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First-Line Systemic Therapy Patterns and Survival in Advanced Neuroendocrine Carcinoma: An Agent-Level Registry Analysis

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BACKGROUND

National registries cannot resolve individual chemotherapy agents in neuroendocrine carcinoma (NEC) or characterize the clinical basis for non-treatment. We describe agent-level first-line treatment patterns, characterize the untreated population, and benchmark overall survival (OS) in a WHO-annotated institutional NEN registry.

METHODS

We conducted a single-institution retrospective analysis of 469 NEN patients at a CoC-accredited community cancer center from 2018–2025. WHO-aligned differentiation was chart-abstracted for 386 patients. The analytic cohort comprised 121 distant-stage NEC patients. Agent-level first-line treatment was extracted from free-text registry fields unavailable in SEER/NCDB. Kaplan-Meier with log-rank test compared OS by treatment group, and Cox regression estimated age effects on OS within PE-treated patients.

RESULTS

Of 121 distant-stage NEC patients, 62 (51.2%) received first-line platinum-etoposide (PE). Carboplatin-EP was used in 58 patients (93.5%) and has been the exclusive platinum agent since 2022; cisplatin was used in 5 patients (8.1%), with 1 receiving both agents sequentially. Checkpoint inhibitor (IO) was added to PE in 33 patients (53.2% of PE-treated); IO addition did not significantly prolong OS (14.0 vs. 6.0 months, p=0.588), though this comparison was underpowered. Overall PE-treated median OS was 11.0 months. Among 55 patients (45.5%) who received no systemic therapy, median OS was 2.0 months with 63.6% mortality within 3 months. The no-therapy group was significantly older (median age 74 vs. 67 years, p=0.002), supporting clinical ineligibility as the predominant driver of non-treatment.. Within PE-treated patients, age ≥70 independently predicted worse OS (HR 2.07, 95% CI 1.11–3.87, p=0.02).

Table 1. Treatment and Outcomes — Distant-Stage NEC (n=121)

Subgroup	n (%)	Platinum or IO Agent	Median OS
PE-treated — all	62 (51.2%)	Carbo-EP 91.9%; Cis-EP 8.1%	11.0 mo
— PE + IO	33 (53.2% of PE)	Atezo 69.7%, Durva 27.3%	14.0 mo

— PE alone	29 (46.8% of PE)	Carboplatin-EP	6.0 mo
No systemic therapy	55 (45.5%)	—	2.0 mo*

**Median age 74 vs. 67 years (p=0.002); 63.6% died within 3 months. IO vs. PE alone log-rank p=0.588 (underpowered). Four patients received non-PE regimens and are excluded. Carbo/Cis totals non-exclusive: 1 patient received both agents sequentially.*

CONCLUSIONS

Carboplatin-EP has replaced cisplatin-EP as the first-line NEC regimen at this community center. PE-treated median OS of 11.0 months exceeds US real-world benchmarks (~6–7 months in published NEC series) and approaches published multicenter trial outcomes. The no-therapy group's short survival and older age support clinical ineligibility rather than access failure. Prospective performance status documentation is needed to distinguish ineligibility from access barriers in future NEN registry analyses.

ABSTRACT ID #36658