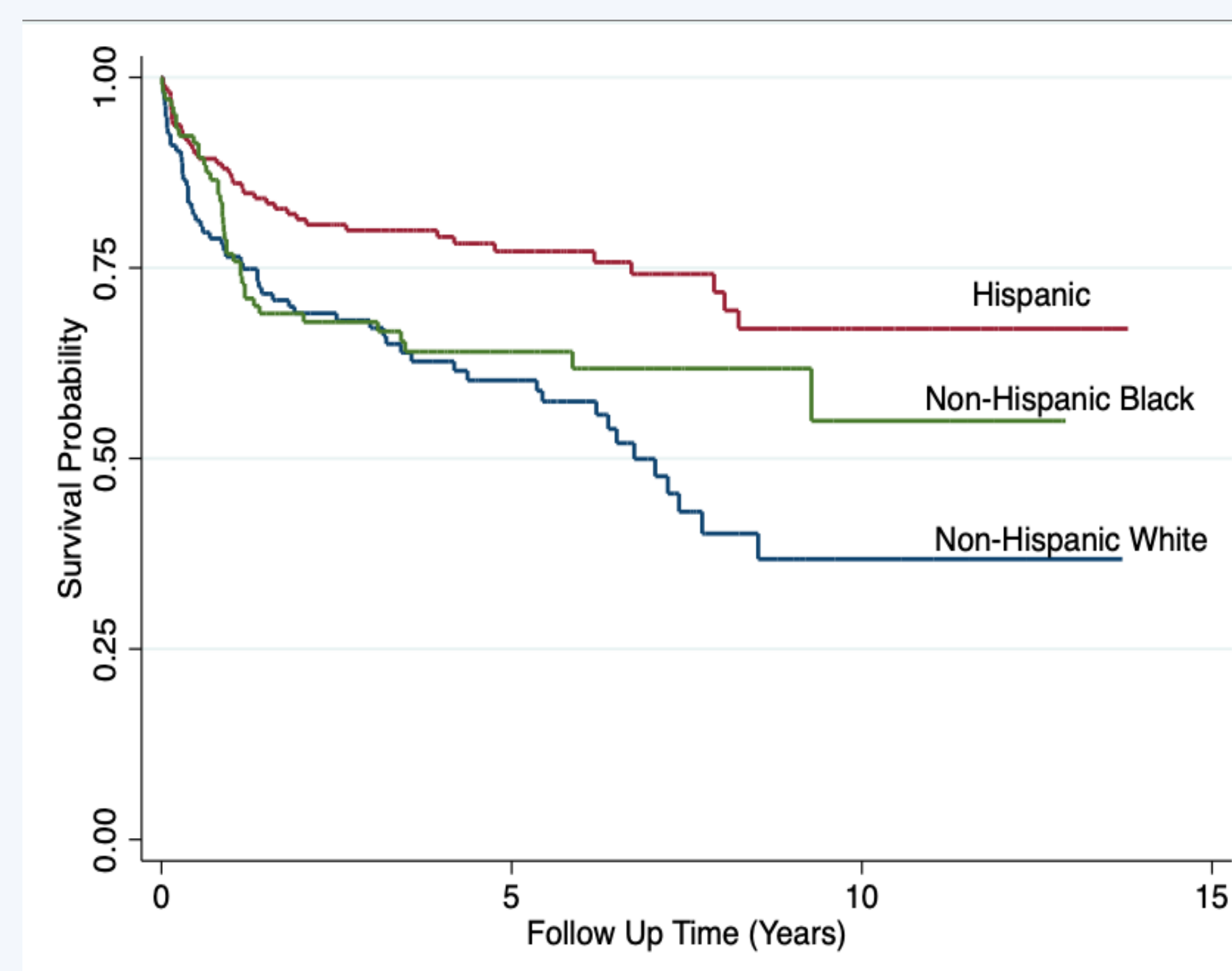
ASSOCIATION BETWEEN RACE/ETHNICITY AND ALL-CAUSE MORTALITY

Race/Ethnicity	UNIVARIATE ASSOCIATIONS		MULTIVARIATE ADJUSTED ASSOCIATIONS	
	HR (95% CI)	P-VALUE	HR (95% CI)*	P-VALUE
Non-Hispanic White	1.00 (reference)		1.00 (reference)	
Non-Hispanic Black	0.77 (0.51, 1.15)	0.20	0.85 (0.52, 1.40)	0.52
Hispanic/Latino	0.46 (0.31, 0.69)	< 0.001	0.48 (0.28, 0.83)	0.008
Age				
≤ 60 years	1.00 (reference)		1.00 (reference)	
> 60 years	2.24 (1.53, 3.30)	< 0.001	1.55 (0.99, 2.43)	0.06
Sex				
Female	1.00 (reference)		1.00 (reference)	
Male	1.48 (1.05, 2.09)	0.03	1.70 (1.12, 2.57)	0.01
Stage				
I/II	1.00 (reference)		1.00 (reference)	
III/IV	1.96 (1.36, 2.84)	< 0.001	1.83 (1.17, 2.86)	0.008
SEER Site				
Nodal	1.00 (reference)		1.00 (reference)	
Extranodal	0.97 (0.66, 1.44)	0.89	1.34 (0.85, 2.12)	0.21
Lactate Dehydrogenase				
≤ 225 u/L	1.00 (reference)		1.00 (reference)	
>225 u/L	1.49 (1.00, 2.21)	0.05	1.65 (1.04, 2.60)	0.03
Hemoglobin				
≥12 g/dL	1.00 (reference)		1.00 (reference)	
< 12 g/dL	1.87 (1.30, 2.67)	< 0.001	1.85 (1.19, 2.87)	0.006
Lymphocyte-Monocyte Ratio				
>2.6	1.00 (reference)		1.00 (reference)	
≤2.6	1.54 (1.03, 2.31)	0.04	1.54 (0.96, 2.47)	0.07
Chemotherapy				
No	1.00 (reference)		1.00 (reference)	
Yes	0.36 (0.25, 0.52)	< 0.001	0.36 (0.22, 0.57)	< 0.001

HR – hazard ratio; CI – confidence interval

* Multivariate model that includes race/ethnicity, age dichotomized at 60 years, sex, stage at diagnosis, SEER site, lactate dehydrogenase (LDH) dichotomized at 225 u/L, hemoglobin dichotomized at 12 g/dL, lymphocyte-monocyte ratio dichotomized at 2.6, preferred language, and receipt of chemotherapy. A priori base model included IPI factors (age at diagnosis > 60 years, advanced stage, extranodal disease, LDH > 225 u/L).

DIFFUSE LARGE B-CELL LYMPHOMA SURVIVAL BY RACE/ETHNICITY



- We found similar associations between Hispanic ethnicity and all-cause mortality compared to non-Hispanic Whites in our subgroup analyses:
 - Age at diagnosis (≤60 years HR = 0.30, 95% CI 0.11-0.82; >60 years HR = 0.60, 95% CI 0.31-1.14)
 - Stage at diagnosis (I/II HR = 0.41, 95% CI 0.15-1.12; III/IV HR = 0.57, 95% CI 0.39-1.13)
 - Sex (Female HR = 0.50, 95% CI 0.19-1.32; Male HR = 0.44, 95% CI 0.22-0.86)
- Hispanics had lower all-cause mortality compared to non-Hispanic Whites (HR = 0.36, 95% CI 0.20-0.67) after excluding individuals who did not receive chemotherapy.

BASELINE CHARACTERISTICS

Characteristic [€]	Non-Hispanic White	Non-Hispanic Black	Hispanic/Latino	p-value
Age at diagnosis, yr*				
>60 years	95 (70.4)	51 (48.6)	94 (58.0)	0.003
Ann Arbor Stage				0.18
Limited (I, II)	59 (46.8)	37 (36.6)	73 (47.7)	
Advanced (III, IV)	67 (53.2)	64 (63.4)	80 (52.3)	
SEER Site				0.44
Extranodal	38 (28.2)	29 (27.6)	36 (22.2)	
Nodal	97 (71.8)	76 (72.4)	126 (77.8)	
Serum Lactate Dehydrogenase				0.63
>225 u/L	69 (63.3)	63 (69.2)	96 (64.0)	
≤225 u/L	40 (36.7)	28 (30.8)	54 (36.0)	
Sex				0.12
Male	81 (60.0)	49 (46.7)	89 (54.9)	
Female	54 (40.0)	56 (53.3)	73 (45.1)	
Chemotherapy				0.002
Yes	87 (72.6)	88 (83.8)	143 (88.3)	
No	37 (27.4)	17 (16.2)	19 (11.7)	
Socioeconomic Status				< 0.001
> Median	98 (77.2)	42 (41.6)	51 (31.9)	
≤ Median	29 (22.8)	59 (58.4)	109 (68.1)	
Follow up Time, yr**				
Alive	4.2 (2.1, 6.8)	5.0 (2.8, 7.5)	5.3 (3.5, 7.8)	0.09
Dead	0.9 (0.1, 3.4)	0.9 (0.5, 1.2)	1.0 (0.2, 2.1)	0.90

*Reported as mean ± standard deviation, followed by median (interquartile range).

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CONCLUSIONS

- In our diverse population, Hispanic DLBCL patients had lower all-cause mortality compared to non-Hispanic Whites
- No difference in all-cause mortality between non-Hispanic Black and non-Hispanic White DLBCL patients.
- Our findings provide insight into DLBCL survival among Hispanics/Latinos that may indicate differences in tumor responsiveness to therapy, cultural factors, or a combination of both, that influence survival among urban Hispanic/Latino populations.
- Future studies should incorporate additional data on medical comorbidities and tumor markers that may influence response to chemotherapy and overall survival.

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