Hybrid SPECT/CT Helps Characterization and Localization of a Dual Thyroid Ectopia

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Abstract: The presence of ectopic thyroid tissue in 2 or more different sites is rare. A 12-year-old girl presented with midline anterior neck swelling in the infrahyoid region with subclinical hypothyroidism. Thyroid scanning with $^{99m}$Tc-pertechnetate was performed, and SPECT/CT was ordered for further evaluation. Two hyperdense lesions demonstrating intense radionuclide uptake were seen in the midline at the base of the tongue and infrahyoid neck. We emphasize the role of hybrid SPECT/CT for characterization and localization of suspected ectopic thyroid tissue.

Key Words: dual ectopia, ectopic thyroid, infrahyoid thyroid, SPECT/CT, sublingual thyroid

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REFERENCES


FIGURE 1. A 12-year-old girl presented with anterior midline neck swelling in the infrahyoid region. Clinical examination revealed a small soft-to-firm mobile mass with smooth outlines, moving with deglution. Thyroid gland was not palpable. Thyroid hormonal profile revealed a subclinical hypothyroid state with free triiodothyronine of 3.37 nmol/L (reference range, 0.9–3.0 nmol/L), free thyroxine of 76.75 nmol/L (reference range, 50–140 nmol/L), and serum thyroid-stimulation hormone of 10.14 μIU/mL (reference range, 0.5–5.0 μIU/mL). Neck ultrasound showed solitary solid well-defined hypervascular echogenic mass and failed to localize thyroid gland at its normal site. Thyroid scintigraphy using ⁹⁹ᵐ Tc-pertechnetate was ordered for status evaluation. Planar anterior neck view images with pinhole (A) and low-energy all-purpose collimators (B). Both images showed 2 areas of focal tracer accumulation at the midline; a small superior one close to the mouth floor (A and B, black arrowhead) and a larger more active spot at a lower position (A and B, black arrow), but still this level is above the expected normal anatomical position of the thyroid gland. SPECT/CT imaging was requested for further characterization and localization. The previously described active spots were localized to 2 well-defined, rounded, soft tissue lesions at the base of the tongue (C and D, coronal and sagittal fused SPECT/CT images, white arrowhead) and infrahyoid region (C and D, white arrow). Their high iodine content was hyperattenuating and easily recognizable on the corresponding noncontrast low-dose CT images (E and F, white arrowhead and arrow). The thyroid gland itself could not be visualized at its normal anatomical site. Ectopic thyroid tissue is a rare developmental anomaly seen in only 1 per 100,000 to 300,000 people.¹,² Sublingual ectopia accounts for 90% of patients with solitary site of thyroid ectopia.³ Dual thyroid ectopia is rare.¹,² A total of 43 patients were reported until now; only one of them was detected as having dual thyroid ectopia using a SPECT/CT machine.⁵ In most cases, the first ectopic site is seen at the base of the tongue, and the second is located within the perihyoid region.⁶ However, rare porta hepatis thyroid ectopia has been reported.⁷ Dual thyroid ectopia usually presents with a midline neck swelling or may be asymptomatic. Approximately half of the patients are euthyroid, and the rest may present with manifest or subclinical hypothyroidism.¹,³,⁸ Surgery must be avoided as possible, because the ectopic lesions may be the only functioning thyroid tissue in the body. Accordingly, we emphasize the important role of hybrid SPECT/CT for characterization and exact localization of these abnormalities.