Somatostatin receptor 2 expression determined by immunohistochemistry in cold thyroid nodules exceeds that of hot thyroid nodules, papillary thyroid carcinoma, and Graves' disease.

Abstract:
BACKGROUND: There is a plethora of partly contradictory reports on somatostatin receptor (SSTR) expression in thyroid tumors. Therefore, our goal was to systematically determine SSTR2 expression in benign cold thyroid nodules (CNs), hot thyroid nodules (HNs), papillary carcinomas (PCs), and Graves' disease (GD) in comparison with intraindividual control tissues by means of immunohistochemistry. METHODS: Tissue sections from 19 HNs, 10 CNs, 17 PCs and their surrounding tissues, and 8 GD thyroids were immunostained for SSTR2. Membranous SSTR2 staining was quantitated by evaluating 10 high-power fields (HPFs) systematically distributed along the largest diameter of the tissue section. RESULTS: The area covered by thyroid epithelial cells in 10 HPFs expressed as median (in mm²) was 0.53 for CNs, 0.44 for HNs, 1.5 for PCs, 1.3 for GD, and 0.3 for the surrounding tissues. The SSTR2 staining density determined by dividing the area of SSTR2 positively stained thyroid epithelial cells (in mm²) by the area of all thyroid epithelial cells (in mm²) in 10 HPFs was 0.1662 for CNs, 0.0204 for HNs, 0.0369 for PCs, and 0.0386 for GD. CONCLUSIONS: SSTR2 expression is inhomogeneous in thyroid disease,
with the highest density detected in CNs. It remains to be determined whether this finding could be of pathophysiologic or therapeutic relevance. The high SSTR2 density in CNs should be considered in the interpretation of SSTR scintigraphy-positive findings.