HIV Status Affects Access to Autologous Stem Cell Transplant in Primary Central Nervous System B-Cell Lymphomas in a Minority Rich, Ethnically Diverse and Socioeconomically Disadvantaged Population at Montefiore Medical Center/Albert Einstein College of Medicine.

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Background

HIV-infected individuals have a higher incidence of PCSNL than the general population although it is declining now with the use of highly active antiretroviral therapy. Autologous stem cell transplantation (ASCT) is a commonly used consolidative treatment for PCNSL and is widely recommended as it offers the longest sustained remission when compared to other modalities. There is a paucity of studies describing the factors limiting access to ASCT in PCNSL patients. The impact of HIV status on access to autologous stem transplantation for PCNSL has not been previously studied in our community in the Bronx which has been disproportionately affected by this condition since it has experienced one of the highest rates of HIV infection especially among women and minorities than any other county in the nation.[1]

Objective

To identify variables like race/ethnicity, socioeconomic status (SES), HIV status etc. associated with lack of access to ASCT and outcomes in patients with PCNSL. The SES was measured using area deprivation index (ADI), which is composed of 17 education, employment, housing-quality, and poverty measures validated for a range of health outcomes and disease domains. (Kind et al NEJM 2018)

Methods

The charts of 53 PCNSL patients treated between 06/15/1999 and 04/05/2022 were evaluated. ADIs were obtained by geocoding subjects' addresses using an online tool (https://geocoding.geo.census.gov/) and matching census block groups to ADI 2019 national percentiles. Patient characteristics were compared by using $\chi 2$ statistics for categorical variables and the Mann-Whitney for continuous variables. The Kaplan-Meier method was used to calculate the probabilities of OS.

Results

Table 1:Comparison of demographic and clinical characteristics between those who received ASCT and those who did not.

Patient and Transplant Characteristics	ASCT n=17 N (%)/ Median (Range) [IQR]	No ASCT n=36 N (%)/ Median (Range) [IQR]	p-value
Median fu	36 (9-179) [21-42]	12 (0-186) [4.5-57]	0.3
Age (years)	63 (49-70) [55-66]	61 (23-84) [54-71.5]	0.45
Gender			
Male	8 (47%)	20 (56%)	0.56
Female	9 (53%)	16 (44%)	
Ethnicity			
Black	7 (41%)	9 (25%)	0.38
Hispanic	6 (35%)	9 (25%)	
White	2 (12%)	5 (14%)	
Asian	1 (6%)	3 (8%)	
Other/Unknown	1 (6%)	10 (28%)	
ECOG			
0	2 (12%)	3 (8%)	0.12
1	11 (65%)	10 (28%)	
2	1 (6%)	6 (17%)	
3	1 (6%)	2 (6%)	
4	1 (6%)	3 (8%)	
Missing	1 (6%)	12 (33%)	
Karnofsky score			
≥90	8 (47%)	8 (22%)	0.045
<90	7 (41%)	12 (33%)	
missing	2 (12%)	16 (44%)	
HIV			
HIV+	0 (0%)	10 (28%)	0.01
HIV-	17 (100%)	23 (64%)	
missing	0 (0%)	3 (8%)	

- Incidence of ASCT was 32% (17/53), better than the national incidence of 14.1% in PCNSL patients in 2019.[2]
- Our population had higher poverty index than the national average (median NY state ADI 5th percentile). 18 % (n =10) of our cohort was HIV positive which is thrice the global prevalence of HIV in PCNSL patients.[3]
- In the logistic regression model, HIV positive status was significantly associated with decreased access to HSCT **(p=0.01).**
- ADI, race/ethnicity did not affect access to ASCT.
- , Karnofsky score > 90 at the time of diagnosis was associated with increased access to ASCT. (**p = 0.04)**
- Those who got ASCT had a significantly better mean overall survival of 128 months compared to 90 months in those who did not **(p=0.01)**
- **Median overall survival in those without HIV was 110 but it was not reached in HIV positive patients (p= 0.6) (Figure 2)**

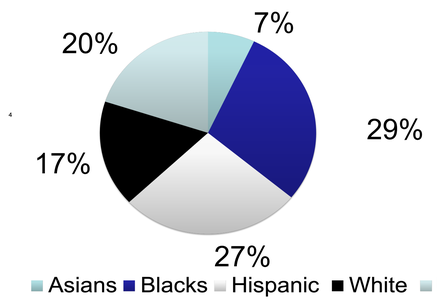
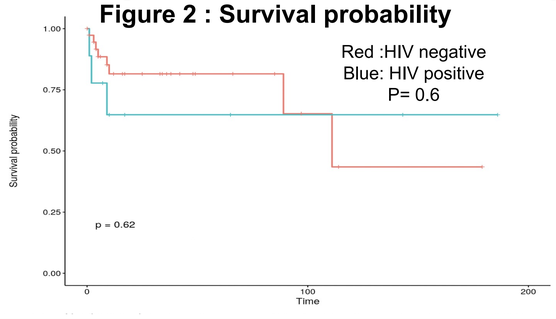


Figure 1 : Distribution of race/ ethnicity

Figure 2 : Survival probability



Discussion

The patients who got ASCT after methotrexate-based induction regimen had significantly better survival outcomes in our cohort and HIV positivity markedly limited access to ASCT. Poor performance status at the time of diagnosis also was a major limiting factor . Race/ethnicity and neighborhood disadvantage (ADI) also did not affect access to ASCT since patients are within a narrow range of extremely low socioeconomic status. No significant difference in survival outcomes was found in patients with and without HIV, likely because 90 % of the HIV positive patients were receiving highly active anti retroviral therapy which has shown to improve survival and lead to long term remission.[4] Analyzing larger datasets of HIV positive individuals with PCNSL can provide further insights into factors affecting HSCT access and outcomes.

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