Peptide Receptor Radionuclide Therapy (PRRT) for Metastatic Neuroendocrine Tumors (NETs): A United States Experience

Bryson Katona1; Brian Riff2; Michael Soulen1; Daniel Pryma1; Bonita Bennett1; Damian Wild3; Guillaume Nicolas3; Ursina Teitelbaum1; David Metz1

1Perelman School of Medicine, University of Pennsylvania; 2Icahn School of Medicine at Mount Sinai; 3University Basel Hospital

Background: The phase III NETTER-1 trial showed that PRRT serves as effective therapy for low to intermediate grade progressive metastatic small bowel NETs but little is known about its general utility in real-world United States (US) practice. We therefore examined the efficacy and toxicity of PRRT in a US-based population.

Methods: Data was analyzed on all University of Pennsylvania patients with metastatic NETs who underwent PRRT therapy for progressive disease between July 2005 and March 2016 (n=24). Tumor progression was determined by RECIST 1.1. Laboratory and clinical data was analyzed using CTCAE criteria, to determine hematologic toxicity, nephrotoxicity, and hepatotoxicity. Kaplan-Meier plots were created to estimate progression free survival (PFS) and overall survival (OS).

Results: Mean age, duration of disease and number of prior therapies at first PRRT was 58 years, 5 years, and 2.6 treatments, respectively. 58% were male, 29% had small bowel primary tumors and 29% had grade 3 tumors. During follow-up (range 3-129 months), 17 of 24 patients (71%) progressed, 5 (21%) had stable disease, 2 (8%) have not yet obtained post-treatment imaging, and there were 11 deaths. Median PFS was 13 months and median OS was 36 months. New onset nephrotoxicity, anemia, leukopenia, and thrombocytopenia developed in 36%, 50%, 30%, and 28%, respectively. Acute liver injury occurred in 11 patients (46%) including 5 (21%) with biochemical injury, 11 (46%) with new onset ascites, and 3 (13%) deaths due to liver-related complications.

Conclusion: In this US population of metastatic NETs, PRRT provided a median PFS of 13 months. The PRRT-associated toxicities and lower PFS compared to the NETTER-1 trial may be due to extensive pre-treatment, higher grade tumors, inclusion of non-small bowel primary sites, and later use of PRRT, all of which may have implications regarding where PRRT should fit in the treatment algorithm of NET patients.

Presented at NANETS 2016