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Radiological Case Report: Thyroid Nodule on Triple Ectopic Thyroid Tissue in a 15-Year-Old Girl

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Abstract:
Ectopic thyroid tissue is a rare congenital anomaly resulting from abnormal thyroid migration during embryogenesis. We present the case of a 15-year-old girl who presented with an anterior cervical mass and intermittent leg heaviness. Imaging studies identified triple ectopic thyroid tissue with an associated TIRADS 3 nodule and mild hypothyroidism. This case underscores the critical role of radiological assessment in diagnosing ectopic thyroid tissue and guiding patient management.

Introduction:
Ectopic thyroid tissue is an uncommon developmental anomaly that occurs due to improper descent of the thyroid gland during embryogenesis. While the most frequent ectopic location is the lingual region, multiple ectopic sites are extremely rare. The diagnosis of ectopic thyroid is often incidental and primarily relies on imaging modalities. This case highlights the significance of radiological evaluation in diagnosing ectopic thyroid tissue and differentiating it from other cervical masses.

Case Presentation:
A 15-year-old girl presented in July 2023 with an anterior cervical mass and intermittent leg heaviness. There was no history of growth retardation, psychomotor delay, childhood irradiation, or familial goiter. The patient exhibited no signs of hemorrhage or compression, such as dyspnea, dysphonia, dysphagia, or superior vena cava syndrome. Clinical examination revealed a soft, mobile, painless mass in the subhyoid region, resembling an “Adam’s apple,” without vascular bruit. No other malformations were noted (Figure 1). Hormonal evaluation demonstrated mild hypothyroidism.

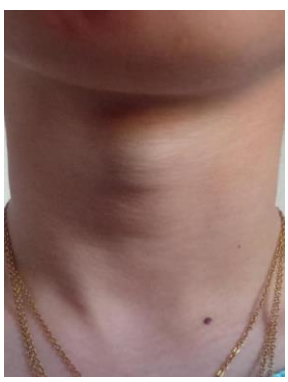

Figure 1: Subhyoid cervical mass

Imaging Findings:

Cervical ultrasound revealed an absent thyroid gland in its normal location and the presence of a subhyoid tissue mass resembling thyroid tissue, which contained a TIRADS 3 nodule (Figure 2). Computed tomography (CT) confirmed the absence of a eutopic thyroid gland and identified three hyperdense masses at the base of the tongue, the subhyoid median region, and the left suprahyoid area. These lesions demonstrated homogeneous contrast enhancement, except for the subhyoid mass, which exhibited heterogeneous enhancement due to the presence of the nodule (Figure3).

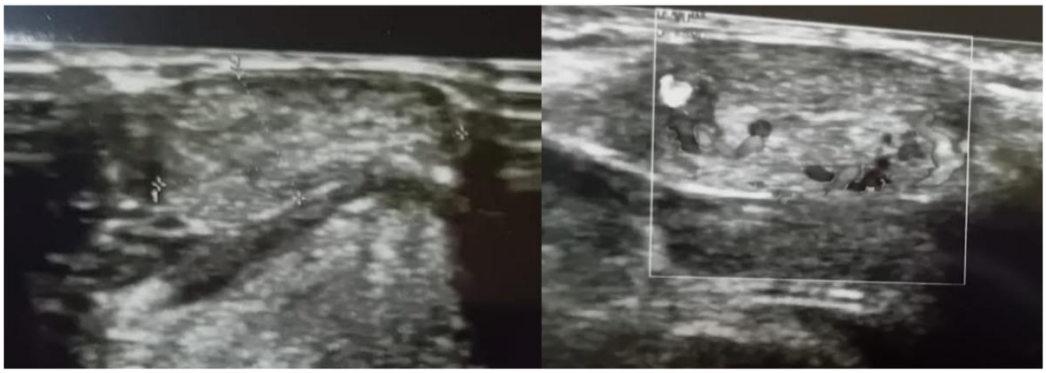

Figure 2: Cervical ultrasound: A subhyoid tissue mass resembling the thyroid gland, containing an isoechoic, well-defined oval nodule with peripheral vascularization, classified as TIRADS 3.

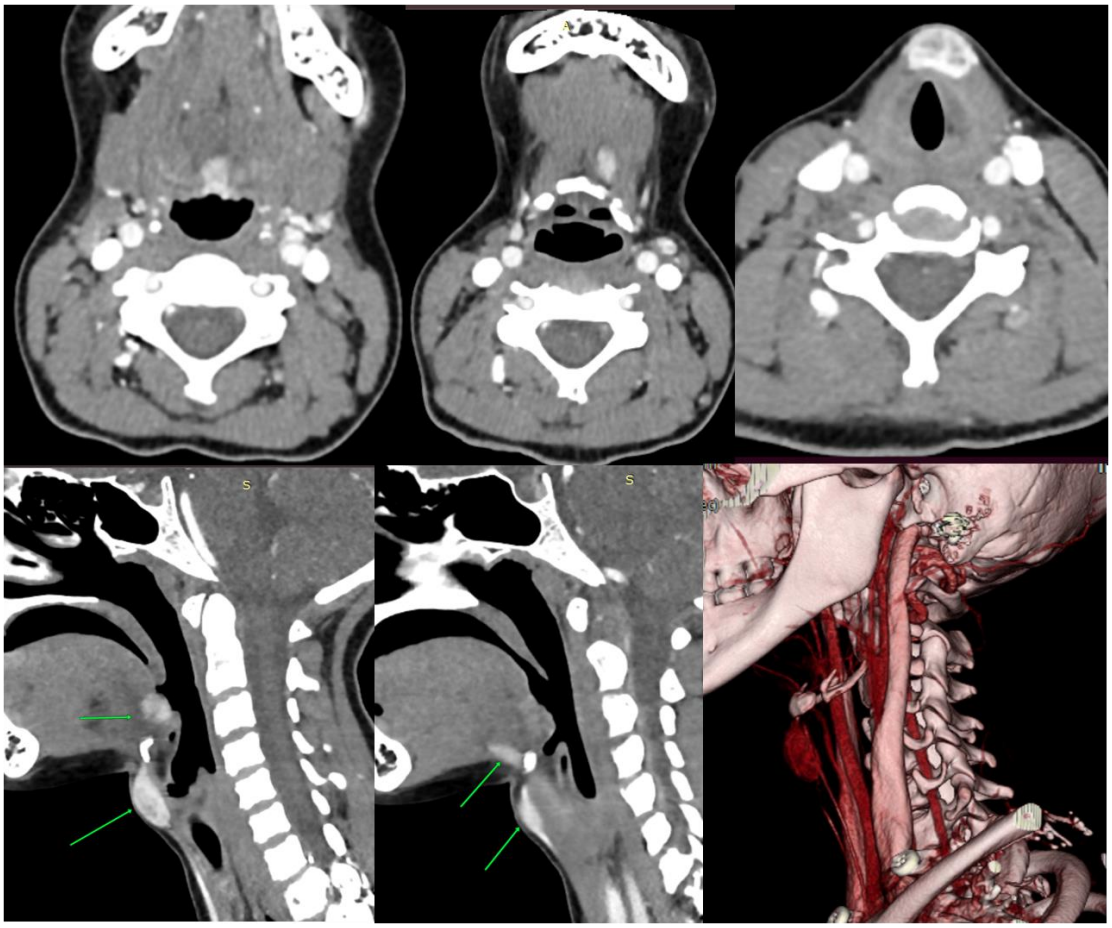

Figure 3: Cervical CT scan with contrast: The scan confirmed the absence of the thyroid gland in its usual location and identified three masses situated at the base of the tongue, in the midline below the hyoid bone, and in the left suprahyoid region. These masses appeared spontaneously hyperdense and showed homogeneous contrast enhancement, suggesting thyroid tissue. However, the subhyoid mass displayed heterogeneous enhancement, corresponding to the previously described nodule.

Diagnosis and Management:

A diagnosis of a thyroid nodule within triple ectopic thyroid tissue associated with mild hypothyroidism was established. Given the family's refusal of surgical intervention, fine-needle aspiration cytology (FNAC) was performed and returned benign results. The patient was initiated on L-thyroxine replacement therapy with regular biochemical and imaging follow-up.

Discussion:

Ectopic thyroid tissue arises due to aberrant migration of the thyroid gland during embryogenesis, most commonly presenting as a lingual thyroid (Guerreiro et al., 2022) [1]. The occurrence of multiple ectopic thyroid foci is exceedingly rare, with an estimated incidence of 1 in 100,000 individuals (Chaudhary et al., 2021) [2]. In cases where ectopic thyroid tissue represents the sole functional thyroid tissue, hypothyroidism is frequently observed (Kumar et al., 2020) [3].

The diagnostic approach to ectopic thyroid tissue relies on radiological modalities, including ultrasound, CT, and MRI (Som et al., 2019) [4]. Ultrasound serves as the primary imaging modality, typically revealing a well-circumscribed, hypoechoic lesion in the absence of normal thyroid tissue in the expected anatomical location (Singh et al., 2018) [5]. The TIRADS classification system assists in risk stratification of thyroid nodules, with a TIRADS 3 designation indicating a low probability of malignancy (Paladini et al., 2017) [6].

CT imaging plays a crucial role in detecting ectopic thyroid tissue and identifying multiple locations. In this case, CT confirmed the absence of the thyroid gland in its usual pretracheal location and demonstrated three separate ectopic thyroid deposits, which exhibited contrast enhancement except for the subhyoid mass, which showed heterogeneous enhancement due to the presence of a nodule (Abdel-Rahman, 2016) [7].

FNAC is a valuable tool in assessing the nature of thyroid nodules in ectopic thyroid tissue, as malignancy is uncommon in such cases (Kessler et al., 2014) [8]. The benign cytology findings in our patient allowed for conservative management with hormone replacement therapy. In cases where the ectopic thyroid tissue is the sole functional thyroid source, L-thyroxine therapy is essential to maintain euthyroidism (Francis et al., 2013) [9].

Surgical intervention is typically reserved for cases involving malignancy, compressive symptoms, or significant cosmetic concerns. Since the patient's primary complaint was cosmetic and FNAC confirmed benign pathology, conservative management with close follow-up was deemed appropriate (Remy et al., 2015) [10].

Conclusion:

This case highlights the importance of radiological imaging in diagnosing ectopic thyroid tissue and evaluating associated thyroid nodules. Awareness of this rare anomaly can help prevent misdiagnosis and unnecessary interventions while ensuring appropriate patient management.

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