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RESEARCH ARTICLE

ACQUIRED HYPOTHYROIDISM AND ECTOPIC LINGUAL THYROID TISSUE

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ABSTRACT

The presence of ectopic thyroid tissue is a rare entity. The non-gland migration occurs in the early stages of embryogenesis to your normal cervical location. Thus, the ectopic tissue lodges in general in the path of the thyroglossal duct, in the middle line of the neck. The most common location is in the lingual zone, being called a lingual thyroid. This, in most cases will be asymptomatic. However, it is able to manifest itself with symptoms of dysphagia, dysphonia, obstruction of upper airways or hemorrhage at any moment between childhood and adulthood. We present a rare case of lingual thyroid in a man of 43 years, when hormonal tests were normal, however scintigraphy confirmed the diagnosis associated with surgical pathology, which revealed nodular goiter hyperplastic ectopic in association with lymphocytic thyroiditis type Hashimoto's thyroiditis. This article is a review of this disease, targeting mainly the conduct, still very controversial in world literature.

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INTRODUCTION

The ectopic thyroid was first described by Hickmam in 1869, being defined as any thyroid tissue not found in their usual topography. The clinical incidence varies between 1:3000 and 1:100000, constituting in 70 to 100% of the occurrences, the only thyroid tissue is available (Sevinç *et al*., 2010). More common in women, with an incidence of 4:1:00 pm for men. Is the main cause of hypothyroidism in children, accounting for 52% of dysgenesis thyroid disease (Klubo-Gwiezdzinska *et al.*, 2011). The presence of ectopic thyroid gland at the base of the tongue, referred to as lingual thyroid, is a rare congenital anomaly resulting from the incomplete descent of the gland during embryogenesis (Kumar *et al.*, 2013). Microscopic quantities are found in up to 10% of the population, however only 0.01% of these patients will have thyroid volume enough to make them symptomatic. As well as the thyroid normal location, the ectopic tissue will be subject to any thyroid pathology such as goiter or neoplasia (Ravishankaran *et at*., 2013). 90% cases of ectopic are lingual thyroid. Displays two peaks, to age 12 and 50 years of age (Amani *et al*., 2012). However, the age range of occurrence is quite broad, ranging from 6 to 74 years. 70 the 80% of patients do not have functional thyroid tissue elsewhere, plus 33% of them being with hypothyroidism. However, most will be euthyroid and a few euthyroid with hyperthyroidism (El Amine and Kamel, 2013). The main differential diagnoses are: hemangioma of tongue, thyroglossal duct cyst, dermoid cyst, lipoma, lymphadenopathy, lymphangioma, cystic hygroma, besides neoplasms (Stoppa-Vaucher *et al*., 2010). However, the malignant transformation is rare and is usually diagnosed after surgical excision of the lesion, the Histopathological examination, through being the most papillary carcinomas or mixed carcinomas (Deshmukh *et al*., 2011). The lingual thyroid, although rare, clinically should be a relevant diagnostic hypothesis in the differential diagnosis of tumor

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structure medians of the base of the tongue. Seems to be more prevalent in the general population than the rare paintings reported to believe, being misdiagnosed, since it expresses, in necropsy studies, an incidence of 10% (Noussios *et al*., 2011). By having a large number of therapeutic options available and few studies in the area, its treatment still could not be consolidated. So, this review aims to throw light on this little discussed in Medical Academy, in addition to promoting an update about the new treatments for this disease (Prado *et al*., 2012).

CASE REPORT

Male patient, 43, was referred for evaluation tumor in the tongue base. Oroscopy seen a midline tumor base the tongue of submucosal aspect, measuring about 2,5cm (Figure 1). They were requested thyroid scintigraphy - which showed ectopic lingual uptake midline (Figure 2). Function tests thyroid (TSH and free T4), which were normal. Started suppression with exogenous thyroid hormone in the volume reduction of trial glandular for further surgical planning. The patient was reevaluated after six months of treatment, with little reduction of goiter with partial improvement of symptoms. Five months later, the patient underwent total thyroidectomy with cervicotomy suprahyoid and removal of the wolf right at the base of the tongue and the left lobe (Figure 3). The report of clinical pathology revealed nodular goiter hyperplastic ectopic in association with lymphocytic thyroiditis type Hashimoto's thyroiditis (Figure 4) and ectopic tissue side was not as metastatic neoplastic disease. The patient was maintained in hormone replacement, evolving satisfactorily.

Figure 1. Tumor base the tongue of submucosal aspect

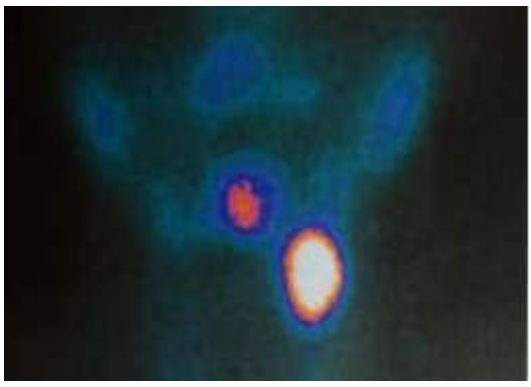
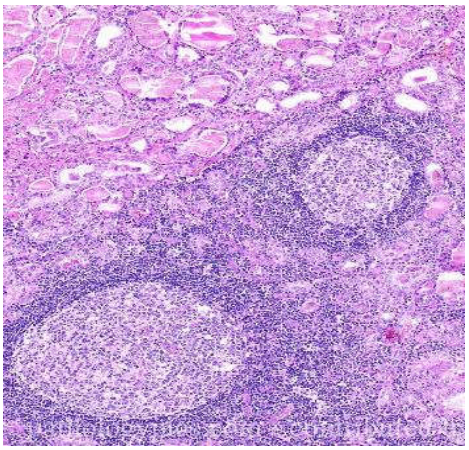


Figure 2. Thyroid scintigraphy showed ectopic lingual

Figure 3. Surgical specimen



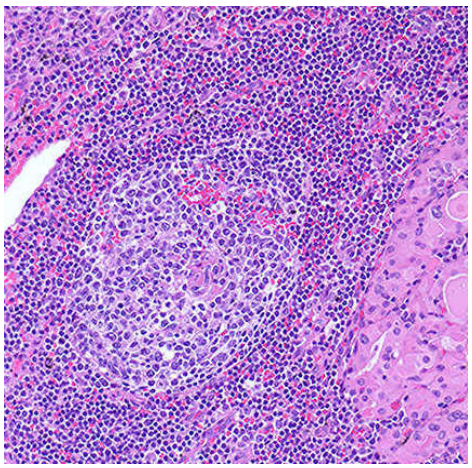


Figure 4. Clinical pathology revealed nodular goiter hyperplastic ectopic in association with lymphocytic thyroiditis type Hashimoto's thyroiditis

Methods

Consists of a literature review in the databases PubMed, Medline, Scielo, Lilacs and Scopus, using descriptors: ectopic thyroid, lingual thyroid, lingual goiter, robotic surgery, transoral surgery and Hashimoto thyroiditis. We included articles published between 2006 and 2016.

Pathophysiology

Ectopic thyroid tissue is the result of abnormal migration of the thyroid gland from the foramen caecum to its final pre-tracheal

position. It may be found in the midline anywhere from the base of the tongue to the porta hepatis (McCoul and de Vries, 2009). Together with thyroid agenesis and hypoplasia, thyroid ectopy is classified as thyroid dysgenesis (Dutta *et al*., 2013).
Thyroid embryonic development occurs between the third and the seventh week of pregnancy, originating on the floor of the pharynx of primitive and migrating earlier and inferiorly until it reaches its final location in the medial and anterior neck, just below the cricoid cartilage (Gopal *et al.*, 2009). The ectopic thyroid is triggered by failure to complete or incomplete tissue migration during this period, and can be located at any point between the blind foramen and caudal part of the neck (Zackaria *et al*., 2010). Consequently, the most common locations are in lingual region, sublingual, prelaryngeal and substernal. Accommodation at other sites outside this path were also reported, as in superior mediastinum, pericardial sac, heart and malik (Nakajima *et at.*, 2010). The most common presentation between the thyroid is lingual ectopic, which usually is situated between the circumvallate papillae and the epiglottis, blind foramen. Its pathogenesis is not completely understood, however, it is speculated that maternal antibodies anti-thyroid hamper the descent of thyroid tissue during embryogenesis (Pellini *et al.*, 2013). Hypothyroidism could be justified by the same mechanism. Genetic changes and family history were also correlated to the origin of the frame (Prisman *et al.*, 2015). Lingual thyroid is not commonly associated with anatomically at parathyroid, because the latter have an embryonic origin distinct from the dorsal wings of third and fourth pharyngeal pouches (Teo *et al*., 2013).

Clinical presentation and diagnosis

The lingual thyroid should always be investigated to find if tumor structure at the base of tongue, for it is the benign mass more often found in the union of 2/3 to 1/3 previous back of tongue. The majority of patients with lingual thyroid is asymptomatic but obstructive symptoms, related to mass effect, and bleeding as well as congenital hypothyroidism have been observed (Byrd and Duvvuri, 2013). Because it is often asymptomatic, is usually diagnosed by chance or in the study of clinical hypothyroidism. Will be symptomatic usually in situations where there is hypertrophy of the gland by increasing the metabolic needs, which will be stimulated by the excess of the hormone TSH (thyroid stimulating hormone) (Park *et al*., 2013). Between the peaks of incidence of the disease, two are characteristic, the childhood and the adolescence. In childhood, will be detected to investigate delays in growth or in neuropsychomotor development, caused by hypothyroidism common to pathology. Female patients predominated in all reported series, ranging from 75% to 89% of the cases (Howard *et al*., 2014). Although there may be other thyroid tissue present, in approximately 70% of cases, the lingual thyroid is the only functioning thyroid tissue (Gandhi *et al*., 2016). Ectopic thyroid tissue may be the site of development of a colloid goiter, hypo or hyperthyroidism, adenoma, or even carcinoma. An ectopic thyroid tissue not clinically apparent may become evident when such a pathological condition develops in it. The overall prevalence of hypothyroidism in lingual thyroid varies in different series, between 14.5% and 33% (Cappelli *et al*., 2006). Adult patients with lingual thyroid may present with hypothyroidism. However, features of cretinism are then usually absent implying that the ectopic tissue has secreted adequate thyroid hormone during childhood, thus preventing the development of cretinism and leading to the diagnosis of hypothyroidism later in life (Rabiei *et al*., 2010).

Puberty will be diagnosed as a result of symptomatic manifestations related to the obstruction of the oropharynx, studying with dysphagia, dysphonia, dyspnea, bleeding, pain, feeling of fullness in throat or obstructive sleep apnea. In the newborn, obstructive symptoms occur, there is stridor. In cases of goiter, the main concern is a potential serious obstruction of the upper airways (Cunningham *et al*., 2011).
Other situations also correlated to signs of thyroid hypertrophy, which strut asymptomatic, are the States of metabolic stress, such as pregnancy, trauma, surgery, infections, menstruation and menopause (Terris *et al*., 2010). This explains why the lingual thyroid have a higher prevalence in women. Ectopic gland in most cases will provide minimally adequate hormone levels throughout childhood, without causing cretinism (Gotlib *et al*., 2015). However, with time, will lose the production capacity, being disabled to respond to situations of increased metabolic demands, and hypothyroidism. In the present case local complications were absent, but there was an hypothyroidism so replacement with thyroxine was not the only treatment required. It may be emphasized that in any primary adult hypothyroidism, careful examination also of the base of tongue is necessary even if oropharyngeal symptoms are lacking (Magalhães *et al*., 2015).
The initial physical evaluation language includes the thyroid full clinical examination of the head and neck, with special attention to the oropharynx as lingual thyroid often arises as a formation of submucosal aspect in sessile language basis, median, painless, soft, smooth or irregular surface, highly vascularized and red colored color (Ersoy Callıoglu *et al*., 2015).

The rigid and/or flexible endoscopy allows photo-documentation of the size and position of the lesion, allowing the observation of the larynx and the disposal of other hypotheses, such as cysts of vallecula, hemangiomas and hypertrophy of lingual tonsil. The cervical palpation is essential to search for the presence of thyroid cervical tissue, are not present in general, as has been seen previously. Thus, the clinical diagnosis with the preview directly or with pasta on base red colored laryngoscopy (Pellini *et al.*, 2013). Because of its great food, even trauma vascularization can ulcerate the ectopic tissue, determining copious bleeding. These will offer serious danger to life, by the risk of pulmonary aspiration for the airways (Nakajima *et al*., 2010). To evaluate the diagnostic criteria, besides the history and physical examination, some additional tests will assist the differential diagnosis, being the study of essential image for final confirmation. The most relevant in this regard will be the mapping with radioactive iodine and technetium^{99} in bone scans, both showing result of marking the level of the mouth (Gandhi *et al*., 2016). The first is the most sensitive and specific test for the detection of the existence, size, distribution and activity of ectopic tiroideu fabric and the presence or absence of thyroid gland in its usual location. The second is less specific, but with better cost benefit and is also able to provide important information

(Deshmukh *et al*., 2011; Dutta *et al*., 2013). As in general there will be the absence of tissue in the cervical region, these will be essential exams preoperatively. Avoiding, whenever possible, the total resection of the sole producer of tissue thyroid hormones, what would the patient do hormone replacement for the rest of his life (Terris *et al*., 2010). Computed tomography and magnetic resonance imaging are complementary diagnostic methods useful in determining the size of the gland and in surgical planning. Sagittal reconstructions will be important in the case of large volume, assessing the depth within the language and air permeability (Prado *et al*., 2012).

The ultrasound would differentiate cystic changes and have low cost, but still has a bad role set forth in this pathology, no studies to support its use. The FNA (fine needle aspiration) can also confirm the diagnosis and preoperative examination is the only that can differentiate benign from malignant lesions (Sturniolo *et at*., 2016). However, we cannot rule out malignancy in the absence of malignancy puncturing. The definitive diagnosis often is only possible with the ectopic tissue excision [18-20]. In addition to these reasons, the biopsy is also indicated for many authors the high risks of hemorrhage, infection and acute thyrotoxicosis observed puncture (Gonciulea *et al*., 2014). Thyroid function tests are also essential in the initial investigation, due to the high line with hypothyroidism, because the hormone produced by the topical is normal, but often insufficient. They do often increased TSH values and thyroglobulin, and neighboring values or reduced by T3 (triiodothyronine) and T4 (thyroxine) (Meng *et al*., 2014; Guerra *et al*., 2014).

Treatment

There is no consensus in the literature about the best therapeutic strategy, given the rarity of the disease and to the limited number of cases described. Treatment depends on the size, the presence or absence of symptoms and complications like ulceration, hemorrhage, malignancy or obstruction of the upper airway (Chawla *et al*., 2007). The fact of ectopic thyroid or may not be the only functional thyroid tissue must also be valued to determine the therapeutic approach. The main objective will be to relieve the obstruction of upper airways without putting the patient's life at risk or leave you with scars mutilating (Howard *et al*., 2014). Asymptomatic cases can be monitored with serials exams or receive hormonal therapy with levothyroxine aimed at treatment of subclinical hypothyroidism. In addition to treating hormone levels of hypothyroidism, exogenous hormones could cause a suppressive action in gland, reducing its size or preventing a rear hypertrophy. The goal of this treatment would be to suppress the production of TSH, removing the incentive to increase the volume of ectopic gland. This will also be the initial approach of symptomatic patients (Park *et al*., 2013).
However, such treatment does not have a good success rate. The size reduction speed is very slow, not to expect significant decreases in volume. Many patients get only the laboratory control, without modification of significant size. Still it is important to note that this therapy can induce acute thyroiditis and sialoadenitis (Teo *et al*., 2013).
Patients treated with hormone suppression should do clinical and laboratory control every 3 months. This time interval can be shortened in predictable situations of increased metabolic demand, such as puberty or pregnancy (Kumar *et al*., 2013).
In patients without clinical conditions to be undergoing surgery, those who refused surgical treatment or those in which anatomical difficulties has contraindication the procedure, one can consider treatment with radioactive iodine 131. However, the reduction of thyroid tissue is not consistent, the behavior of the fabric is still unpredictable, and there are descriptions of ectopic tissue that may need higher doses of radioactivity to the ablation. In these cases there is fear to induce radio-induced tumors. So, is completely contraindicated in women of childbearing age and children (Nakajima *et at*., 2010). As long as you do not get an adequate response to clinical treatment, the method of surgical thyroidectomy is so preferred. Other indications for surgery are on the basis of urgency: dysphonia or dysphagia, dysphonia important with decreased nutritional intake, suspicion of malignancy, cystic degeneration, uncontrolled hyperthyroidism and repetitive or severe bleeding. Some authors recommend the total thyroidectomy for the possibility of malignant transformation of the lesion (Noussios *et al*., 2011). However, even more experienced hands, total excision of ectopic thyroid tissue is extremely difficult, regardless of the approach. Remaining scraps of fabric, this will again hypertrophy if replacement is not appropriate or cannot be performed transplantation of tissue removed (Prisman *et al*., 2015). The ectopic tissue autograft tries to avoid hypothyroidism and the replacement with levothyroxine for the rest of his life. If this tissue is grafted or not able to prevent states of hypothyroidism, the fact is hard to predict, which if successful, would prevent the need for replacement therapy. The location for deployment of the fabric is not important in the survival of the same, and the abdominal rectus muscle used most commonly for easy access. It is expected some degree of hypothyroidism first four months postoperatively, but should not be given hormone therapy in order to prevent the failure of the graft (Terris *et al*., 2010). Ensure preoperative airway is crucial, especially in cases of significant obstruction, being achieved through nasotracheal intubation or tracheostomy. The greater the mass, or the laryngeal edema by excessive handling, more prudent will be conducting temporary tracheostomy or, alternatively, keep the nasotracheal intubation for 24 hours after the surgery (Magalhães *et al*., 2015).

Several surgical approaches have been described, including the trans-hioideas pathways, supra-hioideas, and cervical faringotomy. However, these procedures are largely noninvasive and have high morbidity, leaving large numbers of functional and aesthetic consequences, in addition to the time of hospitalization and recovery period (Meng *et al*., 2014). Alternatively, a transoral approach offers the advantage of not leaving scars. Most of the cases described in the literature was excised by transoral. The challenge, however, is the difficulty of intraoperative visualization with the naked eye or microscope ectopic thyroid resection of the lesion with a laser and standard surgical instruments. The lack of support of the long surgical instruments and the straight line generated by the laser are the main factors cited to justify this complexity. Another great aggravation of the technique is the

control of the intra operative bleeding, and may put the patient's life at risk (Teo *et al*., 2013). Thus, various modifications of the technique were introduced, with the aim of improving exposure, such as incision and opening of the language and of the chin and mandibulotomy. However, some of the reported complications were extensive necrosis of the language, pharyngeal-cutaneous fistula formation and cervical tissue contamination with saliva. Are overly aggressive approaches to the treatment of an injury initially benign (Deshmukh *et al*., 2011). The emergence of transoral robotic-assisted surgery allowed a minimally invasive approach with a larger view of the surgical field and three-dimensional. The endoscopic arm that allows this view base language properly (Byrd and Duvvuri, 2013). This system allows the surgeon to employ bi-manual technique, controlling both arms instrument, besides enabling the inclusion of a better wizard and handling tissue retraction. The greater dexterity and range of motion promoted by robotic equipment allow multiplanar sections within a confined space, due to the flexibility of the neck. These advantages provide a shorter operating time and blood loss, resulting in a surgery easier, fast and safe for the patient, including the largest, stretching after the vallecula (Park *et al*., 2013; Howard *et al*., 2014).

Conclusion

Lingual Thyroid is a rare congenital anomaly usually asymptomatic, however, when too long causes obstructive symptoms, having your recommended treatment. The approach suppressive hormone should be first line but, in cases of bankruptcy, or if the clinical situation so warrants, the total surgical excision is indicated. The studies evaluated showed great preference for transoral approach, being robotic with the best results in safety, causing minimal morbidity, faster recovery and shorter hospital stay. Only a proper diagnosis of cervical masses can lead to a correct therapy, avoiding iatrogenic. We recommend performing a thyroid scan not only when TSH levels are suppressed, but also in all hypothyroid patients, especially when ultrasound investigation shows a small thyroid tissue and replacement with thyroxine was the only treatment required. Finally, it may be emphasized that in any primary adult hypothyroidism, careful examination not only of the neck but also of the base of tongue is necessary even if oropharyngeal symptoms are lacking.

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