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Carcinoma Thyroid with Hyperthyroidism - A Rare Case Report

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Abstract

Thyroid malignancies are most commonly associated with either euthyroid or hypothyroid. It is very rare to find hyperthyroidism coexisting with a carcinoma of thyroid. We present such rare case of a papillary carcinoma thyroid patient with hyperthyroidism.

Keywords: Papillary carcinoma thyroid; Hyperthyroidism; Graves disease; LATS; TSH; Thyroid hormone receptor gene (TSH-r)

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Introduction

Thyroid malignancies and hyperthyroidism are rare associations. Hyperfunctioning diseases of thyroid have always been thought as "unsuspected lesions" because past theories have suggested that hyperthyroidism protects from thyroid cancer owing to a lack of stimulation to thyroid tissue itself by TSH1 (Thyroid Stimulating Hormone). We report a rare case of a papillary carcinoma thyroid patient who presented with hyperthyroidism.

Case Report

A 43 year old male presented with a history of swelling in the right lateral aspect and in the midline of the neck since 3 months. He complained of sweating and palpitations. He had lost weight, however his appetite was normal. There was no past history of radiation to head and neck.

Physical examination revealed an anxious patient with a staring look and fine tremors of the out stretched hands. His resting pulse rate was 110/min. On examination of the neck, he had 4 × 3 cm firm, nodule in the right lobe of thyroid. No nodules were palpable in the isthmus and left lobe. Multiple significant nodes were palpable in the right level III and IV, largest is about 4 × 4 cm in the level III. No lymph nodes were palpable on the left side of the neck.

Thyroid function tests confirmed that the patient was in hyperthyroid state, TSH: <0.01 micro IU/ml, T3: 2.44 ng/ml, T4: 16.30 mcg/dl. Ultrasound neck showed multiple hypoechoic areas of right thyroid lobe, largest measuring 2.4 × 15 mm, multiple small level II, III, IV right cervical lymph nodes noted. Ultrasound guided FNAC of the thyroid was suggestive of follicular adenoma thyroid with hemorrhage and cystic degeneration. Repeat FNAC from the thyroid nodule showed abundant colloid

and old hemorrhage. FNAC from the cervical lymph node showed metastatic papillary thyroid carcinoma.

Patient was advised antithyroid drugs, Tab. Neomercazole 10 mg thrice a day and Tab. Propranolol 20 mg twice a day for 10 days. The doses of the drugs were readjusted according to the symptoms and the thyroid profile. His symptoms improved, thyroid profile came down to normal range in 3 weeks and then he was planned for the surgery.

Total thyroidectomy with central neck dissection and right postero-lateral neck dissection was performed. During surgery the gland was found to be very vascular and the nodes were cystic and black in colour characteristic of a metastatic deposit of papillary carcinoma. Patient also had pretracheal and paratracheal nodes.

Histopathological examination showed a right lobe of size 6 × 4 × 3 cm and left lobe of size 4 × 2 × 2 cm. Cut surface of right lobe showed grey white nodule measuring 1.2 × 1 × 1 cm, another nodule measuring 0.3 × 0.3 × 0.2 cm. Another cyst filled with colloid measuring 3.5 × 2 × 2 cm. Isthmus and left lobe is normal. 7 lymph nodes in the central compartment and 25 lymph nodes in the right lateral neck, with perinodal extension. Microscopy showed differentiated papillary carcinoma of right lobe with

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negative central neck nodes and 6 out of 20 positive nodes in the right lateral neck. Tumor has both solid and cystic components and another separate nodule is seen within the right lobe (Stage: I disease - 43 yr old, T2- largest nodule is about 3.5 × 2 × 2 cm, N1b - right lateral cervical nodes were positive for malignancy, M0- No distant metastasis).

Discussion

Risk of malignancy in clinically hyperthyroid patients was considered low until recently. The incidence in various worldwide literature ranges from 0.8 to 0.4% [1,2]. In the past five years at our institute there were about 200 cases of papillary carcinomas operated and none of them had hyperthyroidism.

The association can be of two forms. An incidental focus of carcinoma in specimens resected for hyperthyroidism or a known patient of carcinoma thyroid presenting with hyperthyroidism which was the case in our patient. Later, association became rare than the former. Such patient presenting with metastatic secondary's is much rare. Most of the carcinomas associated with hyperthyroidism are papillary carcinomas [3].

In our case, repeated FNAC from the thyroid nodule did not reveal malignancy, finally the cytology from the nodal mass showed metastatic papillary carcinoma. The basis of this interesting association of malignancy and hyperthyroidism is being investigated. Initially hyperthyroidism was attributed to the increased volume of thyroid tissue even in the face of decreased function associated with malignancy [4]. Some workers have

raised the role of long acting thyroid stimulator (LATS) and LATS-protector (LATSP) in stimulation of carcinogenesis in Graves' disease [5]. More recently, increasing reports on the possible carcinogenic role of thyroid binding immunoglobulin (TBIG) and other immunoglobulins in Graves' disease are mentioned in the literature [6].

Activating mutation of thyroid hormone receptor (TSH-r) gene has been demonstrated in a hyper functioning differentiated cancer. This mutation through activation of cAMP signal transduction is believed to cause hyperthyroidism [7].

In an autonomously functioning thyroid follicular carcinoma, a combination of mutations of TSH receptor and K-RAS was found to be responsible for hyper function of the tumor and the carcinogenic process [8].

Hyper functioning thyroid carcinoma should always be considered in the differential diagnosis of thyrotoxicosis/hyperthyroidism. This association of hyperthyroidism and malignancy has considerable therapeutic significance. Functioning thyroid carcinomas require total thyroidectomy with or without neck dissection. Normalization of the thyroid hormone levels by anti-thyroid drugs like Neomercazole is mandatory for the preoperative preparation. Propranolol is useful for symptomatic control. Post-operative radioactive iodine therapy is given as indicated.

This rare case report emphasizes the need for thorough evaluation of thyroid gland to exclude malignancy even in a clinical setting of hyperthyroidism which would mandate a total thyroidectomy rather than the other modalities of treatment routinely employed for a thyrotoxic goitre.

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