Radiology Case Reports 14 (2019) 55–57

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/radcr

Case Report

Ectopic thyroid tissue presenting as a new neck mass in a pediatric patient

Sean Carlson, DO[a,*], *Lauren Campbell, BBA-in training*[b], *Emily Janitz, DO*[b,*]

[a] *Cleveland Clinic Foundation, 9500 Euclid Avenue, Cleveland, 44195 OH, USA*
[b] *Department of Radiology, Akron Children's Hospital, One Perkins Square, Akron, 44308 OH, USA*

ARTICLE INFO

Article history:
Received 17 August 2018
Revised 17 September 2018
Accepted 20 September 2018
Available online 15 October 2018

Keywords:
Ectopic thyroid
Pediatric neck mass
Thyroid

ABSTRACT

Ectopic thyroid tissue is an uncommon, but well-documented condition. We present a case of an ectopic thyroid gland with an atypical presentation as a new neck mass in a 3-year-old female without symptoms of hypothyroidism. Imaging confirmed ectopic thyroid and suggested thyroiditis due to hyperemia and heterogeneity on ultrasound. However, there were no laboratory findings of hypothyroidism. An understanding of anatomy and sonographic features of ectopic thyroid gland allows the radiologist to provide a more accurate differential diagnosis in the setting of a neck mass.

Case report

An otherwise healthy 3-year-old Caucasian female presented for outpatient ultrasound of a new, painless neck mass. Her family had recently noticed a lump protruding in the anterior upper neck. The patient had no significant past medical history. There was a family history of autoimmune disease.

Grayscale and color Doppler ultrasound of the neck was performed on an Acuson Sequoia 512 ultrasound machine (Siemens, Munich, Germany) with a 14.0 MHz probe. There was a $2.7 \times 2.0 \times 1.5$ cm mass in the left paramidline anterior neck at the level of the hyoid bone, which correlated to the palpable abnormality. Mass was heterogeneous, but predominately hyperechoic to adjacent strap muscles, and hypervascular (Figs. 1 and 2). The thyroid bed was scanned. No orthotopic gland was present (Fig. 3). An ectopic thyroid gland was the leading consideration. Confirmation with nuclear medicine thyroid scintigraphy was recommended.

Thyroid scintigraphy was performed 3 days later using technetium 99m pertechnetate. Planar and pinhole images were obtained 15 min after injection. There was a single intense focus of radiotracer uptake in the left paramidline anterior neck corresponding to the soft tissue mass seen on ultrasound (Fig. 4). There was no radiotracer uptake within the thyroid bed, lingual region, or chest. Findings were consistent with ectopic thyroid tissue. Free T4, antithyroglobulin antibody and thyroid peroxidase antibody levels were within normal limits. Thyroid stimulating hormone was upper normal limits (4.577 mIU/L; range: 0.35-5.5 mIU/L). Treatment with levothyroxine (Levothyroid, Forest Pharmaceuticals, St. Louis, MO) was initiated to prevent further enlargement of the protruding gland. After 2 years of follow-up, the ectopic gland had not substantially changed in size clinically. Thyroid function

* Corresponding authors.
E-mail addresses: carlsos@ccf.org (S. Carlson), ejanitz@akronchildrens.org (E. Janitz).
https://doi.org/10.1016/j.radcr.2018.09.018

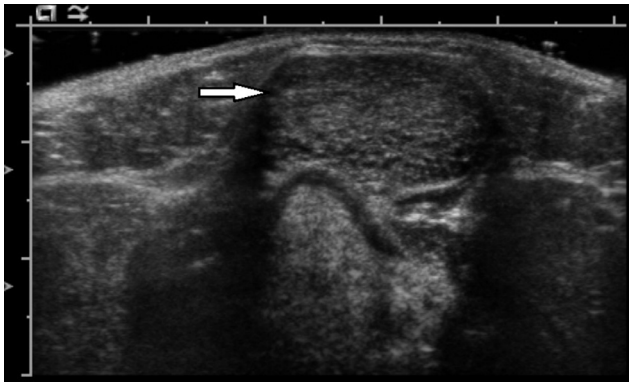

Fig. 1 – Transverse grayscale sonographic image at the level of the patient's hyoid bone revealing a 2.7 x 2.0 x 1.5 cm heterogeneous nodule (white arrow) at the site of palpable abnormality within the anterior neck, centered immediately left of midline.

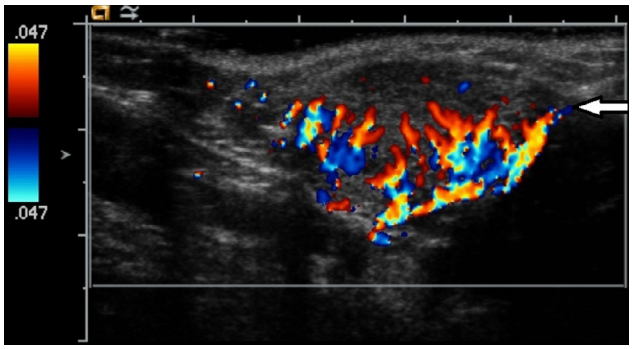

Fig. 2 – Longitudinal color Doppler ultrasound demonstrates increased vascularity of the ectopic thyroid tissue (white arrow).

was maintained and monitored with the patient continuing on levothyroxine.

Discussion

Thyroid dysgenesis, which includes complete absence, ectopy, and hypoplasia, by definition, is a structural abnormality of the gland that results in abnormal thyroid function and is the most common cause of congenital hypothyroidism [1,2]. Once an ectopic thyroid gland is diagnosed, need for lifelong treatment with thyroid hormone replacement is likely, as most have clinical hypothyroidism [3].

Ectopic thyroid is characterized by thyroid tissue in a location other than anterior to the upper tracheal rings. In utero, precursor to the thyroid gland descends from base of the tongue along the midline to infrahyoid neck [4]. The thyroglossal duct persists along this pathway until involuting during gestation [5]. Ectopic tissue can come to rest along this path [4]. Most common location for ectopic thyroid tissue is lingual at the base of the tongue. Lingual ectopic thyroid is the only functioning thyroid tissue in 75% of these cases. Lingual thyroid can be variable in appearance, from rounded to irregular [1]. It has been reported that the ectopic lingual gland can be identified sonographically in children as masses close to the hyoid bone [3]. Other characteristic locations of ectopic thyroid tissue are near the hyoid bone and midline infrahyoid neck [5]. Ectopic thyroid tissue in the lateral neck or mediastinum is rare [1,5,6].

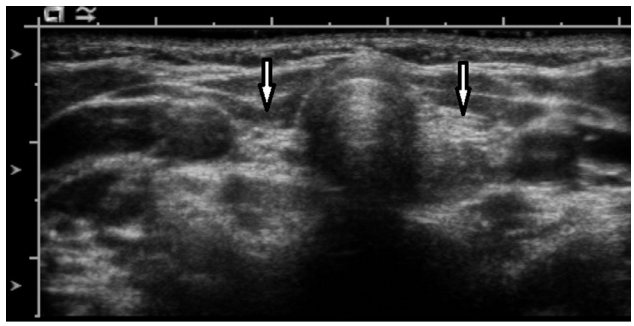

Fig. 3 – Transverse grayscale sonographic image shows no identifiable thyroid tissue in the expected location of the thyroid bed (white arrows) more inferior in the neck.

The most common congenital anomaly related to thyroid development is a thyroglossal duct cyst [5]. Thyroglossal duct cysts also occur along the same path (from base of the tongue at foramen cecum to thyroid isthmus) as failure of closure of the tract with focal fluid accumulation. Typically thyroglossal duct cysts are midline, less commonly paramidline, cystic structures in the infrahyoid neck [4]. They can be deep to or within the strap muscles, but more often splay the strap muscles. Sonographically, thyroglossal duct cyst can have typical cystic characteristics, homogenous anechoic centrally with through transmission, or can appear more complex (pseudosolid) [5], especially if superimposed infection has occurred. Most often there is a normal thyroid gland present in conjunction with a thyroglossal duct cyst; however, on rare occasion, there may be ectopic thyroid tissue elsewhere or in the cyst itself [2].

Ultrasound should be the first line radiologic exam ordered to evaluate a superficial neck mass in the pediatric population [1]. Sonography of any neck mass, especially a midline neck mass, should include targeted evaluation of the thyroid bed with the understanding that the presence of orthotopic thyroid tissue does not exclude the possibility of coexisting ectopic thyroid tissue [6]. On ultrasound, the normal thyroid gland is homogeneous with a slightly greater echogenicity than that of the adjacent strap muscles and demonstrates moderate vascularity [4]. Ectopic thyroid tissue usually has a sonographic appearance similar to orthotopic gland with exception of shape while the orthotopic gland is bilobed, ectopic tissue is variable in configuration [5]. Variable echotexture of the ectopic gland is also reported [3].

In this case, ectopic thyroid was unexpected in a new neck mass of a euthyroid patient. Additionally, the sonographic features of the ectopic gland were more hypervascular and heterogeneous than a normal thyroid gland. This may have represented physiological variation or subclinical or resolving thyroiditis. Also atypical in our case was the absence of

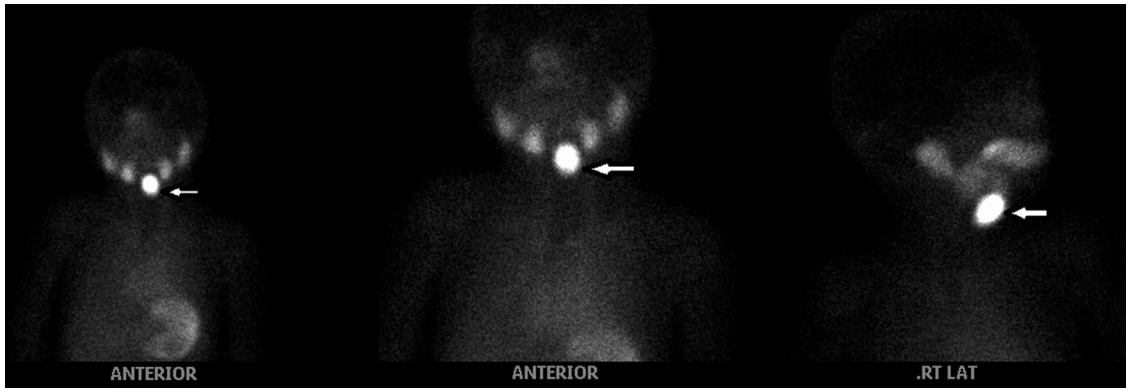

Fig. 4 – Anterior and right lateral views of the head, neck, and chest reveal a single oval focus of radiotracer uptake at the midline anterior upper neck (white arrows). Normal physiological uptake is noted in the salivary glands and stomach. There is no radiotracer uptake within the thyroid bed or chest.

symptoms of hypothyroidism. Imaging of the thyroid bed proved to have the greatest diagnostic utility, revealing lack of orthotopic thyroid gland. Uptake on technetium 99m pertechnetate nuclear medicine imaging confirmed the diagnosis. The heterogeneous gray scale appearance, increased vascularity, and acute enlargement of the ectopic gland by history were suggestive of diffuse thyroid process, such as thyroiditis, although not supported by laboratory values.

One should routinely evaluate the thyroid bed in the sonographic evaluation of neck masses. Ectopic thyroid gland may pose a diagnostic challenge if the thyroid bed was not imaged or if concurrent orthotopic gland is seen particularly in a patient with no laboratory evidence of hypothyroidism. There is a risk of unnecessary anxiety, unsuitable additional testing, and unwarranted surgery unless ectopic thyroid is entertained initially and appropriate confirmatory testing, like nuclear scintigraphy, is pursued.

REFERENCES

[1] Chang Y, Hong H, Choi D. Sonography of the pediatric thyroid: a pictorial essay. J Clin Ultrasound 2009;37(3):149–57.
[2] Williams J, Paul D, Bisset G. Thyroid disease in children: part 1: state-of-the-art imaging in pediatric hypothyroidism. Pediatr Radiol 2013;43(10):1244–53.
[3] Ueda D, Yoto Y, Sato T. Ultrasonic assessment of the lingual thyroid gland in children. Pediatr Radiol 1998;28(2):126–8.
[4] Babcock D. Thyroid disease in the pediatric patient: emphasizing imaging with sonography. Pediatr Radiol 2006;36(4):299–308.
[5] Zander D, Smoker W. Imaging of ectopic thyroid tissue and thyroglossal duct cysts. Radiographics 2014;34(1):37–50.
[6] Sirasanagandla S, Nayak S, Pamidi N. Paramedian ectopic thyroid gland and unusual origin of superior thyroid artery—a case report and review of literature. Erciyes Med J 2017;39(1):37–9.