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# Letters

## RESEARCH LETTER

### Demographic Patterns and Increasing Incidence of Cutaneous T-Cell Lymphoma in Louisiana

Incidence of cutaneous T-cell lymphoma (CTCL) was estimated as 6.4 cases per million individuals per year.<sup>1</sup> Previous reports have documented a worldwide increase in CTCL incidence.<sup>2</sup> We assessed the incidence and demographic patterns of CTCL in Louisiana.

**Methods** | Tulane Institutional Review Board approved this study and waived informed consent because deidentified data were used. Data sources were a Louisiana tumor registry and electronic health records from 2 New Orleans clinics. Sex; age; race and ethnicity; age at diagnosis; year of diagnosis; and CTCL primary site, histologic codes, and grade and behavior data were collected. Census data from 2000 and 2010 were used for all population analyses.

Mean annual CTCL incidence was reported as cases per million persons, and incidence rate over time was calculated using linear regression. Multivariate ordinal regression was used to test whether demographic characteristics and primary residency (urban vs rural) were factors in disease stage, a clinical severity surrogate. Multivariate logistic regression analysis was conducted to assess whether age, race and ethnicity, and sex were factors in CTCL subtype. R was used for statistical analysis.

**Results** | We identified 774 patients (mean [SD] age, 59.14 [15.28] years; 415 women [53.6%]) (Table). Of these patients, 356 (46.0%) had mycosis fungoides. African American patients vs White patients, had an earlier mean (SD) age at diagnosis (54.4 [14.9] years vs 61.8 [14.9] years;  $P < .001$ ) and were more likely to be diagnosed before age 40 years (16.1% vs 9.1%; odds ratio [OR], 2.85; 95% CI, 1.76-4.63) and between 40 and 59 years (47.2% vs 30.4%; OR, 2.64; 95% CI, 1.89-3.69). Among African American patients, men were significantly less likely than women to be diagnosed with CTCL (OR, 0.67; 95% CI, 0.49-0.92). Compared with White patients, African American patients exhibited later disease stage ( $\geq$ II) at time of diagnosis (7.9% vs 3.6%; OR, 1.94; 95% CI, 1.26-2.99).

Multivariate ordinal regression showed that African American patients with CTCL had 1.9 greater odds of higher disease stage (III-IV) than White patients (OR, 1.19; 95% CI, 1.26-3.04); regional differences were not factors in disease stage. Age and race and ethnicity were not significantly associated with CTCL subtypes. Annual incidence was 8.66 per million persons, and this rate was highest among those aged 60 to 69 years. We found no significant difference in incidence rates among African American patients vs White patients (9.4 vs 8.8 per million persons;  $P = .97$ ). Compared with recent national CTCL incidence (6.4 per million persons) and using a 2-sample

$t$  test, we found no significant difference from incidence in Louisiana.

Linear regression analysis showed a significant increase in CTCL incidence over time ( $R^2 = 0.35$ ; coefficient of year, 0.26;  $P = .005$ ) (Figure). These results suggest the 35% rate variance was associated with time, with a 0.26 annual incidence increase.

**Discussion** | From 2000 to 2018, CTCL incidence in Louisiana increased by a mean 0.26 per million persons per year. Similar increasing incidence patterns have been reported in Texas, Georgia, Pittsburgh (Pennsylvania), and Sweden.<sup>3</sup> Although the cause of this pattern is unclear, CTCL clustering in multiple regions suggests environmental triggers.

Existing data support the finding that African American patients had earlier age and later disease stage at diagnosis.<sup>4</sup> Even when adjusted for multiple variables, African American race and ethnicity was an independent factor in higher disease stage. No association was found between primary residency and disease stage; age and race and ethnicity were not

Table. Demographic and Clinical Characteristics of Patients With CTCL in Louisiana

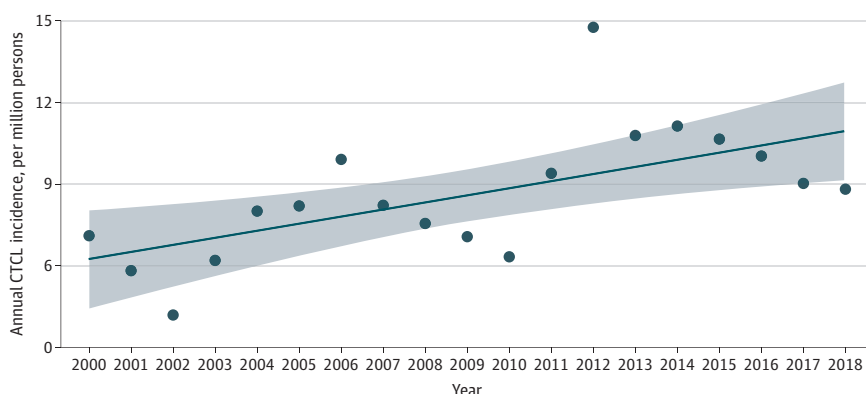
Characteristic	Patients, No. (%) (n = 774)
Age, y	
Mean (SD)	59.14 (15.28)
Median (IQR)	60 (49-70)
Sex	
Female	415 (53.6)
Male	359 (46.3)
Race and ethnicity <sup>a</sup>	
African American	267 (34.5)
Chinese	2 (0.3)
Native American	2 (0.3)
Vietnamese	1 (0.1)
White	496 (64.1)
Other <sup>b</sup>	6 (0.8)
CTCL subtype	
MF	356 (46.0)
Primary CTCL, NOS	414 (53.5)
Sezary syndrome	4 (0.5)
CTCL clinical stage	
I	392 (50.7)
II	39 (5.0)
III	16 (2.1)
IV	67 (8.7)
Unstageable	260 (33.6)

Abbreviations: CTCL, cutaneous T-cell lymphoma; MF, mycosis fungoides; NOS, not otherwise specified.

<sup>a</sup> Race and ethnicity were indicated in data sources.

<sup>b</sup> Other category included Filipino, and South Asian individuals.

Figure. Pattern of Cutaneous T-Cell Lymphoma (CTCL) Incidence From 2000 to 2018



associated with CTCL subtypes. Later-stage diagnosis could be associated with heterogeneous CTCL presentation (eg, as mimickers of atopic dermatitis or psoriasis).

Study limitations were potential CTCL misclassification as peripheral T-cell lymphoma, absence of confounder data, and county-level instead of Census tract-level data analysis. Improvement in physician detection of CTCL may be a factor in the increasing incidence pattern. Disproportionate burden of disease among African American patients is concerning and merits investigation.

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**Author Contributions:** All authors had equal and full access to all data in the study and take responsibility for the integrity of the data and the accuracy of data interpretation.

**Concept and design:** Maghfour, Gill, Olson, Guido, Murina.

**Acquisition, analysis, or interpretation of data:** All authors.

**Drafting of the manuscript:** Maghfour, Gill, Guido, Echuri, Murina.

**Critical revision of the manuscript for important intellectual content:** Maghfour, Gill, Olson, Murina.

**Statistical analysis:** Maghfour, Gill, Olson, Guido.

**Administrative, technical, or material support:** Guido, Echuri, Murina.

**Supervision:** Guido, Echuri, Murina.

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