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SSTR-2 Expression in Solid Tumors: An Immunohistochemistry Analysis

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BACKGROUND

Somatostatin receptor (SSTR) expression has been characterized in well-differentiated neuroendocrine tumors (NET). However, the understanding of receptor expression in various non-neuroendocrine solid tumors is limited. This study was performed to evaluate SSTR-2 in various cancers to provide a rational basis for SSTR-2 targeted anti-cancer therapies.

METHODS

Formalin-fixed paraffin, paraffin-embedded tissue was obtained from pathology archives after institutional review board approval. Tumor blocks were prospectively stained with an anti-SSTR-2 antibody via immunohistochemistry (IHC). The following tumor types were studied: small cell carcinoma (Code 0; n=14), medullary thyroid cancer (Code 1, n=10), melanoma (Code 2, n=10), merkel cell carcinoma (Code 3, n=10), head and neck p16 positive squamous cell carcinoma (Code 4, n=10), well-differentiated NET (Code 5, n=10), paraganglioma and pheochromocytoma (Code 6, n=20), poorly differentiated neuroendocrine carcinoma (Code 7, n=9), and p16 negative squamous cell cancer (Code 8, n=4). IHC was scored as follows: **SSTR2 Intensity** (0=none, 1=weak, 2=moderate, 3=strong), **SSTR2 Localization** (1= membranous; 2=cytoplasmic; 3=mixed), **SSTR2 % Positivity** (5% increments)

RESULTS

64% of SCLC samples stained positive for SSTR-2, and 35.7 % of SCLC samples stained strongly positive for SSTR-2. 60% of Head and Neck carcinoma samples stained positive for SSTR-2, and 40% of these were of moderate intensity. As expected, 100% well-differentiated NET samples stained positive for SSTR-2. Only 33% of poorly differentiated neuroendocrine carcinoma samples were stained positive for SSTR-2, out of which only 11 % stained strongly positive for SSTR-2.

CONCLUSIONS

As expected, well-differentiated NET expressed very high SSTR-2 positivity with high intensity. However, a subset of small cell carcinoma and head and neck p16 positive squamous cell carcinoma were observed to express SSTR-2. Targeting SSTR-2 in small cell carcinoma and head and neck cancer with the help of radiolabeled somatostatin analog could be a promising therapeutic approach. Based on our SSTR-2 IHC data, a prospective study of SSTR-2 assessment with the help of gallium 68 dotatate PET imaging in small cell lung cancer patients is currently underway at Markey Cancer Center.

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