

An intrathyroidal nodule consisting of papillary thyroid cancer and ectopic hyperechoic parathyroid adenoma: a case report

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Abstract

A 53-year-old woman with fatigue lasting for 6 weeks and increased parathormone level underwent a neck ultrasound. It revealed a large, lobulated, solid intrathyroidal nodule consisting of hypoechoic component with microcalcifications and hyperechoic component with vascularity on Doppler mode. There were also subcentimetric intrathyroidal hypo- and hyperechoic nodules. Upon the diagnosis of papillary thyroid cancer on fine-needle aspiration biopsy, a total thyroidectomy procedure was performed. In the histopathologic evaluation, the hypoechoic component was diagnosed as papillary thyroid cancer, while the hyperechoic component was diagnosed as ectopic parathyroid adenoma. Subcentimetric nodules were demonstrated as multifoci of papillary thyroid cancer.

Keywords: adenoma; ectopic; papillary thyroid cancer; parathyroid; ultrasound

Introduction

Thyroid nodules are found in approximately 50% of the adult population and the rate of malignancy accounts for up to 10% in young adults [1,2]. The most common malignant tumor type is papillary thyroid cancer (PTC), which is typically seen as a hypoechoic, solid nodule with irregular margins and microcalcifications on ultrasound (US) [3]. PTC may be either uni- or multifocal [4].

Intrathyroidal non-thyroidal tissues such as parathyroid, thymus and lymph nodes may accompany the

thyroid nodules [1]. Although rare, parathyroid glands or tumors may be demonstrated in the thyroid gland and the incidence of ectopic, intrathyroidal parathyroid gland accounts for 0.2% in an anatomical series study [5]. They are typically hypoechoic and hypervascular on US [6]. In this report, we present a case with a nodule consisting of PTC and ectopic, hyperechoic parathyroid adenoma in the thyroid gland and other foci of PTC appearing as unsuspecting for PTC on US, which to the best of our knowledge has not been reported previously.

Case report

A 53-year-old woman was admitted with fatigue lasting for 6 weeks. Physical examination was unremarkable. Laboratory analysis showed increased parathormone level; 95.3 pg/mL (normal range, 15-65 pg/mL).

Subsequent neck US showed a lobulated, solid, 16x14x9 mm nodule containing both a hypoechoic component with microcalcifications and a hyperechoic component in the right lobe of thyroid (fig 1a). In the hyper-

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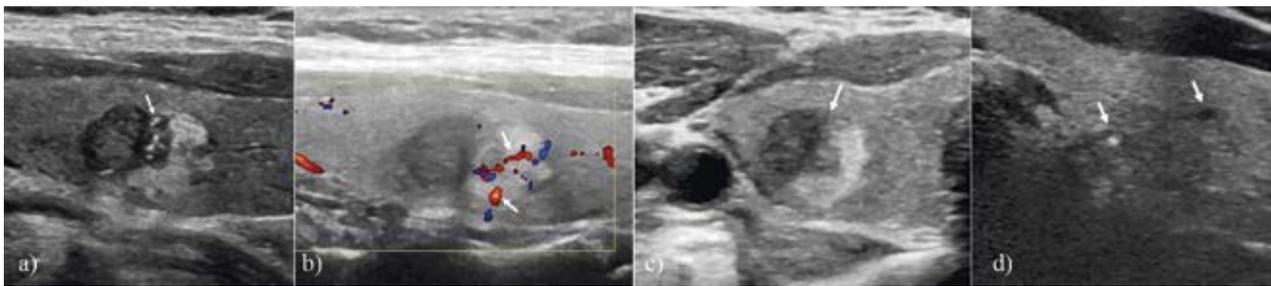


Fig 1. Longitudinal ultrasound image (a) shows a lobulated, solid, 16x14x9 mm nodule in the right lobe containing a hypoechoic component with microcalcifications (arrow) consistent with papillary thyroid cancer and a hyperechoic component. Longitudinal color Doppler sonogram (b) showing vascularities (arrows) in the hyperechoic part of the lesion consistent with parathyroid adenoma. On transverse sonogram (c), the nodule consisted of two distinct components with a yin-yang appearance (arrow). Subcentimetric hyperechoic and hypoechoic nodules (arrows) are also demonstrated on the transverse sonogram (d), which were found to represent additional PTCs in the histopathologic evaluation.

echoic component, vascularity was detected on Doppler US (fig 1b). The hypoechoic component along with the hyperechoic component resembled a yin-yang appearance (fig 1c). In addition to this dominant nodule, there were a few small hypoechoic and hyperechoic nodules measuring less than 2 mm in the left lobe of thyroid, and some of them were benign-looking cysts (fig 1d). There was no parathyroid lesion in routinely expected parathyroid localizations on US.

Fine-needle aspiration biopsy of the hypoechoic solid part with microcalcifications demonstrated a PTC. Following total thyroidectomy procedure, the macroscopic specimen of the nodule in the right lobe revealed the lesion containing both PTC and parathyroid adenoma (fig 2a) and histopathologic specimens of the nodule in the right lobe revealed a PTC measured 10 mm and an ectopic parathyroid adenoma measured 10 mm (fig 2b). The multiple, millimetric nodules in the left lobe revealed small foci of PTC. Parathormone level decreased to 5.3 pg/mL one day after surgery.

Discussion

There have been no reports regarding an intrathyroidal nodule consisting of PTC and ectopic parathyroid adenoma with unusual US findings. In our case, an intrathyroidal nodule consisting of these 2 different entities (ectopic parathyroid adenoma as hyperechoic tumor and multifocal PTC accompanied to this nodule) was detected.

Thyroid nodules, mostly seen in women are very common and account for approximately 50% of the population [2]. They can be either symptomatic or asymptomatic and US comes forward with its advantages, such as effectiveness, low cost, and high accuracy rates in the evaluation of thyroid. PTC, the most common type of thyroid cancer has a prognosis with a 20-year survival

of 90–95% [3,7]. Although most of them are unifocal, multiple PTC foci can be also seen with remarkable rates [4]. A patient with a dominant thyroid nodule suspicious for PTC on US and two distinct, cystic thyroid nodules measured smaller than 5 mm was previously reported, and these small nodules appearing as not suspicious for PTC on US, were found to be as other PTC foci in the histopathologic evaluation [4]. Similarly, our patient had a dominant thyroid nodule suspicious for a typical PTC and multiple, millimetric thyroid nodules in the left lobe, which seemed unsuspecting for PTC on US, but found to be as other PTC foci in the histopathologic evaluation.

Apart from thyroid nodules, non-thyroidal tissues such as parathyroid, thymus, salivary gland, uncommon cysts, lymph node and metastasis can be completely embedded in the thyroid, and most of these ectopic non-thyroidal tissues appear as predominantly hypoechoic on US [1,8,9]. In the differential diagnosis of thyroid nodules, this wide spectrum of the lesions should be always considered.

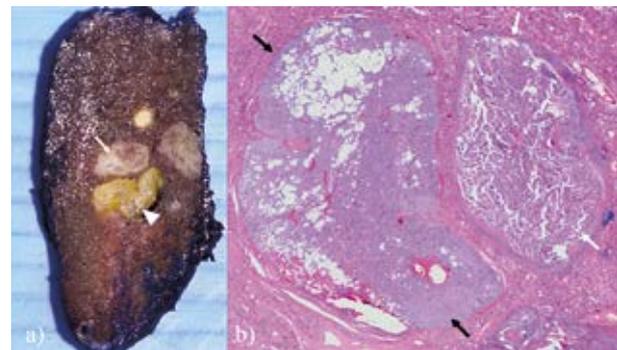


Fig 2. Macroscopic image (a) showing papillary thyroid cancer (arrow) and parathyroid adenoma (arrowhead) and histopathologic specimen (b) shows papillary thyroid cancer (white arrows) and parathyroid adenoma (black arrows).

Parathyroid glands or tumors are mostly located in the retrothyroid location at the level of the cricothyroid junction. However, they may be also ectopic and reveal atypical US features. Parathyroid lesions are typically hypoechoic on US and a polar vessel which is characteristic for parathyroid lesions can be seen in the periphery of the lesion [6]. In our case, vascularity was prominent in the hyperechoic component of the nodule which could suggest a parathyroid lesion due to the hypervascular nature of parathyroid lesions. However, the hyperechoic appearance was an atypical US finding in our case. An occurrence of a parathyroid gland and a unifocal PTC in the same thyroid lobe was previously reported [9]. Different from this study, our case had a parathyroid adenoma, which appeared as a component of an intrathyroidal nodule consisting of both PTC and parathyroid adenoma. Additionally, unlike the typical, expected hypoechoic structure, the adenoma was hyperechoic on US, and multifocal PTC was also present in our study.

In summary, we reported a case with a nodule consisting of both PTC and ectopic, hyperechoic parathyroid adenoma in the right lobe of thyroid and multifocal PTC in the left lobe of thyroid. Intrathyroidal non-thyroid tissues such as parathyroid adenoma should be considered in the differential diagnosis of a nodular appearance in thyroid, and some key factors including vascularity pattern and possibility of variable echogenicity may help in diagnosis. The foci of PTC should be considered in some unsuspecting nodules for PTC on US, in case a suspicious nodule for PTC on US is present.

Conflict of interest: none

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