Neuroendocrine tumor (NET) progression of disease during or within one year after completion of therapy with 177Lu-DOTATATE

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Background

- NETs with poor/limited response to 177Lu-DOTATATE have not been studied extensively
- Recommended dosing of 177Lu-DOTATATE is 4 doses (200 mCi), 8 weeks apart
- We report the single-institution outcomes of NET patients who progressed during or within one year after completion of 177Lu-DOTATATE therapy

Methods

- Clinicopathologic data from institutional NET database analyzed for survival and response
- Population: patients with a NET diagnosis who received at least one dose of 177Lu-DOTATATE therapy and progressed within one year of completing 177Lu-DOTATATE therapy

Results

	Received <4 doses n = 38		Received 4 doses n = 67	
Average age at diagnosis	59 years		57 years	
Sex	Female: 21 (55%) Male: 17 (45%)		Female: 34 (51%) Male: 33 (49%)	
Race	Asian: 1 (3%) Black/African American: 4 (11%) White: 27 (71%) Unknown/Other: 6 (16%)		Asian: 7 (10%) Black/African American: 9 (13%) White: 48 (72%) Unknown/Other: 3 (4%)	
Functional Syndrome	Yes: 20 (53%) Serotonin: 16 (80%) Cushing (Cortisol): 1 (5%) VIPoma: 1 (5%) Gastrinoma: 1 (5%) Serotonin & VIPoma: 1 (5%)		Yes: 18 (27%) Serotonin: 11 (61%) VIPoma: 1 (6%) Gastrinoma: 1 (6%) Cushing & gastrinoma: 1 (6%) Serotonin & hyperinsulinemia: 1 (6%)	
Grade at diagnosis	G1: 12 (32%) G2: 21 (55%) G3: 3 (11%) Unknown: 2 (7%)		G1: 14 (21%) G2: 38 (57%) G3: 13 (19%) Unknown: 2 (3%)	
Average number of prior treatments	4.0 ± 2.1		4.1 ± 2.5	
Prior treatments received	Liver-directed	17 (45%)	Liver-directed	36 (54%)
	External beam radiation therapy	6 (16%)	External beam radiation therapy	7 (10%)
	Somatostatin analogue	36 (95%)	Somatostatin analogue	62 (93%)
	Surgical	18 (47%)	Surgical	32 (48%)
	Immunotherapy	3 (8%)	Immunotherapy	2 (3%)
	Targeted therapy	11 (29%)	Targeted therapy	17 (25%)
	Chemotherapy	19 (50%)	Chemotherapy	36 (54%)

Table 1. Demographics of patients who progressed during or within 1 year of PRRT (n = 105)

Grade	Progressive Disease	Partial Response	Stable Disease
1 (n = 26)	12 (46%) 3.4 ± 2.3 months	7 (27%)	7 (27%)
2 (n = 59)	22 (37%) 3.0 ± 2.5 months	27 (46%)	10 (17%)
3 (n = 16)	5 (31%) 2.6 ± 2.6 months	8 (50%)	3 (19%)
Unknown (n = 4)	n/a	2 (50%)	2 (50%)

Table 2. Best response to PRRT by disease grade and time to progression

Reasons for discontinuation	Number of patients
Progression of disease	28 (74%)
Hematological toxicities	7 (18%)
Bowel obstruction	1 (3%)
Death	1 (3%)
Infection	1 (3%)

Table 3. Reasons for early discontinuation of PRRT

Conclusion

- Among patients with disease progression during or soon after 177Lu-DOTATATE treatment completion (n = 105), 67 patients (64%) received the full treatment course of 4 doses
- Early progression was more commonly seen in grade 2 and grade 3 disease
- Early cessation of therapy (treatment with fewer than 4 doses of 177Lu-DOTATATE) was most often related to disease progression, followed by therapy-related hematologic toxicities