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Renal and Hepatotoxicity of Peptide Receptor Radionuclide Therapy (PRRT) – A Single Institution Experience

H. Duan[1], V. Ferri[2], P. Kunz[3], G. Davidzon[2], J. Nguyen[1], F. Moradi[1], B. Franc[1], A. Iagaru[1], C. Aparici Mari[1]; [1]Radiology, Division of Nuclear Medicine and Molecular Imaging, Stanford University, CA/United States of America, [2]Radiology, Division of Nuclear Medicine and Molecular Imaging, Stanford University, Stanford, CA/United States of America, [3]Medicine-Oncology, Yale University, CT/United States of America

BACKGROUND: Peptide receptor radionuclide therapy (PRRT) is a very encouraging systemic treatment for neuroendocrine tumors (NET). ^{177}Lu-DOTATATE is known to have an overall safe profile. We evaluated renal and hepatotoxicity in our patient cohort treated with PRRT for somatostatin receptor (SSTR)-expressing malignancies.

METHODS: Eighty-two patients (40 women and 42 men, mean±SD: 62.9±10.4 years) with progressive SSTR-expressing tumors were referred to undergo PRRT with 177Lu-DOTATATE from July 2018 to July 2020. Laboratory tests were obtained 1 week before each cycle and every 3 months at follow-up, including serum albumin, total bilirubin and serum creatinine. Toxicity was determined based on the National Cancer Institute Common Terminology Criteria for Adverse Events (NCI CTCAE) V5.0.

RESULTS: 49/82 (59.8%) patients completed all 4 cycles of PRRT. 20/82 (24.4%) patients are currently being treated. 12/82 (14.6%) patients had to discontinue PRRT. 1/82 (1.2%) patient was lost in follow-up. Out of the 81 patients treated/being treated, grade 3 hypoalbuminemia, bilirubinemia and renal toxicity occurred in 0% (0/81), 1% (1/81), and 0% (0/81), respectively, and grade 2 hypoalbuminemia, bilirubinemia and renal toxicity was seen in 4% (3/81), 4% (3/81), and 1% (1/81), respectively.

Grade 3 bilirubinemia occurred at 14-months since PRRT initiation and resolved to grade 2 at 17-months and remained at that level.

Prior to receiving PRRT, 1/81 (1%) patient presented with hypoalbuminemia grade 2, which resolved after the first cycle and remained in the normal range (18months after PRRT), and 2/81 (2%) presented with hyperbilirubinemia grade 2, which resolved in 1 patient at cycle 3 while the other showed persistent grade 2 toxicity at 14-months after PRRT initiation. The median follow-up since PRRT initiation was 10±7 months (range 7–25months).

CONCLUSION: Our preliminary data show that PRRT is overall a safe treatment for liver and kidney function. Four cycles of PRRT did not induce renal toxicity while hepatotoxicity grade 3 occurred in 1%.

ABSTRACT ID: 201