

Hemiagenesis of Left Thyroid Lobe: Ultrasonography Findings and Review of the Literature

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ABSTRACT

Thyroid hemiagenesis is a rare congenital anomaly. Most of the patients diagnosed have an associated thyroidal disease. Ultrasonography (US) is the first radiological choice for diagnosis of thyroidal disease. In this report we described US and scintigraphy findings of a left thyroid lobe hemiagenesis in a female adult and review the literature in relation to this case; discussed the problems associated with this unusual congenital anomaly.

Key words: Thyroid hemiagenesis, ultrasonography, scintigraphy

ÖZET

Tiroid Sol Lob Hemiagenезisi: Ultrasonografi Bulguları ve Literatürün Gözden Geçirilmesi

Tiroid hemiagenезisi nadir görülen konjenital bir anomalidir. Olguların çoğu eşlik eden bir tiroid hastalığı ile tanınır. Ultrasonografi, tiroid hastalıklarının teşhisinde başvurulacak ilk radyolojik modalitedir. Biz bu yazıda, yetişkin bayan olguda saptanan tiroid sol lob hemiagenезisinin ultrasonografi ve sintigrafi bulgularını sunduk ve bu nadir konjenital anomali ile ilgili literatürü gözden geçirip eşlik eden patolojileri tartıştık.

Anahtar Sözcükler: Tiroid hemiagenезi, ultrasonografi, sintigrafi

Thyroid hemiagenesis, absence of one lobe of the thyroid gland, is a rare variant of thyroid congenital abnormalities. Most patients with this condition are often asymptomatic and usually discovered coincidentally during the evaluation of unrelated thyroid disorders. The exact prevalence of thyroid hemiagenesis is unknown and it is often associated with hyperthyroidism.

Ultrasonography (US), computed tomography (CT) and magnetic resonance imaging (MRI) can be use to diagnosis of this condition but US is the enough radiological method for diagnosis (1). We present US and scintigraphy findings of a left thyroid lobe hemiagenesis in an adult female patient with a silent course and review of the literature and also discuss the problems associated with this unusual congenital anomaly.

CASE REPORT

A 24 years old female was admitted to the hospital with headache and nervousness. Her own medical history and physical examination results were non-remarkable. Her family history revealed previous thyroid surgery of the mother but she has not thyroid surgery. Because of suspicion of hyperthyroidism, thyroid function tests and thyroid US were planned simultaneously. Thyroid function test revealed, serum free T3: 2.55 pg/ml (N: 1.8-4.6), free T4: 1.19 ng/dl (N: 0.93-1.71), TSH: 0.884 uIU/ml (N: 0.27-4.2), of which were within normal ranges. On the thyroid US examination (Figure 1), right thyroid lobe was measured 18x23x36 mm,

and isthmus was 4 mm. Parenchyma with homogenous appearance. No cystic or solid mass nodular formation was noted on the thyroid. The left lobe was not detected. Doppler US (Figure 2) and three-dimensional ultrasound (3D US) (Figure 3) was also performed. Scintigraphic examination of the thyroid gland (with Tc-99 m pertechnetate) revealed homogenous uptake of the tracer in the right lobe and isthmus while no uptake was present in the left thyroid lobe. The case was diagnosed as left lobe hemiagenesis of thyroid.

The patient was referred for further evaluations to reveal possible cause of the headache and nervousness complaints, since the case was asymptomatic in terms of thyroid functions and laboratory findings. So the diagnosis of left lobe hemiagenesis of thyroid is appeared incidentally.

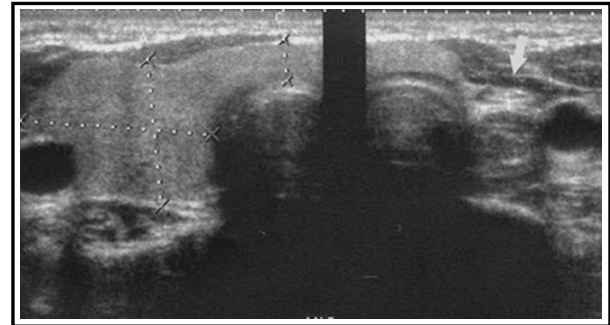


Figure 1. Thyroid US shows the right lobe and isthmus in normal size and homogenous appearance of parenchyma but no appearance of parenchyma in the left lobe (arrow).

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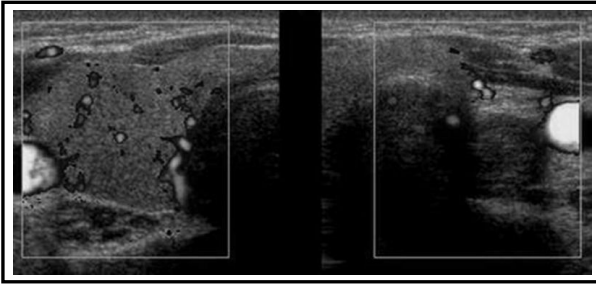


Figure 2. On Doppler US, vascular structures are not evident in the left side.

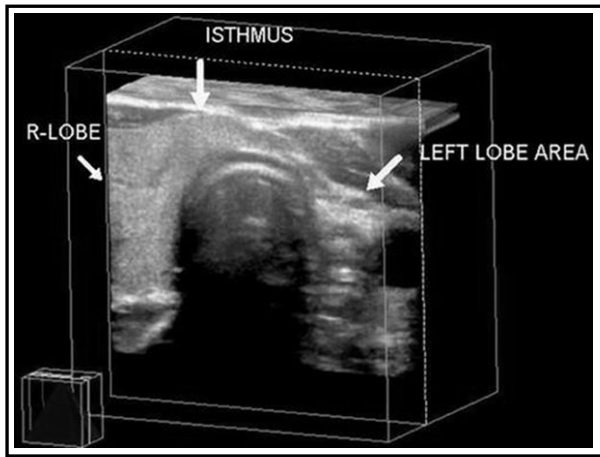


Figure 3. The 3D-US image of the thyroid gland shows parenchyma of the left lobe is not seen (arrows).

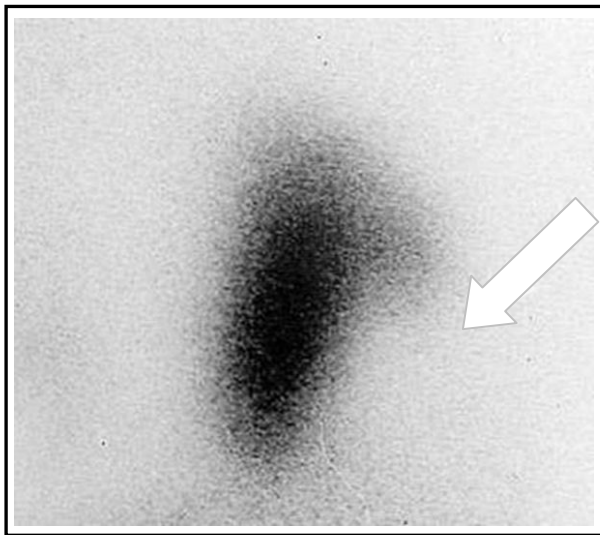


Figure 4. At scintigraphy with ^{99m}Tc pertechnetate shows the normal contrast uptake of the right lobe and no contrast uptake on the left lobe area (arrow).

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DISCUSSION

The rare variant of thyroid congenital abnormality, thyroid hemiagenesis refers disorders in which one thyroid lobe fails to develop or regress. This abnormality usually involves the left lobe of the thyroid gland (1). Because of most patients do not have any signs or symptoms thyroid disease, the true prevalence of thyroid hemiagenesis is not known. However, reports estimate prevalence at between 1:1900 and 1:2675. (2). Reported cases indicates that absence of the left lobe is more common (about 80% of the cases) and the isthmus was absent in 44-50 % of cases. In our case the left lobe was absent. The etiology of thyroid hemiagenesis is not clearly known. Aberrant thyroid migration and genetic component involving mutations in this or in several genes that are known to control thyroid morphogenesis/migration has been suggested (3).

Thyroid hemiagenesis is usually is associated with a variety of thyroid abnormalities, including Graves disease (4), chronic lymphocytic thyroiditis, subacute thyroiditis (5) nodular goiter (2), hyper functioning adenoma, primary or metastatic carcinoma and rarely with hypothyroidism (6). Our case was asymptomatic.

The diagnosis of thyroid hemiagenesis is based upon ultrasonography in most patients, as ultrasound is commonly available, cheap and easily employed technique, which also has been found efficient for the diagnosis of thyroid hemiagenesis. CT, MRI and scintigraphy are also useful in diagnose thyroid hemiagenesis but as they are more expensive and time demanding with no superiority to ultrasonography in diagnose thyroid hemiagenesis.

3D-US provides additional detailed diagnostic information compared to the 2D-US. The recent introduction of three-dimensional ultrasound (3D US) and advances in computer technology has provided better image resolution, acquisition and storing. With many advantages the volume sonography is to become routine imaging technology to clinical practice provided an advance in imaging technology. This technique allows simultaneous demonstration of 3 orthogonal planes. With this technique entire volume of anatomy can be reconstructed in any plane and this presents significant advantage for diagnosis and geometric measurements. Thus, 3D-US combines the relatively low cost, ease and convenience of conventional ultrasound with the advantage of obtaining unlimited planar reformatted sections (7, 8).

In conclusion, in our case, hemiagenesis of thyroid is discovered incidentally when patient are evaluated for other disorder and confirmed literature knowledge about diagnose and localization. True diagnosis of this rare silent abnormality with efficient imaging methods is of importance to save the patients from unnecessary surgery and iodine therapy and also US is a useful and reliable method for evaluating and detecting thyroid abnormalities.

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