

Functional Status and Costs of Care During the First Year After Diagnosis of Neuroendocrine Tumors Among Elderly Patients

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Background: Functional Neuroendocrine tumors (NETs) secrete hormonal peptides which lead to additional symptom burdens on patients. However, it is largely unknown whether and to what extent the additional symptom burdens translate into higher costs of care. This study aims to examine the cost pattern of elderly NET patients during the first year of diagnosis taking into account of the functional status.

Methods: We used SEER-Medicare data to identify elderly NET patients diagnosed between 1/2003 and 12/2011. Patients who had at least two claims indicative of carcinoid syndrome during the 3 months before and after the NET diagnosis are considered to have functional disease. We conducted separate analyses for patients who were alive throughout the year after diagnosis and patients who died within a year as these patients have very different cost patterns due to the cost of terminal care. We adopted a payer's perspective and quantified economic outcomes using three measures: total Medicare reimbursement amount, inpatient costs and outpatient costs. We examined the pattern of monthly costs during the first year of diagnosis. We used Wilcoxon two-sample test to compare costs between patients with and without functional NETs.

Results: Our study cohort included 11,914 elderly NET patients. Out of these patients, 7845 (66%) were alive throughout the one year after diagnosis with continuous enrollment, and 4069 (34%) died within one year. Among the patients who lived throughout the year, 2530 (32.25%) had functional disease; while among the patients who died within the year, 1000 (24.58%) had functional disease. Patients with functional NET had higher costs compared to patients without syndrome (Table 1).

Conclusion: This population-based study showed that patients with functional NET incurred higher costs of care.

Table 1: Monthly Cost of Care of elderly NET patients

	Alive throughout the one year after diagnosis		Died within one year of diagnosis	
	With Carcinoid Syndrome	Without Carcinoid Syndrome	With Carcinoid Syndrome	Without Carcinoid Syndrome
Total Monthly Costs (\$)				
Mean(SD)	4460 (3700)	3506 (3427)	15185 (14354)	14396 (13591)
Median	3548	2745	11686	10734
Outpatient Monthly Costs (\$)				
Mean(SD)	1768 (1760)	1387 (1569)	2517 (2227)	2367 (2325)
Median	1077	777	2176	1835
Inpatient Monthly Costs(\$)				
Mean(SD)	2692 (3062)	2119 (2816)	12668 (14881)	12029 (14202)
Median	2042	1534	9078	7765

SD: standard deviation; all p-values for cost comparison between patients with and without carcinoid syndrome were less than 0.01