

Two Cases of Graves' Disease Presenting with Unilateral Involvement of the Thyroid Gland

Tek Lobda Tutulum ile Seyreden İki Graves Vakası

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Abstract

Graves' disease is an autoimmune disorder of the thyroid which is characterized by hyperthyroidism and frequently accompanying diffuse goiter. Thyroid scan reveals diffuse bilateral increased uptake of radioisotopes. Unilateral involvement of the thyroid gland on thyroid scan in patients with Graves' disease is a rare entity. Here we present two cases of Graves' disease who had unilateral involvement of the thyroid gland. *Turk Jem 2007; 11: 64-6*

Key words: Graves' disease, hyperthyroidism, unilateral involvement, thyroid scan

Özet

Graves hastalığı hipertiroidi ve sıklıkla diffüz guatr ile seyreden bir otoimmün tiroid hastalığıdır. Tiroid sintigrafisinde genellikle bezde her iki lobda radyoizotopun diffüz artmış tutulumu görülür. Tiroid sintigrafisinde tek lobda tutulum nadir görülmektedir. Burada tiroid sintigrafisinde tek lobda tutulum saptanan iki Graves hastası sunuldu. *Turk Jem 2007; 11: 64-6*

Anahtar kelimeler: Graves hastalığı, hipertiroidi, tek lobda tutulum, tiroid sintigrafisi

Introduction

Graves' disease (GD) is a common autoimmune disorder of the thyroid, characterized by hyperthyroidism, diffuse goiter, ophthalmopathy and occasionally infiltrative dermatopathy [1]. Hyperthyroidism and goiter is caused by stimulatory autoantibodies, which bind to TSH receptor (TSHR) on thyroid cells [2]. The symptoms of GD are directly referred to thyroid hormone excess. The diagnosis of GD is based on the clinical and laboratory manifestations of hyperthyroidism. The signs of ophthalmopathy and dermatopathy are sufficient to confirm the diagnosis of GD in a patient with hyperthyroidism and diffuse goiter. However in subjects without signs of ophthalmopathy and dermatopathy, positive thyroid autoantibodies or bilateral increased homogenous uptake of the radioisotope on thyroid scan supports this diagnosis. Unilateral radioisotope uptake on thyroid scan in patients with GD, excluding patients with thyroid hemiagenesis, have been described a few times in the literature before [3,4]. Here we present two cases of GD with unilateral involvement of the thyroid gland on thyroid scan.

Case

A 23-year-old Caucasian man admitted to the endocrinology outpatient clinic with 1 month lasting history of palpitation, heat intolerance, nervousness, malaise and weight loss. On physical examination his blood pressure and pulse rate were 155/70 mmHg and 112 beats/min, respectively. Thyroid gland was not palpable and tender on examination. Moist skin and fine tremor were noted and there were no signs of ophthalmopathy, dermatopathy and acropachy. On laboratory examination, thyroid function tests were as follows; fT4: 42.3 (10.3-24.5) pmol/L, fT3:27.4 (2.8-6.9) pmol/L and TSH: 0.005 (0.5-4.5) mIU/mL. Serum TSH receptor antibody (TRAb) level was also high 38 (0-10) U/L (TRAK-Assay, Henning Berlin, Germany). Levels of anti-thyroperoxidase and anti-thyroglobulin antibodies were within normal ranges. Erythrocyte sedimentation rate (ESR), C-reactive protein (CRP) levels and leucocyte count were within normal limits. On high resolution ultrasonography, echogenicity of the thyroid parenchyma was heterogeneous and size of the thyroid lobes

and isthmus were within normal limits. An isoechoic solitary nodule with peripheral calcification and 15x10 mm in diameter was noted in the upper pole of the right lobe. Tc-99m scintigraphy of the thyroid gland showed minimal enlargement and increased homogenous uptake in the right lobe whereas an accompanying suppression in the left lobe (Figure 1). Ultrasonography guided fine needle aspiration biopsy (FNAB) specimen of the nodule had benign appearance on cytological examination. Propylthiouracil treatment was given for one year and the patient is still in remission.

Case 2

A 49-year old Caucasian woman was consulted for subclinical hyperthyroidism detected by thyroid function tests. She had complaints of sweating, palpitation and insomnia for five years. She had a past history of GD diagnosed three years ago for which she was given one year treatment of oral antithyroid drugs until remission. After a short period of remission, her TSH levels suppressed again and she was followed with subclinical hyperthyroidism for two years without drug therapy until admission to our clinic. On physical examination her blood pressure and pulse rate were 130/80 mmHg and 100 beats/min, respectively. Thyroid gland was not palpable or tender on examination and no signs of ophthalmopathy, dermopathy and acropachy were noted. On laboratory examination, thyroid function tests were as follows; fT4: 10.8 (7.5-21.1) pmol/L, fT3: 4.5 (3.87-6.1) pmol/L and TSH: 0.05 (0.24-4) mIU/mL. Levels of antithyroperoxidase, antithyroglobulin and TSH receptor antibodies were within normal ranges. High resolution ultrasonography revealed normal sized thyroid gland with a homogenous parenchyma. On Tc-99m thyroid scan increased homogenous uptake on the right lobe and suppression on the left lobe was noted (Figure 2). Low-dose oral antithyroid therapy was started and the patient is under follow-up.

Discussion

It is generally accepted that GD is an autoimmune disease and in which both lobes of thyroid are stimulated by TRAb and goiter and thyrotoxicosis develops by this mechanism. Diffuse and unilateral uptake on thyroid scan is a rare entity in patients with GD. Only a few cases of GD with unilateral involvement have been reported previously [3,4].

As epithelial cells of both thyroid lobes develop from the same endodermal tissue, the reason of unilateral involvement of the thyroid gland is unclear. A proposed mechanism for occurrence of unilateral GD was side-to-side difference in function and/or structure of specific receptors due to preceding unilateral bacterial or viral inflammation [5]. This hypothesis was based on studies in which retroviral sequences were isolated from thyroidal tissues of patients with GD [6]. Sakata et al. proposed that the different uptake noted between the lobes could be due to interfollicular heterogeneity in these subjects which is a phenomenon described previously for patients with multinodular goiter and the resolution power of thyroid scintigraphy was insufficient to demonstrate this heterogeneity [3]. Our second case was similar to this case as her thyroid autoantibodies were all negative. However it is known that antibody titers may be rarely normal on diagnosis or may return to normal limits after treatment in subjects with GD. Thyroid autoantibody titer levels during her first diagnosis of hyperthyroidism were unknown and they were found to be negative on admission to our outpatient clinic. As surgical intervention wasn't chosen for treatment, pathological diagnosis was not possible either. Unilateral involvement on thyroid scan can be noted in cases of thyroiditis. However the protracted course of the disease and relapse after 1 year with subclinical hyperthyroidism suggests GD more likely. Differential diagnosis of unilateral GD includes other disease



Figure 1.



Figure 1.

states presenting with unilateral involvement on thyroid scan like thyroid hemiagenesis, Hashimoto disease, toxic adenoma, toxic multinodular goiter and subacute thyroiditis. Thyroid hemiagenesis was ruled out in our patients with high resolution ultrasonography. Thyrotoxicosis of Hashimoto disease depends on destruction of thyroid tissue which causes decreased uptake on thyroid scan. Toxic adenoma was ruled out since ultrasonography which is the gold standard technique for detection of thyroid nodules revealed no nodules. Unilateral subacute thyroiditis of the thyroid gland has a clinical presentation with fever, generally tender thyroid gland on examination and elevated acute phase reactants on laboratory examination and the affected lobe is found to be suppressed on thyroid scan [7]. Primary or secondary thyroid neoplasms, infiltrative diseases and unilateral inflammation are, albeit rare, other etiological factors which can be differentiated with FNAB. Thus high resolution ultrasonography, thyroid scan, FNAB of the nodules, measurement of thyroid autoantibodies and acute phase reactants, clinical presentation of the disease and response to treatment during follow-up confirmed the diagnosis of GD in our first case and suggests GD in the second one.

As a conclusion, unilateral Graves' disease although rare should be included in differential diagnosis of hyperthyroidism with unilat-

eral uptake on thyroid scan. It may be speculated that there exists a functional heterogeneity between right and left lobes in terms of reactivity against TSH receptor antibodies. However the exact etiology of unilateral involvement remains to be established.

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