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Gallium-68 Dotatate PET/CT (Ga68PET/CT) Versus Contrast Enhanced Cross Sectional Imaging (CECSI) to Measure Treatment Response (TR) to Peptide Receptor Radionuclide Therapy (PRRT) in Patients With Neuroendocrine Tumors (NETs).



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BACKGROUND: CECSI is used to measure TR of advanced NETs while Ga68PET/CT offers functional imaging of somatostatin-receptor positive tumors. There is limited data comparing CECSI and Ga68PET/CT to assess PRRT response in NET patients.

METHODS: A total of 29 patients from two centers undergoing PRRT and had both CECSI (CT or MR) and Ga68PET/CT within 6 months prior to and after a minimum 3 cycles of PRRT. Patients were classified as Complete Response (CR), Partial Response (PR), Stable Disease (SD), or Progressive Disease (PD) using RECIST (CECSI) and modified PERCIST (Ga68 PET/CT). PERCIST was calculated using change in tumor SUVmax, tumor to normal liver (T/L), and tumor to normal spleen (T/S). Agreement was evaluated with Cohen's Weighted Kappa and by measuring sensitivity/specificity of Ga68PET/CT to detect progression using CECSI as the standard.

RESULTS: RECIST by CECSI classified 21 patients with response (4 PR, 17 SD) and 8 with progression (PD). Cohen's Weighted Kappa between RESCIST and Ga68PET/CT PERCIST for SUVmax, T/L ratio, and T/S ratios were 0.29, 0.27, and 0.45, respectively (table). Ga68PET/CT identified 3 of 8 patients with PD on CECSI (sensitivity 38%) but correctly identified 20/21 patients without PD by CECSI (specificity 95%) (Table 1).

CONCLUSION: In this series, Ga68PET/CT reliably confirmed patients with RECIST response (PR/SD) to PRRT but did not rule out progression. Inter-test reliability between CECSI and Ga68PET/CT in patients receiving PRRT was low.

Table 1

Ga68PET/ CTSUVmax	RECIST				
	CR	PR	SD	PD	TOTALS
Complete Response (CR)	0	0	0	0	0
Partial Response (PR)	0	2	4	4	10
Stable Disease (SD)	0	2	12	1	15
Progressive Disease (PD)	0	0	1	3	4
TOTALS	0	4	17	8	29

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