

P-1

Rising incidence of bronchopulmonary neuroendocrine tumors

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BACKGROUND

The epidemiology of typical (TC) and atypical carcinoid (AC) bronchopulmonary neuroendocrine tumors (pulmNETs) is not well understood. We aim to describe the incidence of pulmNETs and differences by sex and race and ethnicity (R&E) in the diverse state of California.

METHODS

All patients with malignant pulmNETs diagnosed from 1992-2019 in the population-based California Cancer Registry were identified by histology (ICD-O-3 code 8240 for TC or 8249 for AC) and topography (bronchus or lung). Annual age-adjusted incidence rates (AIR) by patient or tumor characteristic were calculated, compared using incidence rate ratios (IRR), and described using JoinPoint regression temporal trend and annual percent change (APC).

RESULTS

Among 6,276 pulmNET patients identified, almost all (92%) were TC. Most (69%) were diagnosed with local stage, 18% with regional, and 12% with distant metastases. Most (78%) self-identified as Non-Hispanic (NH) White, 16% as Hispanic, 3% Asian/Pacific Islander (API), and 3% NH Black. The vast majority (69%) were women. One in five was diagnosed before age 50, and two in five at the time of diagnosis resided in a neighborhood with the highest socioeconomic status tertile. Surprisingly, the AIR sharply increased starting year 2013, resulting in a large APC (8.09 during 2013-2019 with 95% confidence interval (CI) [4.39,11.93]) and a high final overall AIR in 2019 (0.94 per 100,000 persons). During the most recent five-year block, the AIR for women (1.16) was more than twice that for men (0.53), with a statistically significant IRR (2.18 with 95% CI [1.96,2.42]). Other pronounced incidence disparities are seen by R&E, as presented in the Table.

Latest 5-year age adjusted incidence rates (AIR) from 2015-2019 by race and ethnicity and incidence rate ratio (row/column) with Tiwari 95% confidence interval

	API	Hispanic	NH black	NH white
N:	110	373	94	1,264
AIR:	0.31	0.67	0.75	1.14
API	1	0.46 [0.37,0.57]	0.41 [0.31,0.55]	0.27 [0.22,0.33]
Hispanic	2.17 [1.74,2.73]	1	0.90 [0.71,1.14]	0.59 [0.52,0.67]
NH black	2.43 [1.81,3.25]	1.12 [0.87,1.41]	1	0.66 [0.52,0.82]
NH white	3.69 [3.02,4.54]	1.70 [1.50,1.92]	1.52 [1.22,1.91]	1

CONCLUSIONS

We found incidence rates of pulmNETs rising faster now than a decade ago, and differences by sex and R&E. Most pronounced is the disproportionately higher AIR for women. The NH White population has higher AIR than other R&Es, and API has far lower AIR than other R&Es. The reasons for these wide differences in incidence are unclear, and further research is needed to better understand the mechanisms causing disparities.

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