ECTOPIC THYROID

IN RELATION OF TWO CASES

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Embryologically the thyroid gland derived from three primary sources. Endodermal diverticulum in the area of foramen caecum in the midline of the base of the tongue appears on the third week of gestation between the first and second pharyngeal pouches, later migrating to the neck until it reached its final position. Will result in most of the functioning thyroid tissue. In the seventh week, and on its location prelaryngeal receives the fusion of two lateral masses of cells derived from the fourth pharyngeal pouches, with an inconstant process.

Give rise to the parafollicular C cells and 1-30% of total thyroid weight. At that time the thyroglossal duct has begun to atrophy. Remnants of thyroid tissue along the migratory route of the main diverticulum leading to the formation of thyroglossal duct cysts may be present anywhere from the foramen caecum to the area prelaryngeal through the hyoid bone. 1

The failure of embryonic migration produces clinically ectopic thyroid without functional thyroid tissue in normal cervical position in most cases. The presence of ectopic thyroid tissue from the lingual location, has also been described in other locations such as the midline of the neck near the hyoid bone, trachea, esophagus, and even carrying it away as liver, heart and diaphragm. 2

The pathogenesis remains unknown. It is postulated that maternal antithyroid immunoglobulins can stop the decline glandular and predispose the patient to poor thyroid function life. 3

The clinical incidence varies between 1: 3,000 and 1: 10,000 lingual thyroid being the only functioning thyroid tissue in 70% of cases. The incidence of congenital hypothyroidism in developed countries is 1 / 3500 newborns. Approximately 70% of patients have hypothyroidism and between 2 / 3 and 3 / 4 of symptomatic patients have no other functional thyroid tissue. The ectopic tissue is the most common cause of permanent congenital hypothyroidism and its most common position is the tongue. Described a high incidence of thyroid disease in family members of patients with lingual thyroid. The presence of ectopic thyroid tissue is 3 or 4 times more common in women than in men, although some authors estimate that the proportion may be as high as 7:1. 4

The most common cause of permanent congenital hypothyroidism are thyroid dysgenesis in 80 to 90% and based on the scan and ultrasound are divided into:

**Pure agenesis:** the absence of thyroid gland

**Hypoplasia:** When the gland is at its normal location but small.

**Ectopias:** encompass glands whose position is not normal, that is when the thyroid gland is heterotopic. 2
Generally presented embryonic thyroid tissue, mature thyroid tissue or a combination of both. Ectopic thyroid tissue is at greater risk of malignant degeneration compared with the thyroid gland. The presence of carcinoma in ectopic thyroid tissue is extremely rare being approximately 1%. Most reported cases are follicular carcinomas, occurring more frequently in the third decade of life.\(^3\)

### CLINICAL CASE

**Case 1:** A 3 years 5 months old girl whose mother visit the Pichincha Clinic because about 2 years ago a relative of the patient notices the presence of a mass in the anterior upper neck, of approximately 1 cm. This lymph node was rated by a physician. The mass was increased in size, and it is most noticeable about 2 cm. Semi-hard consistency, regular edges, mobile. For this reason goes to HBO where it was diagnosed cervical tumor mass after additional studies. The patient is in good general health and nutrition. Weight and size are age-appropriate. Imaging studies were requested as Ultrasound, calling attention the absence of thyroid tissue in its usual location and the presence of pretracheal mass in the sublingual region homogeneous hypoechoic appearance with two lobes of 1.6 and 1.5 cm. Figure 1. In the CT hyperdense mass was solid, homogeneous, and the application of contrast proved important enhancement. Figure 2 and 3 (A, B, C)

By the find laboratory studies of thyroid hormones were realized:

- **FT4**  1.16 V.N: (0.9-1.9) ng / ml
- **TSH**  55.62 V.N: (0.85-6.5) from 1 to 6 years.

The scan performed with 99m-Tc showed a round mass, corresponding to THYROID TISSUE, is located in an ectopic position, immediately below the left submandibular gland saliva and the central upper portion of the neck ending ectopic thyroid gland, submaxillary. Figure 3 (C).

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**Figure 1.** Case 1. Ultrasound of sublingual lobulated mass that measures 1.5 to 1.5 cm, is solid hypoechoic, homogeneous.

**Figure 2.** Case 1. Simple Multi Slice CT sublingual mass, note the hyperdensity of it.
**Figure 3. Case 1.** A. Multislice CT contrasting neck stage, demonstrating significant sublingual mass uptake. B and C. 3D reconstructions of the sublingual region note the hyoid bone and the adjacent mass. D. Scintigraphy with Tc 99 showing uptake of radioisotope in the region demonstrating sublingual ectopic thyroid tissue.

**CASE 2:** Children 3 years 3 months old boy who came to the Metropolitan Hospital- Quito with his parents by the presence of a small rounded mass in the submentonian region, painless, mobile, noticed 1 year ago. The physician said that the mass corresponds to swollen glands and prescribed medication without improvement, cataloging the picture as chronic persistent lymphadenopathy. Weight and height were appropriate, on the 50th percentile. Ultrasound was requested without thyroid tissue found in the pretracheal region and observing the presence of mass in the sublingual region with appearance of isoeccénico homogeneous...
routed 1.7 x 1.8 cm. (Figure 4). In the CT the mass is homogeneous, hyperdense, well-defined, phase contrast was not performed. (Figure 5 A and B) Laboratory studies revealed:

FT4 0.89 VN. (0.9-1.9) ng / dl
TSH 81.82 VN. (0.85-6.5) from 1 to 6 years

In the thyroid scan with Tc 99m NaPertechnetate was observed tracer concentration in the midline sublingual level, rounded morphology with well-defined edges, consistent with ectopic thyroid gland sublingual location. (Figure 5 C). Was also conducted in this patient a Scintigraphy with I\textsuperscript{131} observed at 24 h after oral administration of radioiodine tracer concentration in the sublingual region, midline of similar feature observed in the study with Tc, there is no concentration in other locations are also tracking chest. It was concluded that the finding was ectopic thyroid. (Figure 5D).

**Figure 4.** Case 2. A. Ultrasound of the pretracheal region is not identified in the thyroid gland. B. Ultrasound of neck at the level of the anterior midline rounded mass which identifies isoecogénica, homogeneous of 1.7 x 1.8 cm.
Figure 5. A. Single Phase Multi Slice CT in showing soft tissue mass hyperdense sublingual. B. 3D reconstruction. C. Tc $^{99}$m scintigraphy shows radiotracer concentration in the midline sublingual level, rounded morphology with well defined edges. No similar features observed in images of the neck or other locations. D. scintigraphy with Radioactive iodine 131 demonstrated radiotracer concentration in the sublingual region, midline of a similar feature observed in the study with Tc, there is no concentration in other locations, is also screening chest. Compatible with thyroid gland.

DISCUSSION

The lingual thyroid is a rare congenital anomaly of thyroid development resulting from the absence of decrease of the same from the foramen caecum to its location prelaryngeal. Usually presents as a submucosal nodule at the base of the tongue. Thyroid hormones have an important clinical significance in the development of this child for both the clinician and the nuclear medicine physician and the radiologist should be aware at the time of diagnosis. The thyroid gland appears around the 3 to 4 weeks of gestation as epithelial proliferation in the floor of the pharynx between the tuberculum impar and the dome (hipobranquial eminence), then corresponds to the blind hole. Descend past the pharyngeal gut as a bilobed diverticulum. During migration, the gland is attached to the tongue by a small bore tube, the thyroglossal duct then becomes massive and disappears at the seventh week. The gland descends in front of the hyoid bone and laryngeal cartilages, to the front of the tráquea. Any alteration in the normal descent of the gland, causing an ectopic location. It is located anywhere from the base of the tongue in the midline to the epiglottis or in the mediastinum, heart, lung, etc. The most common location is the sublingual (90%). 70% of cases present with hypothyroidism in some cases can be started during pregnancy or puberty. Depend on the location and tumor size. If the thyroid is lingual small, located in the thickness of the tongue may be asymptomatic. When located in the back of the tongue can produce dysphagia, pain at the base of the tongue, hoarseness, dysphagia, ulceration, bleeding, cough, etc. In intralaringea location is less common, can cause coughing, dyspnea, stridor, obstruction of the airway. The physical examination depends on the location, if this is sublingual presents a mass of the midline, firm,
elastic variable diameter. At the lingual location isfrecuent a tumor often red or pink, vascular appearance, smooth or lobulated. The diagnosis is made by laboratory studies should be obtained serum TSH, free T4 and T3. A TSH below 10 mU / L is normal, 10-50 mU / L is necessary repeat the test, a result greater than 50 mU / L disease (hypothyroidism). As Image may be indicated the ultrasound, computed tomography, magnetic resonance imaging and scintigraphy with I $^{131}$ y Tc $^{99}$m. You can also use fiber optic laryngoscope. It is not suggested Fine Needle Aspiration for the important tissue vascularity. Surgical treatment is suggested in case of large mass obstructing the oropharynx, hemorrhage and malignant (follicular Ca for high TSH stimulation) recommended resection plus treatment with L-thyroxinein replacement dose. In asymptomatic cases, monitoring is suggested and for hypothyroidism, the replacement therapy (L-thyroxine).

CONCLUSION

Ectopic thyroid is a rare clinical entity but is potentially underdiagnosed. Should be suspected in patients with midline masses in the neck and back of the tongue for early diagnosis and treatment.

BIBLIOGRAFÍA


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