Safety of Lutetium-177 DOTATATE Treatment in Patients with Advanced Neuroendocrine Tumors and Extensive/Innumerable Bone Metastases

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ABSTRACT

- Treatment with 177Lu DOTATATE can lead to hematological toxicity, mostly transient and mild to moderate in nature (G 1-2). Potential risk factors for hematotoxicity with PRRT prior exposure to chemotherapy & alkylating agents, this includes the presence of bone marrow metastases. [1,2]
- We aimed to evaluate the safety and efficacy of Lutetium-177 DOTATATE in patients with advanced NETs and extensive bone metastases in a large cohort aiming to better characterize and identify the pattern of hematological toxicity.

METHODS

- Retrospective study across Mayo clinic tri-sites.
- Patients with advanced NETs and have extensive/innumerable bone metastases.

Characteristics	No of patients= 48 (%)
Primary origin:	26 (54%)
Bowel	6 (12.5%)
Pancreas	
Pheochromocytoma/paraganglioma	3 (6%)
Lung	4 (8%)
Renal	1 (2%)
Cervix	1 (2%)
Unknown	7 (15%)
Grading of NET:	
Grade 1	12 (25%)
Grade 2	23 (48%)
Grade 3	3 (6%)
Atypical lung carcinoid NOS	2 (4%) 8(17%)
Pattern of bone metastases:	
Confluent/Near-confluent	13 (27%)
Extensive	35 (73%)

Table 1: Characteristics of patients included. 48 patients met our criteria.

RESULTS

High incidence of hematoxicity among patients with advanced NETs and extensive bone metastases (50% overall hematological toxicity, with 23.5% G3/4). Prolonged cytopenias > 6 months in 21%

Hematological toxicity	Any Grade; n (%)	Grade 3-4 ; n (%)	Prolonged Cytopenia(s) (≥ 6 months post PRRT)
Anemia	24 (50%)	7 (14.5%)	8 (17%)
Thrombocytopenia	16 (33%)	9 (19%)	8 (17%)
Neutropenia	8 (17%)	5 (10%)	1 (2%)
Total	24 (50%)	14 (29%)	10 (21%)

Table 2: Incidence of hematoxicity among patients with advanced NETs and extensive bone metastases who received at least one cycle of PRRT

Event	n (%)
t-MN (MDS)	1 (2%)
t-Clonal cytopenias (t-CCUS)	2 (4%)
Metastatic NET	4 (8%)

Table 3: Incidence of t-MN and t-Clonal Cytopenias in our cohort. One patient developed t-MDS, while other two were found to have t-CCUS.

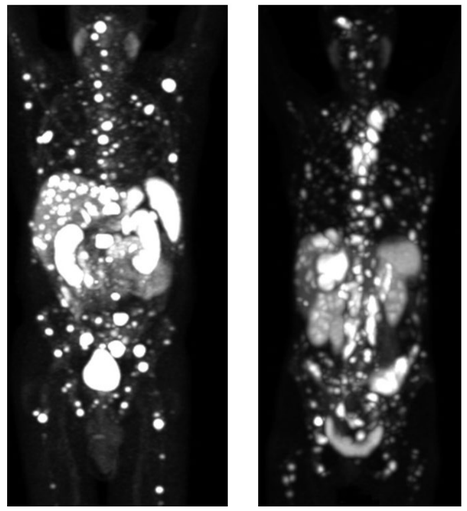

Fig 1: Extensive bone metastases

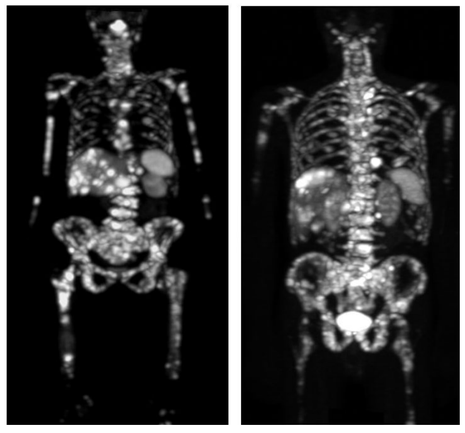

Fig 2: Confluent /near confluent bone metastases

DISCUSSION

- We aimed to evaluate the safety of PRRT in this subgroup with extensive/innumerable bone metastases.
- In our cohort, we noticed a higher rates of hematological toxicity compared to historical cohorts in this patient population. [3,4]
- The incidence of therapy-related myeloid neoplasms (MDS/AML), aligns with the known data about PRRT (1.9 % in our cohort).
- Also, important to point out that cytopenias persisted > 6 months in 21% of the patients.

CONCLUSIONS

- In one of the largest institutional series of PRRT in patients with advanced NETs and extensive/innumerable bone metastases, moderate rates of grade 3-4 hematoxicity were observed, although the majority were transient.
- Our study highlights the importance of carefully monitoring and assessing hematological parameters in patients being considered for 177Lu DOTATATE with extensive/innumerable bone metastasis

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