

## MIBG Avidity and Therapy in a Metastatic GI Neuroendocrine Tumor Patient Cohort

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**Background:** Iodine 123 and 131- metaiodobenzylguanidine (<sup>123/131</sup>I-MIBG) has been effectively used as a tumor localization imaging technique and treatment modality in neuroendocrine tumors, particularly pheochromocytomas. Information regarding efficacy and dose toxicity is limited. We report our experience assessing tumor avidity in established metastatic GI neuroendocrine tumor patients. For those patients treated with <sup>131</sup>I-MIBG therapy, systemic toxicity and tumor response were measured over time.

**Methods:** We performed a retrospective chart review of 57 patients with known metastatic GI neuroendocrine tumors referred to our center for imaging and possibly therapy with <sup>131</sup>I-MIBG over a period of 5 years. Tumor avidity was established based on uptake of <sup>123</sup>I-MIBG and patients with MIBG avid tumors were offered therapy with radioactive <sup>131</sup>I-MIBG. Measures of systemic toxicity including subjective symptoms, bone marrow, kidney and liver toxicity were reviewed. Finally, tumor response was assessed on serial imaging studies.

**Results:** 57 patients underwent <sup>123</sup>I-MIBG imaging. 31 patients (50.4%) were MIBG avid including 8 (14%) who were only partially avid. To date, 7 patients (only 23% of the tumor avid cohort), 5 with carcinoid syndrome and 2 with nonfunctional tumors (stomach, pancreas primary) were treated with radioactive MIBG at 2mCi/Kg with a mean of 3 <sup>131</sup>I-MIBG treatments per patient. (range 1-5). The average follow up after initial therapy was 18 months (range 1– 45 months). Shortness of breath (57%) and fatigue (42%) were the most commonly reported side effects in interval follow up after treatment. Evidence of bone marrow toxicity was seen with an average decrement in white count (18%), hemoglobin (8%) and platelet (18%) from pre-treatment to end of follow up values. Three patients suffered new onset kidney disease while two had new onset decompensated liver disease (hepatic encephalopathy and refractory ascites) during the course of treatment. The mean stable disease duration following initial treatment was 14.5 months.

**Conclusion:** We report a significantly lower tumor avidity percentage than previously reported for GI NET patients. For those patients treated with <sup>131</sup>I-MIBG, there is evidence of good tumor response but with significant bone marrow toxicity and possible pulmonary complications.