Case Report

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Concomitant Bilateral Papillary Thyroid Carcinoma and Parathyroid Adenoma

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ABSTRACT

Thyroid malignant neoplasms are the most prevalent cancer of the endocrine system, and their concurrence with parathyroid neoplasms is extremely rare. We report a 69-year-old woman presenting with hypercalcemia and thyroid nodule, which histologic examination revealed bilateral papillary thyroid carcinoma with different variants coincident with parathyroid adenoma. Awareness of concomitant parathyroid and thyroid diseases may help manage patients with hypercalcemia history. So, we recommended a preoperative calcium check in a patient with a thyroid nodule.

Introduction

Thyroid malignant neoplasms are the most prevalent cancer of the endocrine system; however, they are rarely seen internationally [1, 2]. The rapid growth of its case numbers has been reported in recent years in many countries likewise Iran [3-6]. Besides, few studies have estimated that bilateral thyroid carcinoma occurrence accounts for a significantly low proportion of thyroid carcinomas [7, 8]. The incidence of primary hyperparathyroidism is estimated at 0.1% in the general population, mainly in multiple endocrine neoplasias (MEN types I and IIa) [9].

Despite several reports regarding synchronous non-medullary thyroid carcinoma and parathyroid hyperplasia, the presence of parathyroid adenoma with papillary

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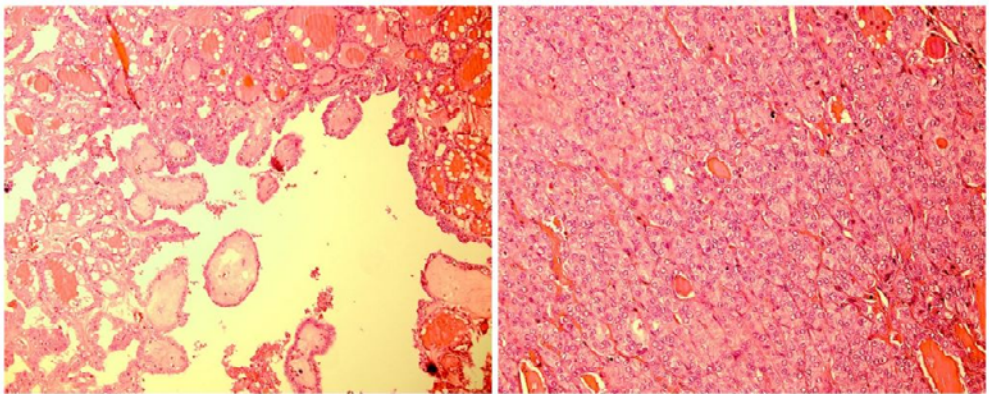

Figure 1. Histologic examination revealed papillary thyroid carcinoma, classic variant (right), and papillary thyroid carcinoma, follicular variant (left) (H&E, x400)

carcinoma is extremely rare [10]. Here we further report a sporadic concurrence of bilateral papillary thyroid carcinoma with parathyroid adenoma to raise awareness about cervical mass.

Case Presentation

A 69-year-old woman presented in the Department of Surgery in Sina Hospital in Tehran in Iran with a 3 months history of painless left cervical mass. She experienced any dyspnea, hoarseness as well as dysphagia either. The patient's family history and past medical history were unremarkable.

A physical exam showed an asymmetric enlarged thyroid gland without palpable lymph nodes. Left thyroid lobe sonography revealed a solid-cystic hetero-echoic nodule measuring 51x20x2 mm. Right thyroid lobe sonography showed a well-circumscribed solid hypoechoic nodule sized 6x3mm. A cystic lesion with internal septa was also found during cervical sonography measuring 38x38x47 mm in the right thoracic inlet. Fine Needle Aspiration (FNA) from the left thyroid lobe nodule was done, and its cytology findings were suggestive of Papillary Thyroid Carcinoma (PTC).

A thyroid scan showed a multinodular goiter pattern in radioactive iode absorption, and the Sestamibi scan was negative. An abdominal CT scan showed no lesions on both sides of the Adrenals. The preoperative biochemical profile revealed increased serum calcium (13.9 mg/dl) and parathyroid hormone (PTH) level (7.5 pg/ml), a decrease in serum phosphorus level (2.6 mg/dl), and calcitonin level (3.5 pg/ml). After all, surgery was planned, and the left thyroid lobe was sent to the pathology laboratory in a new state for intra-operative investigation. Frozen sections also reconfirmed foci of PTC without any capsular invasion. So, total thyroidectomy and right thoracic inlet mass resection was performed. The received specimen for pathology examination consists of two separate thyroid lobes which right lobe measuring 6x3x2cm and the left lobe measuring 4x2.5x2cm. One piece of brownish tissue measuring 4x2x1cm and weighing 8 grams is also received. Histological examinations revealed PTC, a classic variant in the left lobe, and PTC, a follicular variant in the right lobe (Figure 1). Right

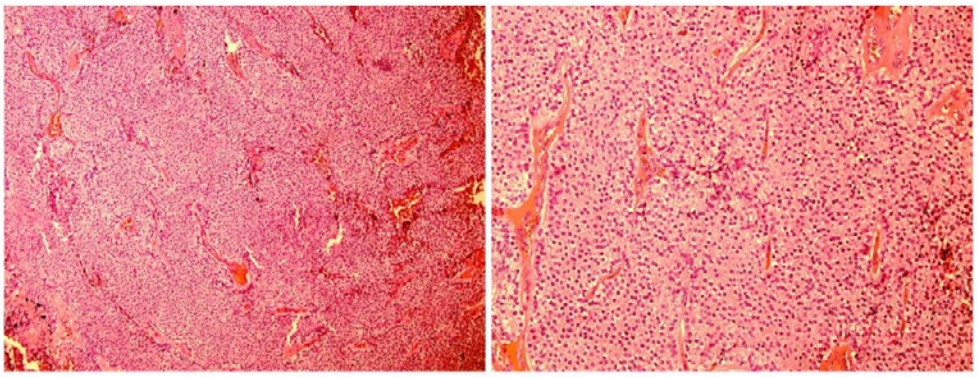

Figure 2. Histologic examination revealed Parathyroid adenoma with uniform round cells and high vascularity (H&E, x400)

thoracic inlet mass is compatible with parathyroid adenoma (Figure 2). The final histological diagnosis was PTC and parathyroid adenoma with no evidence of medullary thyroid carcinoma. After 6 months of follow-up examinations, no recurrence was observed, and the patient is still asymptomatic.

Discussion

Studies describe that patients undergoing para-thyroidectomy may suffer from an additional thyroid disease at 2.5% to 17.5%. Primary hyperparathyroidism is reported from 0.3% to 8.7% in diagnosed thyroid disease [11]. The incidence rate of synchronous non-medullary thyroid carcinoma and primary hyperthyroidism/parathyroid adenoma is unclear, although Leitha et al. reported a 3% prevalence rate [12]. In the same fashion, little evidence is known from bilateral thyroid carcinomas regarding concurrence with parathyroid adenomas.

Lee et al.'s report showed that primary hyperparathyroidism was diagnosed before thyroid carcinoma based on histopathology findings [13]. Therefore, our case was confirmed by histopathology after para-thyroidectomy. Surprisingly, this report is the single coexistence of bilateral & bivariant papillary thyroid carcinoma and parathyroid adenoma. Several hypotheses have been announced to clarify this sporadic synchronism. Head and neck radiation exposure has been studied, showing controversial impacts [14-16].

Higher angiogenesis factors produced by high PTH levels with hypercalcemia may promote the coexistence of PTC and parathyroid adenomas [17]. Still, PTH was in a normal range in our case, and only a mild calcium level increase was seen. Bilateral papillary thyroid carcinoma is extremely rare, and its concurrence may exist. Then, laboratory testing, namely; calcium, PTH, phosphorous, and calcitonin level, before surgery assists in a specific diagnosis. This case demonstrates the need for clinical alertness of concurrent parathyroid adenoma and thyroid cancer. Therefore, careful thyroid assessment is recommended for all patients with hypercalcemia.

Conclusion

Although the pathological relationship between parathyroid and thyroid diseases is common, an association between parathyroid adenoma and thyroid cancer is rare. So, in patients with suspicious thyroid nodules and mild hypercalcemia, the possibility of thyroid carcinoma and occult parathyroid neoplasm can be considered.

Ethical Considerations

Compliance with ethical guidelines

There were no ethical considerations to be considered in this research.

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Conflict of interest

The authors declared no conflict of interest.

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