Graves’ Disease With Unilateral Involvement: A Rare Entity

Gülsüm Gönülalan, Mehtap Çakır

Selcuk University Meram School of Medicine, Department of Endocrinology and Metabolism, Konya, Turkey

Abstract

Graves’ disease usually affects both lobes of the gland, thus, unilateral Graves’ hyperthyroidism has been reported very rarely. Here, we report a case of Graves’ disease presenting with unilateral involvement of the thyroid gland. Thyroid function tests revealed thyrotoxicosis and scintigraphy with technetium-99m showed increased diffuse unilateral radioisotope uptake in the right lobe with suppressed activity in the left lobe. The patient underwent oral antithyroid drug treatment. Graves’ disease may present with asymmetrical uptake on thyroid scan similar to asymmetrical Graves’ ophthalmopathy. Turk Jem 2011; 15: 128-9

Key words: Graves’ disease, goiter, unilateral involvement, thyroid scan

Introduction

Graves’ disease affects about 0.05% of the population and is the most common cause of hyperthyroidism (1,2). Hyperthyroidism is a disease of autoimmune origin. Circulating thyrotropin (TSH) receptor autoantibodies that bind to and activate the thyrotropin receptors are responsible for the increased hormone synthesis and secretion (1). Thyroid function tests show a suppressed serum TSH level with accompanying normal or elevated serum T4 and/or T3 levels (1,2). Graves’ ophthalmopathy occurs in a mild form in 25-50% of patients and periorbital edema, proptosis and inflammation may be found independent of thyroid pathologies (1,2).

Graves’ disease typically presents with a diffuse uptake in the thyroid gland. Unilateral Graves’ hyperthyroidism has also been reported, albeit very rarely (3,4,5). Here, we present a case of a patient with Graves’ disease who presented with unilateral involvement of the thyroid gland.

Case Report

A 40-year-old man presented to our endocrinology outpatient clinic with complaints of weight loss, sweating and palpitations. His medical history revealed no known chronic disease or recent acute upper respiratory tract infection. He was a non-smoker and did not use any drugs or alcohol. On physical examination, his blood pressure was 120/90 mmHg, pulse was 90/minute, and a fine tremor was noted in both hands. The thyroid gland was nonpalpable and there were no specific signs of Graves’ disease such as ophthalmopathy and dermopathy.

On laboratory examination, his complete blood count and blood chemistry were unremarkable. Thyroid function tests revealed thyrotoxicosis [serum free T3 (fT3): 9.56 <3.08-6.46pmol/L, free T4 (fT4): 23.55 (11.96-21.87) pmol/L, TSH: <0.005 (0.27-4.2) μIU/mL]. Anti-thyroglobulin (anti-Tg) and anti-thyroperoxidase (anti-TPO) values were 478.5 <34IU/mL and 105.3 <34IU/mL. On thyroid ultrasonography the right lobe was

Address for Correspondence: Gülsüm Gönülalan MD, Selcuk University, Meram School of Medicine, Department of Endocrinology and Metabolism, Konya, Turkey Phone: +90 332 223 70 77 E-mail: drggonulan@yahoo.com.tr Received: 03.07.2011 Accepted: 29.07.2011

Discussion

Due to its autoimmune pathogenesis, Graves’ disease affects both lobes of the thyroid gland and unilateral involvement of the thyroid gland in Graves’ disease is an extremely rare and unexpected finding. Accordingly, unilateral involvement has been reported in only four cases in the English literature so far (3,4,5). Interestingly, in these case reports, the hyperfunctioning lobe was always the right lobe which was also the situation in our patient. However, unilateral involvement of the thyroid gland in Graves’ disease is less frequent than in Graves’ ophthalmopathy. Graves’ ophthalmopathy presents as a symmetric bilateral eye disease in the majority of patients (6). Asymmetric involvement in Graves’ ophthalmopathy is in some way similar to unilateral involvement of the thyroid gland in Graves’ disease in that, both are difficult to explain in terms of the systemic and autoimmune nature of the disease. In their elegant prospective study, Wiersinga and colleagues (6) have evaluated sleeping position as an etiological factor in asymmetrical Graves’ ophthalmopathy. However, sleeping position did not differ between symmetric and asymmetric Graves’ ophthalmopathy and thus, asymmetry was not related to preferred sleeping position on the right or left side. In another interesting study, 143 primarily hyperthyroid, 28 primarily euthyroid and 11 primarily hypothyroid patients with Graves’ ophthalmopathy were evaluated retrospectively in terms of the differences between clinical symptoms and laboratory findings (7). Patients with euthyroid/hypothyroid Graves’ ophthalmopathy developed significantly less severe Graves’ ophthalmopathy symptoms (NOSPECS score 4.4 vs 5.7; p=0.03), less active Graves’ ophthalmopathy (CAS score 3.9 vs 5.2; p=0.002) and more asymmetrical disease (proptosis side difference: 1.9 mm vs 1.0 mm (p = 0.01); side difference of > or =3 mm: 23% vs 4.8%) than hyperthyroid patients. Thus, thyroid hormone status at presentation was a significant determinant of several clinical and laboratory findings including asymmetrical ophthalmopathy in this study (7).

In the differential diagnosis of unilateral uptake on thyroid scan in a patient with hyperthyroidism, a few other conditions should also be considered before unilateral Graves’ disease. The first possibility is an overactive thyroid nodule filling one of the lobes of the thyroid gland and causing suppression in the other lobe on thyroid scan. In this situation thyroid ultrasonography will reveal the nodule on the visualized side and the diagnosis of toxic adenoma will emerge. The second possibility is hemiagenesis of the thyroid gland. Thyroid hemiagenesis is a rare congenital anomaly in which one of the thyroid lobes with or without isthmus fails to develop (8). In this condition, even if the patient is euthyroid, only one lobe will be seen on the thyroid scan. Again the diagnosis is very straightforward as on thyroid ultrasonography only one lobe will be visualized in thyroid hemiagenesis. Recently, we have reported a female patient with thyroid hemiagenesis, Graves’ disease and Graves’ ophthalmopathy who had presented with unilateral uptake on thyroid scan (9). Subacute thyroiditis in a single lobe is another possibility in which due to nil uptake in the lobe with thyroiditis, only the lobe with normal uptake will be seen (10). These subjects may easily be diagnosed with clinical features including fever, pain in the thyroid region spreading to the chin, ears and the neck and with laboratory findings of elevated acute phase reactants.

Antithyroid drugs, radiiodine treatment or surgery can be used for the treatment of Graves’ disease (1,2). If chosen as a treatment strategy in a patient with unilateral Graves’ disease, the type of surgery is important in that Sakata and colleagues (4) have reported recurrence in the contralateral lobe after hemithyroidectomy in two patients with unilateral Graves’ disease.

As a conclusion, Graves’ disease may present with asymmetrical uptake on thyroid scan similar to asymmetrical Graves’ ophthalmopathy. The reason why it is much rarer compared to asymmetrical Graves’ ophthalmopathy is yet a mystery for endocrinologists.

References