SINGLE-PHOTON EMISSION COMPUTED TOMOGRAPHY/COMPUTED TOMOGRAPHY: EXTRATHYROIDAL UPTAKE ON TECHNETIUM [Tc99m] PERTECHNETATE THYROID SCINTIGRAPHY

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A 29-year-old female with right neck swelling was referred for a thyroid scan. Tc99m pertechnetate thyroid scan demonstrated a large cold nodule in the right lobe of thyroid gland corresponding to the clinically palpable right neck swelling [Figure 1]. Two areas of focal extrathyroidal uptake were noted in the right cervical region. Single-photon emission computed tomography (SPECT)/CT images showed the extrathyroidal tracer uptake in the right-sided cervical lymph nodes [Figure 2]. Histopathological evaluation confirmed the right thyroid nodule as differentiated thyroid carcinoma (follicular type) along with metastases in the right cervical lymph nodes. The patient underwent complete thyroidectomy and right-sided neck dissection followed by radioactive iodine ablation therapy and suppressive doses of oral thyroxin.

This case highlights the aberrant distribution of Tc99m pertechnetate in the cervical nodes with metastases from follicular thyroid carcinoma.[1,2] Mechanism for this nodal uptake is unclear; however, hypothesis is that there is an increased expression of the sodium iodide symporter (thyroid pump) by the follicular thyroid metastases. SPECT-CT provided the one-stop imaging for functional and morphological characterisation of right thyroid nodule and right-sided neck nodes.

PET-CT was the first hybrid scanner to be introduced into clinical practice with F18-FDG as the most common PET radiopharmaceutical to date. Hybrid SPECT-CT, as compared to PET-CT, has a more widespread impact on nuclear medicine imaging. A wide variety of radionuclide

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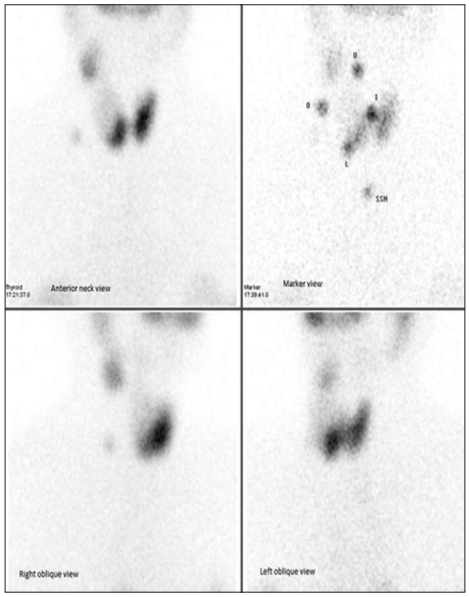

Figure 1: Thyroid scan: Large area of decrease tracer uptake (cold nodule) in the upper pole and mid-region of the right lobe of thyroid gland with two areas of extrathyroidal uptake in the right side of the neck

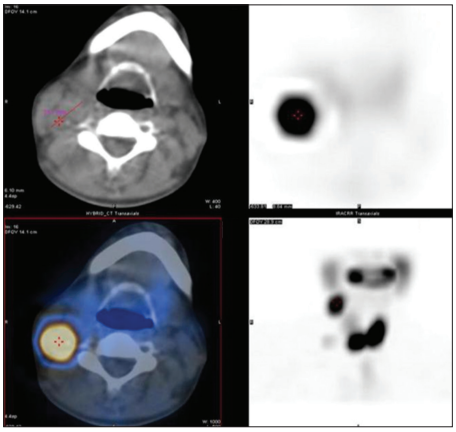

Figure 2: Single-photon emission computed tomography/CT (SPECT/CT): CT axial, SPECT axial, SPECT/CT fusion in axial and SPECT MIP images showing extrathyroidal tracer uptake in the right-sided cervical nodal mass

procedures tend to benefit from improved attenuation correction, lesion localisation and characterisation offered by SPECT-CT. The clinical impact of SPECT-CT is still unravelling as functional and morphological features of pathological findings, across all body systems, are being studied for the 1st time in a simultaneous setting.[3,4]

Conflict of Interest

The authors declare that they have no conflict of interest.

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