ORIGINAL ARTICLE

Epidemiology of SCLC in the United States From 2000 to 2019: A Study Utilizing the Surveillance, Epidemiology, and End Results Registry

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ABSTRACT

Introduction: From the late 1980s to 2000, SCLC represented a decreasing proportion of lung cancer cases in the United States. Nevertheless, survival outcomes in SCLC did not improve, reflecting the paucity of treatment advances. We sought to determine whether these trends continued into more recent decades, before the Food and Drug Administration approval of immunotherapy for SCLC in 2019, by evaluating the incidence and survival of SCLC from 2000 to 2019 in the United States population, with attention to variance across gender and racial subgroups.

Methods: Using the United States Surveillance, Epidemiology, and End Results 17 database, we evaluated the incidence of SCLC and NSCLC from 2000 to 2019. Demographic, staging, and survival data were collected for patients with SCLC by comparing the incidence and outcomes across groups.

Results: The percentage of SCLC among all newly diagnosed lung cancer cases decreased from 14.5% in 2000 to 11.8% in 2019. A decrease in SCLC incidence was observed in all sex and racial subgroups but was earlier and steeper in men than in women. This has resulted in a shift in the male-to-female ratio from 1.14:1 in 2000 to 0.93:1 in 2019. Among the racial subgroups, the incidence of SCLC declined most slowly in non-Hispanic Whites and most rapidly in non-Hispanic Asians and Pacific Islanders. There was a decline in limited-stage SCLC at diagnosis, from 31.1% in 2000 to 26.4% in 2019. Minimal improvement was observed in survival regardless of patient characteristics or stage.

Conclusions: In the preimmunotherapy era of 2000 to 2019, the incidence of SCLC continued to decline in both sexes and all racial subgroups. The male-to-female ratio continued to narrow with women outnumbering men in the most recent years. The proportion of patients with limited-stage disease continues to decline, likely because of improved staging procedures. The outcomes improved slightly but remained poor, highlighting the need for more effective treatment strategies.

Keywords: Small cell; Incidence; Sex; Race; Survival

Introduction

Despite recent advances in treatment and early detection, lung cancer remains the most common cause of cancer-related death worldwide.[1] SCLC comprises only 10% to 20% of lung cancer cases, but is known for its aggressive nature and persistently poor outcomes.[2] SCLC is characterized by highly proliferative neuroendocrine cells forming rapidly progressive tumors, which

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typically develop in the central airways of heavy smokers, and have a predisposition for early metastasis.[2] For the past 60 years, the Veterans Administration Lung Cancer Study Group system has been used to stage SCLC, with limited-stage SCLC (LS-SCLC) being confined within a single hemithorax and a safe radiotherapy field, and extensive-stage SCLC (ES-SCLC) typically characterized by distant metastases. With the advent of modern chemotherapy and radiotherapy, SCLC has proven extremely responsive to initial treatment; nevertheless, the vast most patients relapse quickly, and the five-year survival rates remain low regardless of the disease stage or treatment.[3]

Since the 1965 Surgeon General report on the health dangers of smoking, and the subsequent decline in cigarette use in the United States, the incidence of SCLC has decreased. According to prior reviews of SCLC data in the Surveillance, Epidemiology, and End Results (SEER) database from 1973 to 2002, the absolute incidence of SCLC and the proportional incidence of SCLC (the percentage of SCLC among all new lung cancer diagnoses) peaked in the late 1980s and then steadily declined through 2002.[4,5] Nevertheless, there was only minimal improvement in survival regardless of stage. Advances that may have affected survival during this period include the advent of the cisplatin and etoposide regimen in the 1980s and the routine use of concurrent chemoradiotherapy for LS-SCLC in the 1990s.[3]

Our study explored newer data from the SEER17 database from 2000 to 2019, to reveal the continued decline in SCLC incidence, with variations in trends between subgroups of the population. In addition, we report an increasing predominance of extensive-stage disease and minimal improvements in survival over the 20 years before the United States Food and Drug Administration's approval of immunotherapy for SCLC, during which there was little advancement in SCLC therapy. These data set the baseline for future evaluation of SCLC trends after the recent incorporation of immunotherapy into the standard treatment for all stages of SCLC.[2,6,7]

Materials and Methods

We analyzed data from patients with primary lung cancer in the SEER17 database from 2000 to 2019. Patients were selected from the following primary sites: C34.0 (main bronchus), C34.1 (upper lobe, lung), C34.2 (middle lobe, lung), C34.3 (lower lobe, lung), and C34.9 (lung, not otherwise specified). We excluded C34.8 (overlapping lesion of the lung). We defined SCLC using five International Classification of Diseases (ICD)-O-3 codes: 8002 and 8041 to 8044. Patients with combined small cell carcinoma (ICD-O-3 code 8045) were excluded. ICD-O-3 codes that were not considered to be primary lung were excluded. For the full list of ICD-O-3 codes of the included cases, see Supplementary Table 1. A rate session was created using SEERStat software. Data for crude and age-adjusted incidences were collected using the SEER November 17, 2021 submission (2000–2019), which included data from Hawaii, California, Seattle (Puget Sound), Utah, New Mexico, Iowa, Rural Georgia, Greater Georgia, Atlanta (Metropolitan), Kentucky, Louisiana, Connecticut, and New Jersey. Crude incidence rates were used to calculate the proportional incidence of SCLC (among all new lung cancer diagnoses), the proportional incidence of limited-stage disease (among all new SCLC diagnoses), and the male-to-female ratio of new SCLC diagnoses. Age-adjusted rates were calculated using the 2000 United States standard population.[8] SE and population data obtained from the SEER Stat program were input along with age-adjusted incidence rates into the Joinpoint program. Log transformation was used to calculate the Joinpoint curves, and the maximum number of Joinpoints was set to three to create the plots. In these plots, the change over time was expressed as the annual percentage change (APC). Overall survival (OS) was calculated on the basis of the censored time to death or last follow-up, whichever occurred earlier, for both LS-SCLC and ES-SCLC and the sex and race subgroups.

Results

Patient Characteristics

On the basis of the included ICD-O-3 codes, 111,263 patients with SCLC and 736,484 patients with NSCLC were reported between 2000 and 2019, resulting in an overall incidence of SCLC of 13.1%. The characteristics of the patients with SCLC during the study period are displayed in Table 1. The median age was 60 to 69 years, 50.3% were men, and 83.2% were non-Hispanic Whites (NHWs). At diagnosis, 70.9% of patients had ES-SCLC, 26.0% had LS-SCLC, and the remaining stages were unknown. Of the 107,830 patients with known stage, the stage-specific characteristics are described in Table 2. There were slightly more men diagnosed with ES-SCLC (51.2% versus 48.8%), with the male-to-female gap narrowing over time. Most patients with LS-SCLC were female (53.9% versus 46.1%), and the female-to-male gap increased over time. There was no difference in the racial distribution between patients with ES-SCLC and those with LS-SCLC, with a slight decline in the proportion of NHW patients and a slight increase in the proportion of other racial categories noted over time for both stages. There was no significant difference in age distribution between ES-SCLC and LS-SCLC, with median age falling between 60 and 69 years for both stages, with a slight increase in the proportion of older patients over time (Table 2).

Table 1. Characteristics of Patients With SCLC in the SEER17 Registry From 2000 to 2019

Patient Characteristics	N	%
Total SCLC	111,263	
Sex		
Male	55,972	50.3
Female	55,291	49.7
Race		
Non-Hispanic White	92,535	83.2
Non-Hispanic Black	8840	7.9
Hispanic	5316	4.8
Non-Hispanic Asian-Pacific Islander	3820	3.4
Other or Unknown	752	0.7
Age (y)		
<40	351	0.3
40-49	4089	3.7
50-59	19,546	17.6
60-69	37,143	33.4
70-79	35,924	32.2
≥80	14,210	12.8
Stage		
Limited	28,958	26.0
Extensive	78,872	70.9
Unknown	3433	3.1

SEER, Surveillance, Epidemiology, and End Results.

Temporal Trends in SCLC and NSCLC Incidence Rates

The proportional incidence of SCLC relative to all lung cancers decreased from 14.5% in 2000 to 11.8% in 2019 (Fig. 1*A*). During this period, the incidence rates of both SCLC and NSCLC decreased; nevertheless, there was a greater proportional decline in SCLC. The age-adjusted incidence of SCLC was 8.6 per 100,000 in 2000 and decreased to 4.7 per 100,000 in 2019, corresponding to an APC of −1.61 from 2000 to 2004 and −3.25 from 2004 to 2019. The age-adjusted incidence rate for NSCLC declined more slowly from 51.7 per 100,000 to 36.3 per 100,000, corresponding to an APC of −1.19 from 2000 to 2008 and −2.40 from 2008 to 2019 (Fig. 1*B*).

Temporal Trends in Sex in SCLC

The incidence of SCLC decreased in both men and women over time, although this decline began earlier and was steeper in men than in women. Crude incidence rates reported a declining male-to-female ratio, which was 1.14:1 in 2000 but decreased to 0.93:1 by 2019, indicating that more women than men are now diagnosed with SCLC (Fig. 2*A*). In men, the age-adjusted incidence rate of SCLC was 10.7 per 100,000 in 2000, which dropped to 5.0 per 100,000 in 2019, with a steady APC of −3.59. In women, the age-adjusted incidence rate of SCLC was 7.3 per 100,000 in 2000, declining to 4.6 per 100,000 in 2019, with a slow decrease between 2000 and 2007 at an APC −1.54, but a steeper decline between 2000 and 2019 at an APC of −3.04. Because of this rapid decline in new diagnoses of SCLC in men, the age-adjusted rates of SCLC in men and women converged by 2019, remaining only slightly higher in men (Fig. 2*B*).

Temporal Trends in Racial Subgroups in SCLC

A decline in the age-adjusted incidence rates of SCLC was noted in all racial subgroups throughout the study period (Fig. 3). There was a slightly greater percentage decrease in the Hispanic and non-Hispanic Asian-Pacific Islander (NHA-PI) subgroups than in the non-Hispanic Black (NHB) and NHW subgroups. The age-adjusted incidence rate of SCLC in the NHA-PI subgroup was 3.5 per 100,000 in 2000, declining to 1.6 per 100,000 in 2019 (2000–2017: APC = −3.26; 2017−2019: APC = −11.39). In the Hispanic subgroup, the SCLC incidence rates were 3.9 per 100,000 in 2000 and 1.9 per 100,000 in 2019 (APC = −3.7). A steady, although slower, decline was observed in the incidence rate of SCLC in the NHB subgroup, dropping from 8.3 per 100,000 in 2000 to 4.7 per 100,000 in 2019 (APC = −2.87). The incidence rate of SCLC was persistently the highest and had the slowest decline in the NHW subgroup, from 9.8 per 100,000 in 2000 to 5.9 per 100,000 in 2019 (2000–2006: APC = −1.87; 2006–2019: APC = −2.92).

Temporal Trends in SCLC Stage

The incidence rates of both LS-SCLC and ES-SCLC declined from 2000 to 2019, with a more rapid decline in new LS-SCLC diagnoses, leading to a drop in the proportional incidence of LS-SCLC from 31.1% in 2000 to 26.4% in 2019 (Supplementary Fig. 1*A*). The age-adjusted incidence of LS-SCLC decreased from 2.5 per 100,000 to 1.2 per 100,000. This downward trend began sharply with an APC of −4.35 from 2000 to 2014, followed by a brief upward trend with an APC of 2.71 from 2014 to 2017, before a rapid decline with an APC of −10.16 from 2017 to 2019. The incidence rate of ES-SCLC decreased from 5.6 per 100,000 in 2000 to 3.4 per 100,000 in 2019, with an APC of −0.71 from 2000 to 2009 and an APC of −3.43 from 2009 to 2019 (Supplementary Fig. 1*B*).

Temporal Trends in OS

Among the patients with LS-SCLC, the two-year OS rate increased from 26.7% in 2000 to 36.7% in 2017, whereas the five-year OS rate increased from 11.3% in 2000 to 15.6% in 2014 (Fig. 4*A*). Unsurprisingly, the OS rate was worse in ES-SCLC and had less improvement during the study period, with the two-year OS rate

Table 2. Stage-specific Characteristics of Patients With SCLC in the SEER17 Registry by Decade of Study Period, 2000 to 2019

Subgroup	2000-2009		2010-2019		2000-2019		2000-2009		2010-2019		2000-2019		2000-2009		2010-2019		2000-2019	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
LS	15,522		13,436		28,958		ES 39,992		38,880		78,872		ALL 55,514		52,316		107,830	
Sex																		
Male	7401	47.7	5946	44.3	13,347	46.1	20,980	52.5	19,909	51.2	40,889	51.8	28,381	51.1	25,855	49.4	54,236	50.3
Female	8121	52.3	7490	55.8	15,611	53.9	19,012	47.5	18,971	48.8	37,983	48.2	27,133	48.9	26,461	50.6	53,594	49.7
Race																		
NHW	13,186	85.0	11,044	82.2	24,230	83.7	33,566	83.9	31,944	82.2	65,510	83.1	46,752	84.2	42,988	82.2	89,740	83.2
NHB	1219	7.9	1123	8.4	2,342	8.0	2978	7.5	3255	8.4	6233	7.9	4197	7.6	4378	8.4	8575	8.0
Hispanic	566	3.7	679	5.1	1245	4.3	1904	4.8	1957	5.0	3,861	4.9	2470	4.4	2636	5.0	5106	4.7
NHA-PI	469	3.0	486	3.6	955	3.3	1298	3.3	1435	3.7	2733	3.5	1767	3.2	1921	3.7	3688	3.4
Other or unknown	82	0.5	104	0.7	186	0.6	246	0.6	289	0.7	535	0.7	328	0.6	393	0.8	721	0.7
Age (y)																		
<40	61	0.4	32	0.2	93	0.3	160	0.4	82	0.2	242	0.3	221	0.4	114	0.2	335	0.3
40-49	746	4.8	318	2.4	1064	3.7	1875	4.7	1031	2.7	2906	3.7	2621	4.7	1349	2.6	3970	3.7
50-59	2762	17.8	2137	15.9	4899	16.9	7307	18.3	6858	17.6	14,165	18.0	10,069	18.1	8995	17.2	19,064	17.7
60-69	5099	32.9	4593	34.2	9692	33.5	12,774	31.9	13,654	35.1	26,428	33.5	17,873	32.2	18,247	34.9	36,120	33.5
70-79	4991	32.2	4589	34.2	9580	33.1	12,916	32.3	12,205	31.4	25,121	31.9	17,907	32.3	16,794	32.1	34,701	32.2
≥80	1863	12.0	1767	13.2	3630	12.5	4960	12.4	5050	13.0	10,010	12.7	6823	12.3	6817	13.0	13,640	12.6

ES, extensive stage; LS, limited stage; NHA-PI, non-Hispanic Asian-Pacific Islander; NHB, non-Hispanic Black; NHW, non-Hispanic White.

increasing from 6.4% in 2000 to 8.4% in 2017 and the five-year OS rate increasing from 2.2% in 2000 to 2.9% in 2014 (Fig. 4*D*).

The OS rates were consistently higher in women than in men in both the LS-SCLC and ES-SCLC groups (Fig. 4*B* and *E*). Throughout the study period, women also had greater improvements in two- and five-year OS rates (LS-SCLC: two-year 29.9%–37%, five-year 12.8%–16.0%; ES-SCLC: two-year 7.0%–9.5%, five-year 2.2%–3.9%). The OS rates also improved in men with LS-SCLC (two-year 23.4%–36.2 %; five-year 9.9%–15.2%), but only the two-year OS rate improved in men with ES-SCLC (5.8%–7.3%), whereas the five-year OS rate remained relatively stable (2.3%–2.0%).

The assessment of OS rates by race was confounded by the small number of patients in some racial subgroups. Both the NHW and NHB subgroups reported consistent improvements in OS rates for LS-SCLC, with a slight improvement or stability in ES-SCLC. The OS trend for the Hispanic subgroup seemed stable for both stages of the disease, whereas the trend for the NHA-PI subgroup may have worsened slightly in both stages. Nevertheless, the number of patients in these subgroups was small, creating extreme shifts in the yearly rates (Fig. 4*C* and *F*).

Discussion

The downward trend in SCLC incidence and the slowly improving survival rates from 2000 to 2019 that are noted in the current study are continuations of trends seen in studies on the basis of data from prior decades.[4,5] These prior studies found that the incidence of SCLC peaked in the late 1980s, with the peak proportional incidence of SCLC variably reported as 17.2% to 19.8%, depending on study methods.[4,5,9,10] Both the absolute and proportional incidence of SCLC began to decline in the early 1990s, with an earlier and faster decline seen in men than in women.[4,5,9,10] By 2002, Govindan et al.[4] estimated the proportional incidence of SCLC to be 12.95%, with an age-adjusted incidence rate of around eight per 100,000. By this time, there was a nearly equal sex distribution of SCLC cases (compared with 70% male and 30% female individuals in 1973). Similarly, Navada et al.[5] reported a declining male-to-female ratio from 2.6:1 (1973–1982) to 1.4:1 (1993–2002).

Our updated data revealed an age-adjusted incidence rate of SCLC of 8.8 per 100,000 in 2000, with an SCLC proportional incidence of 14.5% and a male-to-female ratio of 1.4:1. By 2019, the age-adjusted incidence rate was 4.7 per 100,000 and the proportional incidence of SCLC was 11.8%. Like other studies that extended data to the early 2010s, rate of change varied between sex and

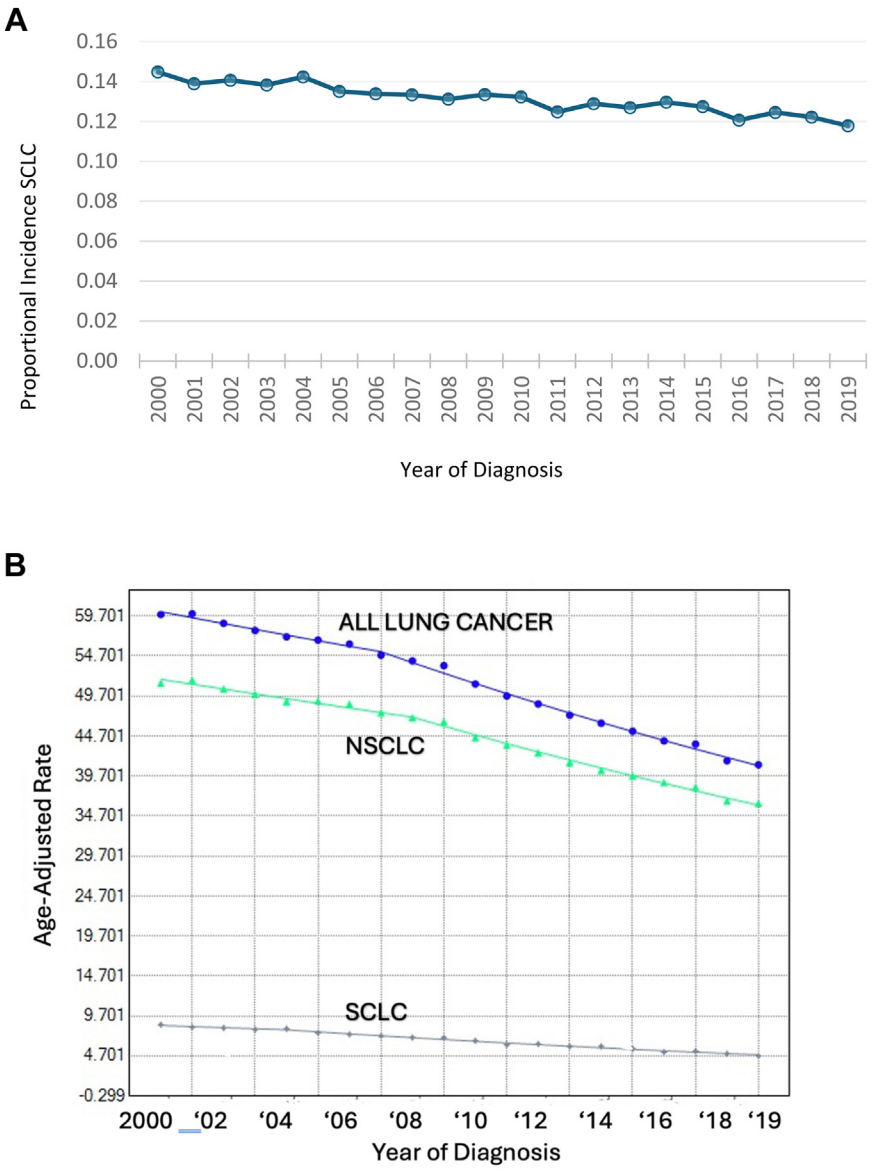

Figure 1. *(A)* Proportional Incidence of SCLC relative to all lung cancer from 2000 to 2019. *(B)* Joinpoint regression analysis of age-adjusted incidence rates of all lung cancers, NSCLC, and SCLC from 2000 to 2019.

racial subgroups.[9,10] There was a steeper decline in the incidence of SCLC in men than in women. In terms of crude incidence, our data reported a male-to-female ratio of 0.93:1 in 2019, although age-adjusted incidence rates remained slightly higher in men (after adjustment for older age distribution in the female population). Our data revealed a consistently higher incidence of SCLC in the NHW and NHB, with a faster decline in the NHA-PI and Hispanic populations.

Owing to the particularly strong connection between cigarette smoking and the development of SCLC, the described trends in SCLC incidence unsurprisingly mirror smoking patterns in the adult population of the United States.[11–13] After the 1965 Surgeon General's report on the health dangers of smoking, cigarette use dropped from 42.4 % to 13.7% by 2018, with the decline in absolute and proportional incidence of SCLC trailing two decades behind.[14,15] Within subgroups of the United States population, the rate of adult men who smoked declined more rapidly (51.9 to 15.6%) compared with adult women (33.9% to 12.0%) from 1965 to 2018, corresponding to the more significant drop in SCLC incidence seen in men.[14,15] Similarly, higher smoking rates are seen in NHW and NHB subgroups, and declines in smoking have been steeper in Asian and Hispanic groups from 1997 to 2018.[14,15] Although other genetic and environmental factors may also be in play, more rapid decline in rates of SCLC in certain ethnic subgroups seem to very clearly reflect these trends in tobacco use.

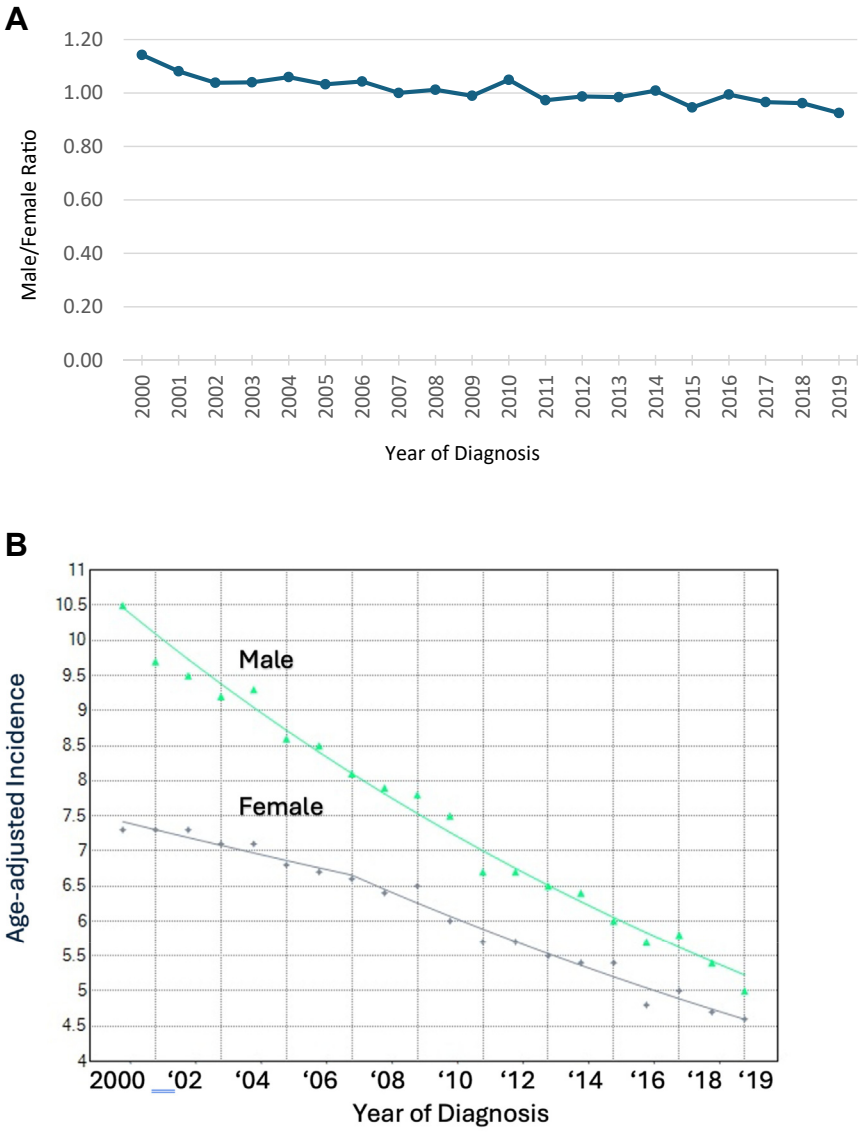

Figure 2. *(A)* The male-to-female ratio of SCLC cases from 2000 to 2019. *(B)* Joinpoint regression analysis of age-adjusted incidence rates of SCLC in male and female individuals from 2000 to 2019.

Nevertheless, even though the incidence of SCLC has declined, the outcomes remain poor. Extensive-stage disease occurs most frequently given the aggressive nature of SCLC and its propensity for early metastasis. Govindan et al.[4] reported that 56.6% of patients presented with ES-SCLC and 39.6% presented with LS-SCLC in 2002. Our updated data reported a substantial decrease in the proportion of patients with LS-SCLC to 26.4% by 2019. This shift likely reflects improvements in the imaging modalities used in staging rather than any change in the true disease burden at presentation. The use of positron emission tomography–computed tomography (PET-CT) for SCLC staging has been steadily increasing since becoming commercially available around 2001, and PET-CT is superior to conventional imaging at detection of asymptomatic distant metastases in SCLC.[16] The National Comprehensive Cancer Network now recommends that PET-CT imaging be completed as part of the initial staging for patients thought to have LS-SCLC by CT.[17–21] In addition, baseline brain imaging is also recommended in all patients with SCLC owing to the high frequency of brain metastases.[21,22] Over time brain magnetic resonance imaging, which has better sensitivity for detecting brain metastases than CT, has also become increasingly utilized, perhaps also leading to more patients being classified as ES-SCLC.[23]

Patients with all stages of SCLC have consistently poor survival rates, which have only slightly improved over time in the preimmunotherapy era. The five-year OS rate for LS-SCLC increased from 4.9% in 1973 to 10% in

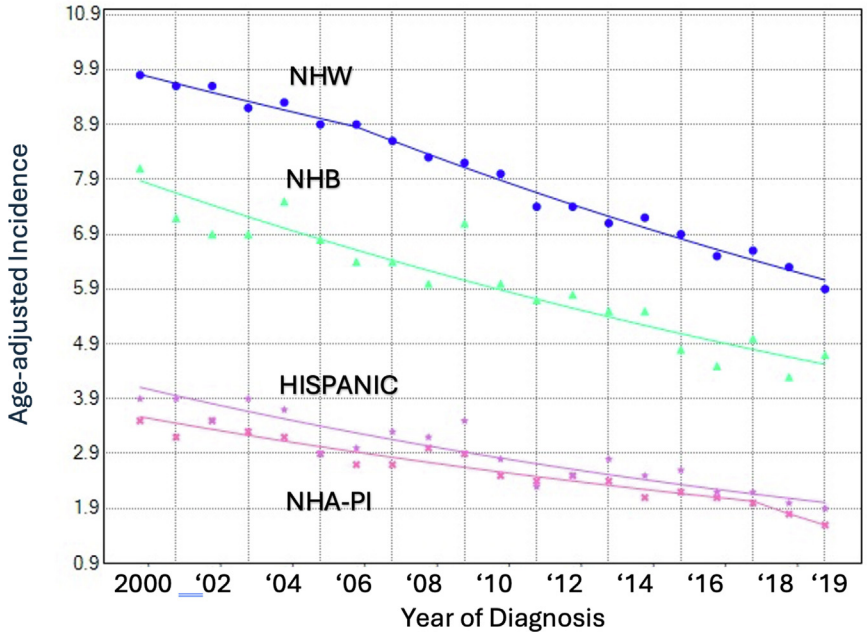

Figure 3. Joinpoint regression analysis of age-adjusted incidence rates of SCLC by racial subgroups. NHA-PI, non-Hispanic Asian-Pacific Islander; NHB, non-Hispanic Black; NHW, non-Hispanic White.

1998, whereas the two-year OS rate of ES-SCLC increased from 1.5% in 1973 to 4.6% in 2000.[4] Our study and others confirm a continuation of this trend, with the five-year OS rate for LS-SCLC reaching 15.6% by 2014 and the two-year OS rate for ES-SCLC reaching 8.4% in 2017, with improved survival being distributed fairly equally across sex and racial subgroups.[4,5,9,10] These small improvements in survival may in part be due to a stage shift related to improvements in staging technology (e.g., PET-CT and brain magnetic resonance imaging [MRI]). With the adoption of these improved imaging modalities, some patients who would previously be diagnosed with LS-SCLC are being upstaged to ES-SCLC at the time of diagnosis. As patients with asymptomatic distant metastases are excluded from the ranking of those believed to have LS-SCLC, the OS rate of the remaining LS-SCLC cohort will improve. At the same time, the placement of more patients with asymptomatic distant metastases and presumably a lower burden of disease into the ES-SCLC cohort will also improve the OS rate for this cohort.

Subtle advances in the treatment of SCLC may also have contributed to the improvement in survival observed at both stages of the disease. Nevertheless, from the early 1980s to 2019, first-line systemic therapy for SCLC did not substantially change, remaining platinum plus etoposide for four to six cycles, with many trials of various chemotherapy strategies and newer agents showing no added benefit.[24] In addition, thoracic radiotherapy and prophylactic cranial irradiation became standard-of-care for LS-SCLC in the 1990s and have been consistently utilized throughout our study period from 2000 to 2019.[3,25] Despite this relatively stable general treatment strategy, imaging and radiation technology have improved. PET-CT has increased radiation oncologists' comfort in omitting clinically uninvolved nodal regions from the treatment plan, and improved radiotherapy equipment allows for further narrowing of the thoracic radiation field in LS-SCLC.[25] Hyperfractionation of radiotherapy has also become a standard treatment option during the study period, although the benefits of such treatment versus standard fractionation remain controversial.[25–28]

Although less so than for LS-SCLC, improved radiotherapy techniques may have also provided some benefits in ES-SCLC by allowing for more focused and less toxic thoracic radiation in the palliative setting. In 2015, the CREST trial revealed a survival benefit for patients with ES-SCLC who received consolidative radiotherapy for residual thoracic disease.[29,30] This selective addition of radiotherapy may have provided a small survival benefit to the most recent patient cohort, although the risks and benefits of consolidative radiation must be carefully weighed in a palliative setting.

The toxicity of prophylactic cranial irradiation has also become an increasing concern, leading to its avoidance in some patients, particularly the elderly and those with ES-SCLC. Serial brain imaging with prompt treatment after detection of intracranial metastasis has proven to be a reasonable alternative, with trials suggesting that this approach may obviate the need for

Figure 4. Limited-stage SCLC five-year overall survival *(A)* in all patients, *(B)* in male and female patients, and *(C)* by racial subgroups. Extensive-stage SCLC five-year overall survival *(D)* in all patients, *(E)* in male and female patients, and *(F)* by racial subgroups.

prophylactic cranial irradiation.[24,31] Increasing comfort with MRI surveillance reduces toxicity and may improve morbidity and mortality in patients with ES-SCLC.

Although public health policies and changes in imaging and radiation technology correspond to small improvements in the OS rates of SCLC from 2000 to 2019, the outcomes remain poor. Changes in systemic therapy are expected to play a larger role in the future. On the basis of the OS benefits noted in the IMpower133 and CASPIAN trials, combination chemotherapy plus either atezolizumab (2019) or durvalumab (2020), respectively, are now the standard initial treatments for patients with ES-SCLC.[6,7] Most recently, the ADRIATIC trial has revealed a significant improvement in OS with durvalumab consolidation for patients who have completed chemoradiotherapy for LS-SCLC.[32] Gay et al.[33] and others[33–35] have also characterized distinct molecular subgroups of SCLC, and there are high hopes that this work will lead to more effective personalized, targeted approaches to the systemic treatment of SCLC.

Conclusions

From 2000 to 2019, the incidence of SCLC continued to decline overall and to varying degrees across population subgroups, likely owing to the trends in tobacco use. Concurrently, survival rates have slightly improved in the setting of better imaging and radiation strategies, despite little change in systemic therapy during the preimmunotherapy study period analyzed in this report. Continued antismoking efforts, access to improved radiation techniques, implementation of immunotherapy, and the ongoing search for more effective and novel systemic agents will be key to improving the poor prognosis of patients with SCLC.

Disclosure

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CRediT Authorship Contribution Statement

Leah Wells: Data curation, Formal analysis, Writing - original draft, Writing - review & editing.

Sean Cohen: Methodology, Data curation, Formal analysis, Investigation.

Benjamin Brennan: Methodology, Formal analysis.

Mousumi Banerjee: Methodology, Writing - review & editing.

Gregory Kalemkerian: Conceptualization, Funding acquisition, Project administration, Supervision, Writing - review & editing.

Supplementary Data

Note: To access the supplementary material accompanying this article, visit the online version of the *Journal of Thoracic Oncology* at www.jto.org and at https://doi.org/10.1016/j.jtocrr.2025.100799.

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