

Case-Based Diagnosis Training

Patient: Intrathyroidal thymus with ectopic cervical thymus

Gender: *Male*

Age: *8 years old*

Submitted by:

Z.N. Tekin

Please add pictures (radiograph, ultrasound, CT or MR images) and schematic drawing of the developmental process *if applicable* by clicking on the symbols within the boxes below:

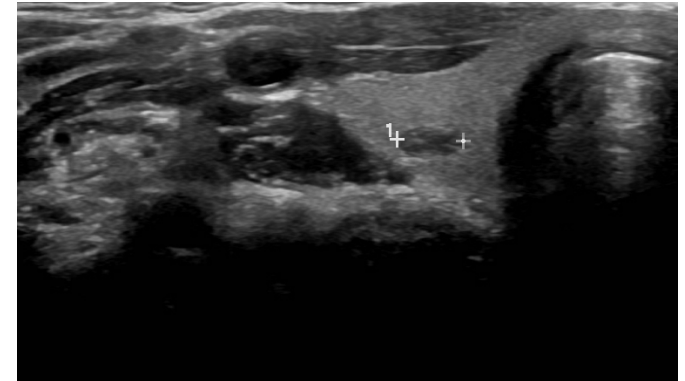
Clinical history and working diagnosis on the referral:

8 year old boy with a palpable left cervical lump presented to the paediatric department of hospital. Laboratory findings were normal. Sonogram of the right lobe of the thyroid shows a well-defined solid lesion with multiple focal internal nonshadowing echogenicities and an angular shape. In addition to intrathyroidal thymus, cervical Ultrasound showed an ectopic thymus located nearby the inferior part of the left thyroid lobe with similar sonographic appearances of the tissues.

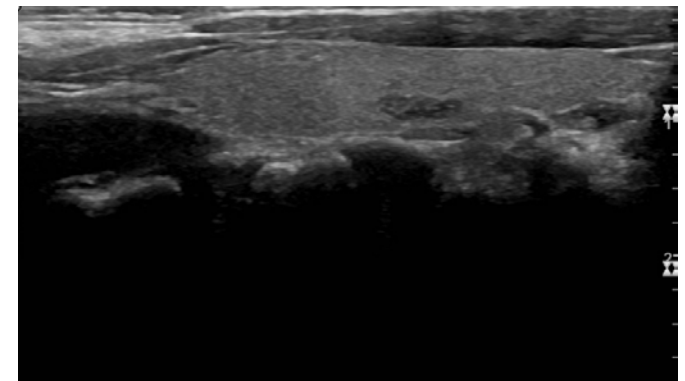
Normal variant:

Intrathyroidal thymus with ectopic cervical thymus

Ectopic and/or accessory thymic tissue may be located anywhere along the path of descent of the thymopharyngeal ducts (e.g. Retrocaval, cervical, posterior mediastinal). If an intrathyroid lesion has sharp margins and an echo texture that matches the thymus, with no abnormal echogenicities in the surrounding thyroid and no abnormal lymph nodes, it can be left alone, with annual sonographic follow-up. If the diagnosis is uncertain based on the sonographic features in a lesion that measures greater than 1 cm in maximum diameter, ultrasound-guided FNA can be considered for confirmation of intrathyroidal thymic tissue. With the combination of characteristic sonographic features and characteristic cytologic findings for intrathyroid thymic tissue, it should be possible to avoid surgical interventions in these patients.



Picture 1: Right intrathyroidal thymus (calipers).



Picture 2: Sagittal sonogram of the right intrathyroidal thymus as an angular shaped solid lesion with multiple focal nonshadowing echogenicities.

Case-Based Diagnosis Training

Additional information

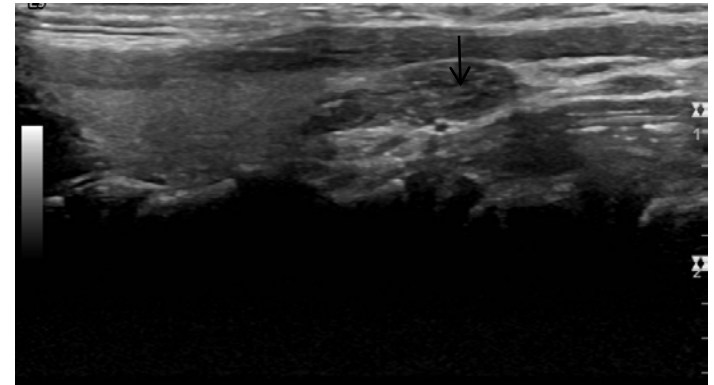
In case you want to submit further pictures, please add these (radiograph, ultrasound, CT or MR images) and schematic drawing of the developmental process *if applicable* by clicking on the symbols within the boxes below:

Underlying step in embryological development:

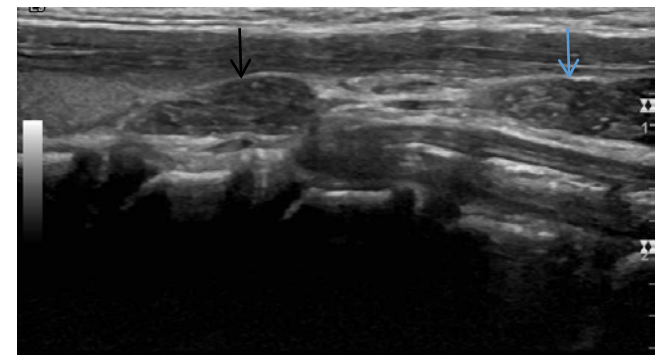
Thymus arises bilaterally from the 3rd, and to a lesser extent 4th branchial pouches starting from the fifth or sixth gestational week. During the seventh week thymic primordia located in the pharynx start their descent medially and caudally. In the eighth week, thymic tissue reaches anterior mediastinum and left and right primordia fuse at their lower poles. Thymus may fail to descend, or even when it descends to anterior mediastinum, there may be thymic remnants at any point along its path. The level of thyroid is the most common site for ectopic cervical thymus, which may be due to the close relationship of the descent of the two organs.

Potential differential diagnostic entities:

An intrathyroidal thymus is a developmental variant is key for accurate identification to avoid false concerns of primary thyroid neoplasia or other thyroid nodules. Accordingly, many patients with intrathyroidal thymic tissue will present with a sonographically discrete mass. Because the echo texture of benign thymic tissue is hypoechoic with punctate echogenicities (which correlate with connective tissue septa and blood vessels), an intrathyroidal thymus might be misclassified as a high risk for malignancy if the echogenicities are mistaken for microcalcifications. Comparison to the normal thymus on sonography is a critical and extremely useful component of the evaluation. As seen in our case, an intrathyroidal thymus has well-defined lesion margins and central punctate echogenicities that are nonshadowing and do not extend into the surrounding thyroid or appear in abnormal cervical nodes. Also cervical thymic tissue has the same sonographic appearance as well.



Picture 3: Sagittal US image of left ectopic cervical thymus (arrow).

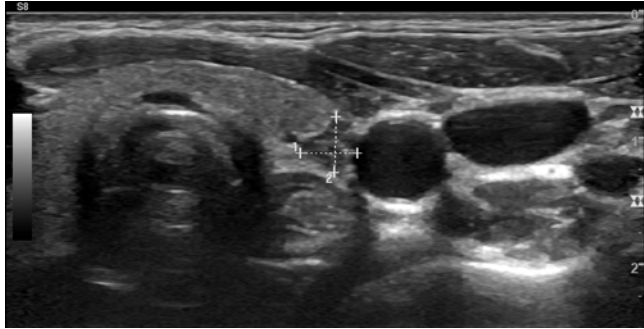


Picture 4: Sagittal US image of left ectopic cervical thymus (arrow) and a normally located thymus (white arrow) showing similar sonographic appearances of the tissues.

Case-Based Diagnosis Training

Additional pictures

In case you want to submit further pictures, please add these (radiograph, ultrasound, CT or MR images) and schematic drawing of the developmental process *if applicable* by clicking on the symbols within the boxes below:



Picture 5: Axial US image of left ectopic cervical thymus (calipers).