Copyright © Athens Medical Society
www.mednet.gr/archives
ARCHIVES OF HELLENIC MEDICINE: ISSN 11-05-3992

CONTINUING MEDICAL EDUCATION
ΣΥΝΕΧΙΖΟΜΕΝΗ ΙΑΤΡΙΚΗ ΕΚΠΑΙΔΕΥΣΗ

Endocrinology Quiz – Case 3

ARCHIVES OF HELLENIC MEDICINE 2008, 25(3):399–400
ΑΡΧΕΙΑ ΕΛΛΗΝΙΚΗΣ ΙΑΤΡΙΚΗΣ 2008, 25(3):399–400

E. Palioura,
S. Livadas,
X. Xyrafis,
G. Boutzios,
E. Tantalaki,
F. Economou,
M. Xristou,
X. Xristakou,
C. Kouskouti,
E. Kandaraki,
G. Tsagkaraki,
S. Palimeri,
E. Diamanti-Kandarakis

First Department of Internal Medicine, Endocrine Section, University of Athens, "Laiko" General Hospital, Athens, Greece

A 54-year old woman presented to outpatient endocrine clinic on January 1999 for assessment of her thyroid function, due to a history of Grave's disease diagnosed in 1988. At diagnosis the patient was treated with methimazole for one year and consecutively received thyroxine for one year more, until she became euthyroid and discontinued any medication. Annual thyroid testing revealed normal thyroid function without pathological ultrasonographic findings. On 2005, on a routine check, thyroid-stimulating hormone (TSH) value was found above normal range (5.42 μIU/mL with normal values 0.3 to 4), compatible with subclinical hypothyroidism and follow-up in 3 months time was advised. Although, during a two year follow-up period, TSH remained at that range and no treatment was prescribed, at the end (2007) thyroid testing revealed hyperthyroidism (suppressed TSH=0.03 μIU/mL and increased FT3: 7.07 pg/mL and FT4=3.04 ng/dL levels) (normal values for FT3: 2.30–6.19 and for FT4: 0.7–1.9, respectively) with positive thyroid autoantibodies [anti-TPO= 498 IU/mL (0–150) and anti-TG= 209.5 IU/mL (0–100)], but TSI antibodies were negative. On physical examination no signs and symptoms compatible with hyperthyroidism were documented. Thyroid gland was slightly enlarged, without pain during palpation and no thyroid murmur was detected. Thyroid scan with 50 μCi radioactive I-131 revealed a decreased uptake of radioactive drug (fig. 1). Additionally, uptake at 4 hours and 24 hours was 1.8% and 1.6% (NR >20%). These findings were compatible with absence of thyroid function. Two months later (3/07) and without any medication patient was hypothyroid with TSH 45.7 μIU/mL and decreased FT4, FT3 (2.2 pg/mL and 4.4 μg/dL). Patient started thyroxine treatment with a gradually increasing dose (fig. 2, Thyroid status of the patient during time).

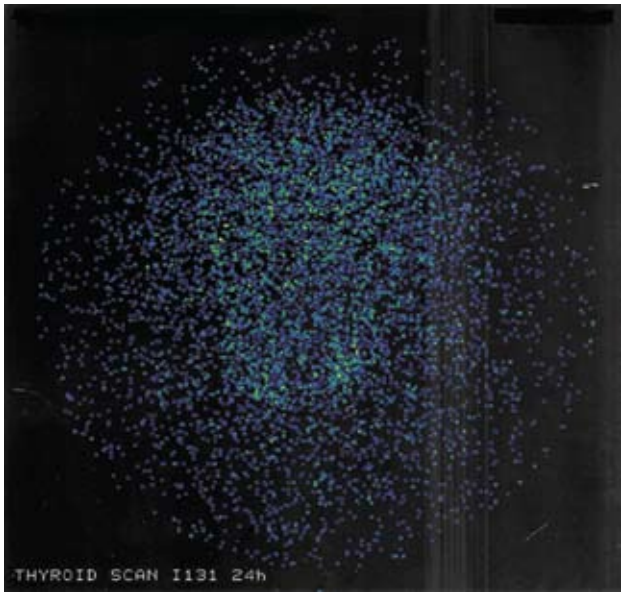

Figure 1. Thyroid scan of the patient.

Comment

A patient with a history of Graves' hyperthyroidism, free of the disease the last seven years, developed subclinical hypothyroidism for two years and subsequently developed suclinical hyperthyroidism with decreased uptake of radioactine iodine. Two months post

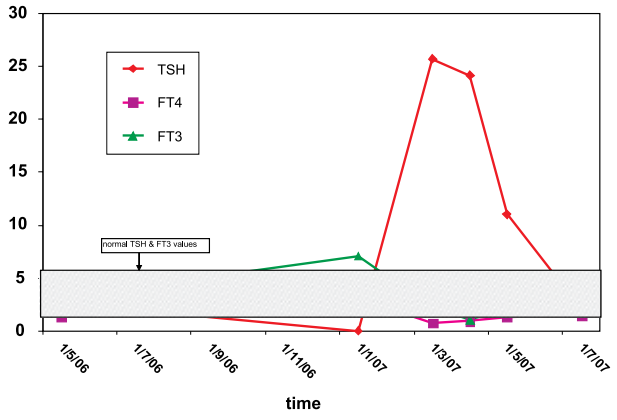

Figure 2. Thyroid status of the patient through time.

*radiodine scan, and the patient without treatment, the patient became hypothyroid and thyroxine treatment was initiated. Our main concern was to determine the cause of her sudden hyperthyroid state. We thought all types of hyperthyroidism (tab. 1). Due to her past history of Graves' disease one possible thought would be exacerbation of her disease. However, thyroid scintigram in Graves' disease typically shows a symmetrically enlarged gland with homogeneous tracer distribution and a prominent pyramidal lobe with radioiodine uptake usually elevated to the range of 50% to 80%, findings not compatible with our patient's scan. Therefore, Graves' disease was excluded. Another possible diagnose with compatible scan findings (diffusely decreased uptake on thyroid scan) would be that of subacute thyroiditis. However, patient denied any virus infection and sudden or gradual pain on thyroid gland, typical findings of De Quervain's thyroiditis. Moreover, from physical examination there was no painful enlargement of thyroid gland and erythrocyte sedimentation rate was in normal range 7 mm/*hours*. Thus subacute thyroiditis was excluded. However, silent subacute thyroiditis is less likely since no inflammatory markers were found to be raised. Toxic thyroid adenoma was excluded based on ultrasound as well as thyroid scan.*

Table 1. Causes of hyperthyroidism.

Common causes of hyperthyroidism	**Incidence**
Diffuse toxic goiter (Graves' disease)	70–80%
Toxic multinodular goiter (Plummer's disease)	15%
Toxic thyroid adenoma	5%
Subacute thyroiditis (De Quervain's thyroiditis)	3%
Rare causes of hyperthyroidism	

Hashitoxicosis, Postpartum thyroiditis, Drug-Induced thyroiditis, Hydatidiform mole, TSH-secreting pituary tumor, Pituitary resistance to T3 and T4, Factitia, Ovarian struma, Metastatic thyroid carcinoma, "Hamburger thyrotoxicosis"

Hashitoxicosis is an autoimmune thyroid disorder, in which individuals with autoimmune hypothyroidism experience intermittent or sporadic periods characterized by biochemical hyperthyroidism. The underlying pathophysiological mechanism is not yet completely elucidated. The predominant theory is that thyroid cell destruction intermediated by thyroid peroxidase and thyroglobulin antibodies is implicated in the generation of this form of thyrotoxicosis. Following cellular destruction, sudden release of stored supplies of thyroid hormones into the blood circulation is responsible for the hyperthyroid state. Another hypothesis is that the regenerating hyperplastic follicles are in excess of those destroyed by cytoxic autoimmune process. It is known that in about 5 to 10 percent of patients with chronic autoimmune thyroiditis, anti-thyrotropin-receptor antibodies contribute to hypothyroidism. A possible hypothesis is that transmission of TR-blocking antibodies to TR-stimulatory antibodies may be responsible for hyperthyroidism. Moreover, due to the reversal ability of this mechanism, scintigraph may be conducted at a phase in which blocking antibodies are in excess in the immunologic state causing hypothyroidism and thus, reduced uptake. Based on patient's medical history, clinical examination and iodine 131 thyroid scan we conclude to Hashitoxicosis as the most consistent diagnosis for her hyperthyroid state.

Corresponding author:

E. Diamanti-Kandarakis, First Department of Internal Medicine, National and Kapodistrian University of Athens, School of Medicine, "Laiko" General Hospital, GR-115 27 Athens, Greece
e-mail:akandar@otenet.gr