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The Use of Peptide Receptor Radionucleotide Therapy (PRRT) in Patients with Neuroendocrine Tumor Cardiac Metastases

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BACKGROUND: PRRT is approved for the treatment of somatostatin receptor positive gastroenteropancreatic neuroendocrine tumors (NETs). Cardiac metastases are an infrequent site of metastasis, and safety concerns exist regarding cardiac integrity and function in response to PRRT in this setting. Our objectives are to: 1) characterize patients with cardiac metastases in NETs diagnosed by Gallium-68 (68-Ga) DOTATATE PET/CT, and 2) describe the safety and outcomes with PRRT.

METHODS: Sequential patients who underwent 68-Ga DOTATATE PET/CT imaging and received ≥1 dose of PRRT were included. Retrospective chart review was performed to identify those with cardiac metastases. Clinical, laboratory, and radiographic information was obtained and summarized.

RESULTS: Of 123 sequential patients who had Ga-68 DOTATATE PET/CT scans, four (3.3%) had cardiac metastases detected and all subsequently received ≥1 dose of PRRT. All four patients had midgut, grade 1 tumors that were functional and had a high burden of metastasis to at least four different distant sites. Median duration of follow-up was 45 weeks. Sites of cardiac involvement were the interatrial septum (n=2) and ventricular wall (n=2); cardiac function was normal. In 2 of 4 patients, the cardiac lesions were not detected on transthoracic echocardiogram but visualized on Ga-68 DOTATATE PET/CT. One patient received 3 doses of PRRT, and 3 patients have completed 4 doses. All have demonstrated tolerance to treatment, with no reports of cardiorespiratory concerns or heart failure.

CONCLUSION: NET cardiac metastases were documented in patients with midgut, grade 1 tumors with a high burden of metastasis and the use of PRRT was safe. Follow-up is required to determine the efficacy and long-term safety of PRRT in this unique population.

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