

# C-26

## Pre-therapy Functional Imaging with MIBG and DOTATATE to Guide Radiopharmaceutical Therapy for Pheochromocytoma and Paraganglioma: A Single Institution Experience

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### BACKGROUND

Since their FDA-approval in 2018, both Lu177-DOTATATE and I131-MIBG radiopharmaceutical therapies are available at our institution for the treatment of pheochromocytoma and paraganglioma (PPGL). Tumor uptake of the radiopharmaceutical on pre-therapy imaging is a requirement for treatment. Here, we describe our experience with pre-therapy imaging, and how it relates to the tumor genotype and the therapeutic choice.

### METHODS

This is a retrospective evaluation of pre-therapy imaging of all patients with progressive, nonresectable or metastatic, PPGL referred for radiopharmaceutical therapy at our institution since 2018. At our institution, the choice of treatment is first guided by the degree of uptake on functional imaging, followed by the FDA-label for the therapy. Parameters evaluated here include the uptake on pre-therapy DOTATATE and MIBG scans, and the tumor genotype.

### RESULTS

A total of 17 PPGL patients have been referred to date.

Five were not treated with a radiopharmaceutical due to a variety of factors such as stable or limited disease, rapid progression, insufficient uptake on imaging, or patient choice. Paragangliomas: n=4, pheochromocytomas: n=1:

- SDHC mutation (n=1): MIBG: Negative, DOTATATE: Heterogeneous uptake.
- SDHB mutation (n=3):
  1. Imaging not performed due to rapid progression.
  2. MIBG: Positive, DOTATATE: Positive
  3. MIBG: Negative, DOTATATE not performed.
- No mutation detected (n=1): MIBG: Positive, DOTATATE: Positive.

Six were treated with Lu177-DOTATATE, all paragangliomas:

- SDHB mutation (n=1), mutation unknown (n=2): MIBG: Heterogeneous, DOTATATE: Positive.
- SDHD mutation (n=1), SDHAF2 mutation (n=1), HRAS mutation (n=1): MIBG: Negative, DOTATATE: Positive.

Six were treated with I-131 MIBG. Paragangliomas: n=4, pheochromocytomas: n=2:

- SDHB mutation (n=2), RET mutation (n=1), SDHx mutation (by IHC on biopsy, no genetic testing performed) (n=1), mutation unknown (n=1): MIBG: Positive, DOTATATE: Positive.
- No mutation detected (n=1): MIBG: Positive, DOTATATE: not performed.

In summary, DOTATATE PET was positive in all patients, with the exception of one case that showed heterogeneous somatostatin receptor expression (93.3%, n=14/15). MIBG scan was positive in 50% (8/16) of patients, and heterogeneous in another 18.9% (3/16).

## CONCLUSIONS

Our data is consistent with literature supporting DOTATATE PET as a first line imaging agent for PPGLs across all genetic mutations. However, in our experience, pre-therapy functional imaging with both agents should be performed and used to guide the therapeutic choice as tumors positive with both agents are preferentially treated with I131-MIBG given the FDA label. Additional data is needed for confirmation of these findings.

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