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Incidence and Survival Patterns of Gastroenteropancreatic Neuroendocrine Neoplasms in California

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BACKGROUND: Neuroendocrine neoplasms (NEN) are a heterogeneous group of rare tumors that typically account for <5% of tumors in any organ. There is a paucity of epidemiologic data regarding risk factors. We aimed to characterize the burden of NENs in California with its diverse racial populations.

METHODS: Using California Cancer Registry, we identified all newly diagnosed NEN from gastroenteropancreatic (GEP) sites in years 1992-2015. Age-adjusted incidence rates (AIR) were compared according to year using annual percent change (APC) and according to sex, race-ethnicity, primary tumor site, stage, and type of county of residence (urban, suburban, rural) using incidence rate ratios (IRR). Kaplan-Meier survival estimates from diagnosis to death by any cause were compared using log-rank tests stratified the same ways.

RESULTS: There were 23,983 GEP NEN cases and 9,910 deaths. All AIRs increased over the 24 years, with the greatest increase in Hispanics with pancreatic NEN (APC 8.9). Table 1 compares AIRs from the last 5 years. The greatest discrepancies (>4-fold) were for non-Hispanic (NH) blacks or NH whites vs. Asians with small intestine or appendiceal NEN. Longer median survival estimates were seen in women (13.1 years) vs. men (11.6), and in Asians (20.7) and Hispanics (16.7) vs. NH blacks (12.3) and NH whites (9.6). No significant survival differences were detected according to county type. Median survival estimates were significantly different according to primary tumor site: colorectal (19.9 years); appendiceal (16.0); small intestine (10.1); stomach (9.7); and pancreatic (4.4).

CONCLUSION: Incidence rates of GEP NENs in California steadily increase from 1992 through 2015 for all populations. Survival estimates differ significantly by primary tumor site of origin, sex, race-ethnicity, and stage, but not by county. These findings show higher incidence rate and longer survival than in previous publications and add information about NENs in Hispanic and Asian populations in California.

Table 1.

IRR [95% CI]	NH white	NH black	Hispanic	Asian/PI
All GEP NEN	1	1.59 [1.47,1.72]	0.95 [0.90,1.00]	0.77 [0.71,0.82]
Colon-rectum	1	2.60 [2.28,2.95]	1.44 [1.30,1.58]	1.76 [1.58,1.96]
Stomach	1	1.51 [1.13,1.98]	2.03 [1.73,2.36]	0.60 [0.45,0.79]
Sm Intestine	1	1.60 [1.37,1.86]	0.70 [0.62,0.79]	0.23 [0.18,0.29]
Appendix	1	0.78 [0.57,1.04]	0.39 [0.32,0.48]	0.19 [0.13,0.28]
Pancreas	1	1.06 [0.87,1.28]	0.68 [0.60,0.78]	0.78 [0.67,0.90]