Does Receptor Status Impact Survival of Patients with Neuroendocrine Tumors?

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Background: Neuroendocrine tumors (NETs) are rare neoplasms increasing in incidence due to greater awareness among patients and physicians. The most reliable diagnostic imaging study has been the 111-In-pentetreotide scan which binds to somatostatin receptors of the tumor. It is known that breast cancer treatment outcome is tightly correlated with degree of tumor cell differentiation and receptor status. We hypothesize that receptor status determined by 111-In-pentetreotide (Octreoscan) and 123-I-Metaiodobenzylguanidine (MIBG) imaging results can predict prognosis for small bowel NETs.

Methods: A database with all patients seen at the LSU/Ochsner NET Program was queried for nuclear medicine scan results. Included patients had a histologically confirmed ileal, jejunal, or small intestinal NET and Octreoscan and MIBG imaging results. Kaplan-Meier survival analysis was performed and statistical significance was determined by Log-rank test ($p<0.05$).

Results: 110 patients diagnosed between July 1994 and September 2013 were included. There were 64 females (64/110, 58%) and 46 males (46/110, 42%). Seventy-three (73/110, 66%) and sixty-three (63/100, 57%) patients had positive Octreoscan and MIBG imaging results, respectively. 5- and 10-year survival was calculated and sorted into four groups based on imaging positivity (Table 1).

Conclusion: Most midgut NETs present with positive Octreoscans which reflect positive receptor status; a favorable feature in prognosis based on the well-established breast cancer treatment experience. Unexpectedly, our data have shown receptor scintigraphy studies result has no baring in short term survival. More surprisingly, patients with double positive scan demonstrate a substantial survival disadvantage over a longer interval. Further longitudinal studies are required to determine if NET receptor status can reliably predict patient prognosis and the mystery of the reversal relation of the receptor status of NET patients and their prognosis.

Presented at NANETS 2016

Table 1: Survival Stratified by Receptor Status

Kaplan-Meier survival	Octreoscan+ /MIBG+	Octreoscan+ /MIBG-	Octreoscan- /MIBG+	Octreoscan- /MIBG-
N (%)	48/110 (44%)	23/110 (21%)	17/110 (15%)	22/110 (20%)
5-year survival rate	89%	95%	94%	95%
10-year survival rate	62%	89%	75%	95%