

IMAGING FINDINGS IN LINGUAL THYROID: APROPOS OF TWO CASES

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Lingual thyroid is a developmental anomaly caused by undescended thyroid tissue at the base of the tongue. In the majority of patients, the lingual thyroid is the only functioning thyroid gland tissue. Therefore early diagnosis with imaging techniques is clinically important to avoid permanent hypothyroidism following surgical removal. Imaging findings of this entity have previously been reported. Although varying degrees of contrast enhancement have been described, the most frequent presentation is a smoothly shaped enhancing mass at the base of the tongue. We present two cases of lingual thyroid in order to emphasize the wide spectrum of radiological findings encountered in this rare developmental anomaly.

Key Words: Lingual thyroid, MRI, CT

LİNGUAL TİROİDDE GÖRÜNTÜLEME BULGULARI: İKİ OLGU HAKKINDA

Lingual tiroid, tiroid bezinin kısmi ya da tam göç etmemesine bağlı ortaya çıkan gelişimsel bir anomalidir. Olguların çoğunda lingual tiroid tek işlev gösteren tiroid dokusudur. Bu nedenle tanısı, cerrahi sonrası kalıcı hipotiroidizmin önlenmesi açısından önemlidir. Lingual tiroidin görüntüleme bulguları literatürde bildirilmiş olup en sık tanımlanan dil kökünde düzgün konturlu kontrast tutulumu gösteren kitle lezyonu şeklindedir. Amacımız bu nadir gelişimsel anomalide karşılaşılabilecek geniş radyolojik bulgu spektrumunu iki olgu ile vurgulamaktır.

Anahtar Kelime: Lingual tiroid, MR, BT

INTRODUCTION

Lingual thyroid is a developmental anomaly caused by undescended thyroid tissue at the base of the tongue. Lingual thyroid is found predominantly in females and comprises 90% of ectopic thyroid tissue (1). In the majority of patients, the lingual thyroid is the only functioning thyroid gland tissue. Therefore early diagnosis with imaging techniques is clinically important to avoid permanent hypothyroidism following surgical removal. Imaging findings of this entity have previously been reported (2). We present two cases of lingual thyroid in order to emphasize the wide spectrum of radiological findings encountered in this rare developmental anomaly.

CASE REPORT

Case 1

A 28-year-old female presented with a 5-month history of progressive dysphagia. On physical examination a round, reddish mass occupied the posterior oropharynx, on the midline, at the base of the tongue. Laboratory tests including free T3, free T4 and TSH were within normal limits. Computed tomography (CT) and ultrasound (US) failed to demonstrate the normal thyroid gland in its usual location. CT revealed a smooth shaped mass with central cystic areas measuring 3 cm in diameter that showed intense contrast enhancement (Fig. 1a). A technetium pertechnetate (Tc-99m) thyroid scan showed isotope uptake at the base of the tongue with no activity at the expected site of the normal thyroid (Fig. 1b). The patient was diagnosed with lingual thyroid and referred to the ear, nose and throat (ENT) department for appropriate treatment.

Case 2

An 8-year-old male presented with a history of mild dysphagia to solid foods. Upon physical examination a smooth, rubbery mass at the midline of the tongue was noted. Laboratory tests including free T3, free T4 and TSH failed to reveal any pathological findings. In consideration of the patient's age a CT examination was not performed. Magnetic resonance imaging (MRI) and US failed to demonstrate the normal thyroid gland in its usual location. MRI depicted a round mass 2 cm in diameter, showing low signal intensity on both T1 and T2 weighted images (Fig. 2a, 2b). Following intravenous contrast administration no enhancement was detected. On the Tc-99m scan, the base of the tongue showed isotope uptake with no activity at the normal thyroid gland location (Fig. 2c). Based on these findings the patient was diagnosed with lingual thyroid and referred to an ENT clinic for appropriate treatment.

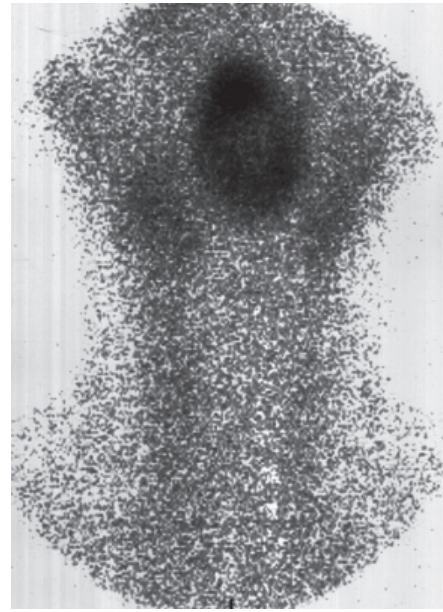
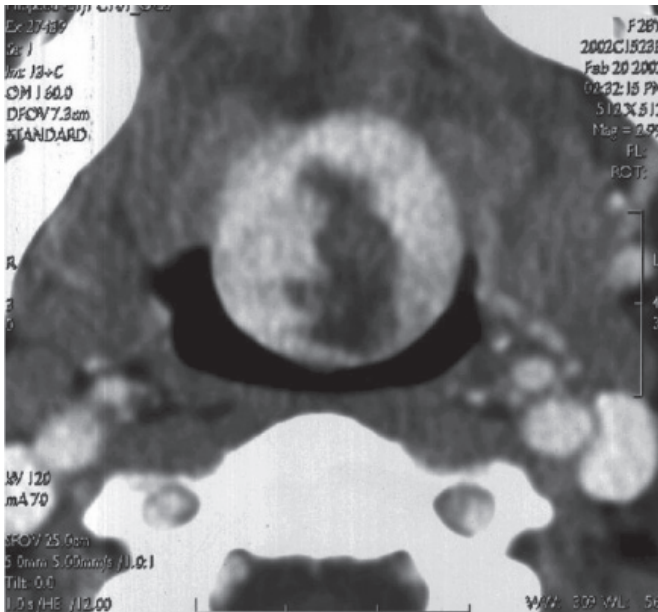


Figure 1: Contrast enhanced CT image in the axial plane (a) reveals a round mass at the base of the tongue with central cystic areas showing marked enhancement. On a Tc-99m scan (b) high isotope uptake, typical of lingual thyroid, is noted at the same location.

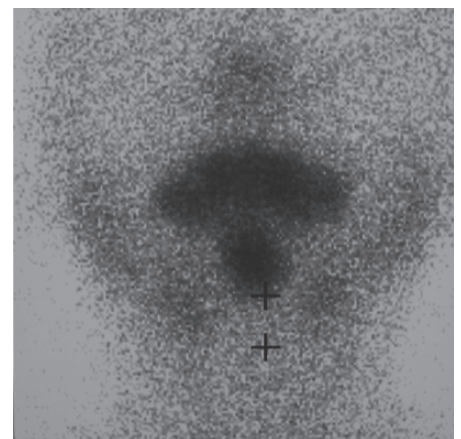
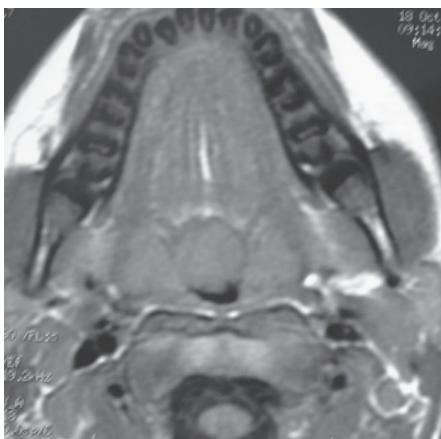


Figure 2: T1-weighted magnetic resonance images in the axial plane, before (a) and after (b) intravenous contrast injection, show a non-enhancing round mass at the base of the tongue. On a Tc-99m scan (c) high isotope uptake is noted at the same location, pointing to a lingual thyroid.

DISCUSSION

Based on their final resting position in the upper aerodigestive tract, ectopic thyroid glands are categorized in 4 general groups: lingual, sublingual, thyroglossal and intralaryngotracheal (3,4). Lingual thyroid is the most common type and comprises 90% of all ectopic thyroid tissue (1). Lingual thyroid is found in approximately 1 in 100,000 people with a marked female predominance (female to male ratio 4:1 to 7:1) (3,4). Symptoms and signs are largely related to size and consist of dysphagia, dysphonia and dyspnoea. The majority of symptomatic lingual thyroid glands occur during puberty, pregnancy or menstruation (5).

Imaging of lingual thyroid has previously been described (2,6-9). Lee reported that the lingual thyroid, like the normal gland, shows high attenuation on CT and high signal intensities on both T1- and T2-weighted magnetic resonance images due to the presence of iodine, and exhibits marked contrast

enhancement (8). Takashima, in his study including 5 lingual thyroids, reported that ectopic glands appeared as iso- to hyperintense on T1, and low to intermediate signal on T2 weighted images, with slight to fair contrast enhancement (5). Although MRI was not available, the first case described in this paper showed typical CT findings of lingual thyroid with strong contrast enhancement. On the other hand, the second case exhibited a well-defined mass with low signal intensity on all imaging sequences and showed no enhancement following contrast administration. In the literature, non-enhancing parts of a lingual thyroid have been reported and attributed to necrotic or goitrogenous areas, associated with altered thyroid functions (8). In the above-presented case, laboratory findings pointed to euthyroid status with a homogeneous parenchymal signal pattern, and therefore cannot explain the non-enhancing character of the ectopic gland. Although imaging findings were not typical in this patient, a potential diagnosis of lingual thyroid was made when US and MRI failed to demonstrate the

normal thyroid gland in its usual location. The final diagnosis was made possible with an intense uptake at the lesion location with a Th-99m scan. Therefore, we assumed that contrast enhancement is not always correlated with the function of the lingual thyroid.

In conclusion, lingual thyroid has a wide range of imaging findings including a well defined mass of variable signal intensity and attenuation on MRI and CT respectively, with no to fair contrast enhancement. Therefore, a non-enhancing mass does not rule out the possibility of a lingual thyroid. A high scintigraphic uptake remains the confirmative test and helps avoid biopsy in equivocal cases.

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