Estimating the Burden of T-Cell Lymphoma among Hispanic and Rural Patients

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Background

T-Cell lymphoma (TCL) is a rare cancer that arises from T-lymphocytes, a type of white blood cell essential for immune system function. Due to its infrequency, research on TCL has been limited.

As example, in areas where HTLV-1 is endemic, this retrovirus has been linked to specific forms of TCL named Adult T-cell Leukemia/Lymphoma (**ATLL**) [1]

A higher incidence of some viruses, such as HTLV-1, among the population of Hispanics may increase their risk for certain aggressive TCL. [1]

Among underserved populations, rural patients face distinct health care challenges in comparison to individuals who live in metropolitan regions [9] and, in the case of hematologic malignancies like diffuse large cell B-lymphoma and myeloma, these result in a significant decrease in survival for both rural and urban populations, compared to metropolitan populations [10-12].

Hypothesis

The goal of this study was to assess the burden of TCL in the Texan population, considering the race and ethnicity of patients.

Due to the endemic nature of TCL in the Latin America and the Caribbean population, **we hypothesized that areas with high number of Hispanic population could have a higher prevalence of TCL.**

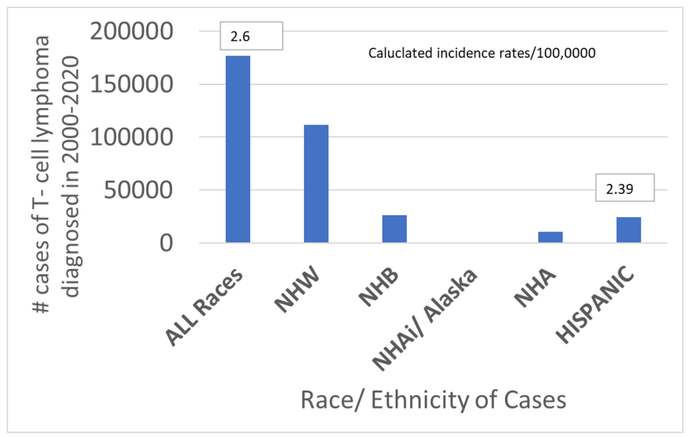
We hypothesized that the rural population of Texas would be affected by these rare, aggressive lymphomas.

Methodology

- To investigate the frequency of TCL in the U.S., we utilized data from SEER, specifically SEER Research Plus Limited-Field Data, 22 Registries, Nov 2022 Sub (2000-2020).
- For the analysis, we used SEER*Stat software, from the National Cancer Institute, which allowed us to process and examine the relevant data. We included all cases of Non-Hodgkin peripheral TCL in the year 2020, excluding cutaneous T-cell lymphomas.
- To calculate incidence, we used SEER # cases reported for year 2020, and data from the 2020 Census results to estimate the population in the USA during the same period.

Results

Frequency & incidence of Peripheral TCL in the US 2000-2020



Incidence Rates in 2020

	T- cell lymphoma	ATLL
ALL Races	2.691	0.025
NHW	2.616	**0.012**
NHB	2.884	0.084
NHAi/ Alaska	0.766	0.000
NHA	2.993	0.014
HISPANIC	2.398	**0.027**

Lymphoma affects all races/ethnicities. A lower number of cases among Hispanic patients over the last 20 years, was associated with a lower incidence rate for all T-cell lymphomas. In contrast, the incidence for ATLL appeared to be the higher for Hispanic patients when compared to Non-Hispanic patients.

Distribution of Peripheral TCL in Texas Counties

Number of Subset Peripheral TCL cases per Texas county, 2000-2020

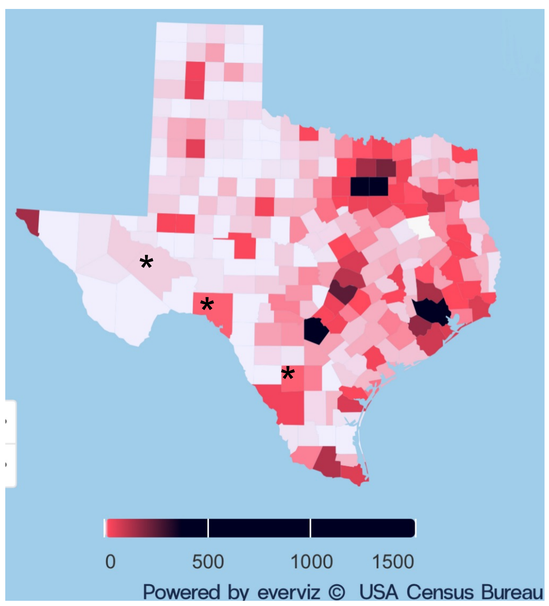


Fig 1

Total County Population, 2018

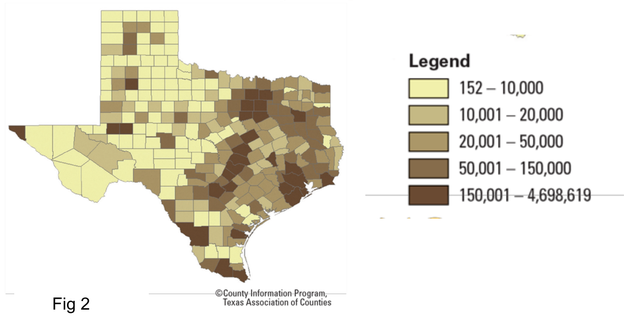


Fig 2

County Population Density, 2018

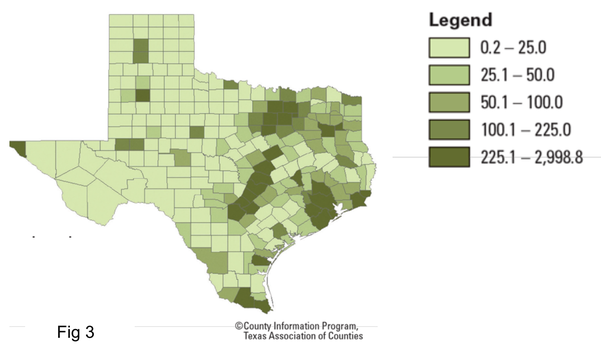


Fig 3

Fig 1 shows that, regardless of whether the counties are categorized as rural or metropolitan, our data supports a clear relationship between the number of diagnosed T-Cell Lymphoma cases and total county population (Fig 2). While the incidence of T-Cell Lymphoma does not appear to increase in rural regions, ***there is a significant number of cases among people living in rural counties (* like Val Verde, Reeves, Pecos, or La Salle)*** *(see Fig 3).*

This data suggests that T-Cell Lymphoma affects individuals from diverse geographic backgrounds, emphasizing the importance of considering both rural and metropolitan populations in healthcare strategies and interventions.

Discussion

We hypothesized that there would be a difference in incidence among NH and HISP populations. Our data suggests that despite overall lowers incidence for T-cell lymphoma, **peripheral TCL incidence is higher among Hispanic patients.**

While the overall burden of TCL cases correlates with the size of the population**, a significant number of patients were diagnosed in low-density, rural counties**.

Conclusions

These findings highlight the importance of thorough cancer surveillance and research to better understand the underlying variables that contribute to T-Cell Lymphoma development.

We can better understand this rare cancer and improve preventive, diagnosis, and treatment efforts by investigating potential risk factors and demographic variations.

Moving forward, it is critical to continue monitoring T-Cell Lymphoma trends across different geographies and population densities in order to create focused and effective measures to combating this illness.

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