ELSEVIER MASSON

Annales d'Endocrinologie 68 (2007) 460–463

Annales d'Endocrinologie
Annals of Endocrinology

Clinical case

Pseudomalabsorption of thyroid hormones: case report and review of the literature

Pseudomalabsorption des hormones thyroïdiennes : cas clinique et données de la littérature

E. Livadariu[a], H. Valdes-Socin[a], M.-C. Burlacu[a], C. Vulpoi[b], A.-F. Daly[a], A. Beckers[a,*]

[a] *Department of Endocrinology, Centre Hospitalier Universitaire, University of Liège, Liège, Belgium*
[b] *Endocrinology Clinic, University Hospital "Sf.Spiridon", Iassy, Romania*

Available online 07 November 2007

Résumé

Plusieurs causes de malabsorption des hormones thyroïdiennes ont été décrites, mais la plus fréquente est le défaut de compliance du patient, décrit comme pseudomalabsorption. Nous rapportons le cas d'une femme traitée par thyroïdectomie totale pour maladie de Basedow-Graves. Après l'intervention chirurgicale, plusieurs schémas de substitution ont été essayés, mais seule la thyroxine injectable a permis la correction de l'hypothyroïdie. Pour écarter un problème d'absorption intestinale nous avons hospitalisé la patiente et nous avons réalisé un test avec une dose de 1000 μg de thyroxine administrée per os. Après quatre heures, la TSH a diminué (de 59,7 à 55,6 μUI/ml) et la T4 libre a augmenté (de 0,8 à 15,5 pg/ml), éliminant un syndrome de malabsorption. Nous avons ainsi démontré un défaut de compliance du patient et établi le diagnostic de pseudomalabsorption.

Abstract

Many causes of thyroxine malabsorption are described in the literature, but the most common cause of failure of thyroxine therapy is poor patient compliance, or *pseudomalabsorption*. We describe the case of a female patient who underwent total thyroidectomy for Basedow-Graves disease. Post-operatively, several treatment regimens were employed to achieve euthyroidism, but only injectable thyroxine was found to be effective. To exclude levothyroxine malabsorption, the patient was hospitalized in a hypothyroid state while a single oral test dose of levothyroxine (1000 μg) was administered. Within 4 hours a decrease of TSH level (from 59.7 to 55.6 μUI/ml) and a significant increase in free T4 levels (from 0.8 to 15.5 pg/ml) was observed, eliminating a malabsorption problem. The cause of resistance to thyroid hormone therapy was poor patient compliance, leading to the designation of this as a case of pseudomalabsorption.

Mots clés : Pseudomalabsorption ; Hypothyroïdie ; Thyroxine ; Test oral

Keywords: Pseudomalabsorption; Hypothyroidism; Thyroxine; Oral test

* Corresponding author. Department of Endocrinology, Centre Hospitalier de Liège, University of Liège, Domaine Universitaire du Sart-Tilman, 4000 Liège, Belgium.
E-mail address: albert.beckers@chu.ulg.ac.be (A. Beckers).

0003-4266/$ - see front matter © 2007 Elsevier Masson SAS. All rights reserved.
doi:10.1016/j.ando.2007.09.003

1. Introduction

In 1891, Murray discovered the beneficial effects of sheep thyroid extract in treating a patient with myxedema [1]. Thereafter, in 1926 Harrington synthesized thyroxine (T_4), which was recognized as the main hormone in desiccated thyroid in the early 1950's [1]. Nowadays thyroxine is available for oral and intravenous administration, the latter being used particularly in patients with severe hypothyroidism and myxedematous coma but also in cases of persistent hypothyroidism despite high oral doses of thyroid hormones. Synthetic thyroxine (levothyroxine, LT_4) is the main drug used in the clinical setting to achieve normal serum free T_4 (fT_4) levels. The usual replacement dose is 1.6 μg/kg body weight per day and is most frequently administered orally in the fasting state [2]. When euthyroidism is not achievable despite large doses of oral levothyroxine, poor compliance to oral therapy or deficient gastrointestinal absorption may be suspected.

The most common cause of supposed malabsorption is, however, poor compliance with oral thyroxine therapy [2,3], which is termed *pseudomalabsorption*. The concept of pseudomalabsorption of thyroid hormones was first outlined in 1991 to describe a factitious disorder due to patient non-compliance with the intention to deceive [4]. The diagnosis is made after excluding all causes of malabsorption and demonstrating normal thyroxine absorption following a single large test dose of thyroxine [3,5].

2. Case presentation

A 69-year-old female patient was referred for endocrinologic evaluation to our unit because of persistent hypothyroidism despite oral treatment with large doses of thyroid hormones. The patient had a personal history of gastric ulcer, which was repeatedly treated with antisecretory therapy and she had previously received *Helicobacter pylori* eradication treatment. In the last several years she had not required any ulcer treatment.

Two of her daughters were known to have autoimmune thyroiditis with hypothyroidism for which they received oral thyroid hormone therapy.

A diagnosis of Graves'-Basedow's hyperthyroidism had been made in 1997 and a complete thyroidectomy was performed in 1998. After surgery, oral thyroid hormone therapy was instituted, but despite a variety of treatment regimens a euthyroid state was not achieved. In March 2006, treatment with intramuscular levothyroxine was initiated (200 μg/day) and the patient became euthyroid for the first time. In October 2006 intramuscular levothyroxine was withdrawn from availability and so oral treatment was reinitiated. Because of persistent hypothyroidism the patient was referred to the University Hospital of Liège in 2007.

The patient denied poor compliance, claiming that she took her thyroid hormone treatment daily. At referral, her treatment was liothyronine (Cytomel®) 150 μg/day (normal daily dose: 25–50 μg/day [2]). On examination the patient had a rough voice and dry, pale skin. On questioning she demonstrated bradypsychia. She weighed 59 kg (body mass index 23 kg/m^2), her blood pressure was 130/80 mmHg and her temperature 36 °C. Her heart rate was 65 beats per minute and of regular rhythm; cardiac auscultation was normal.

Thyroid function evaluation confirmed hypothyroidism (TSH: 59.7 μUI/ml, normal range: 0.2–4.2 μUI/ml; fT_4 0.8 pg/ml, normal range: 7–17 pg/ml; fT_3 0.3 pg/ml, normal range: 1.5–4.6 pg/ml).

In this context thyroid hormone malabsorption was considered and investigated. Anamnesis excluded drug and dietary interference, and also previous gastrointestinal surgery. Gastrointestinal diseases were eliminated through immunological and laboratory tests (anti-parietal cell antibodies and anti-gliadin antibodies were negative). No evidence of relevant liver, pancreatic and heart diseases were found. Considering the personal history of gastric ulcer, an upper gastrointestinal tract endoscopy and biopsy was performed, which revealed oesophagitis, antral gastritis and *H. pylori* infection. Her duodenal biopsy was normal. Impairment of gastric acid secretion (gastritis and *H. pylori* infection) is associated with a median increase in thyroxine dose requirement of 22–34% [6], but this was insufficient to explain persistent hypothyroidism despite high doses of thyroid hormones.

The patient was hospitalized in order to evaluate thyroxine absorption. A 1000 μg dose of levothyroxine (Elthyrone®, Abbott) was administrated orally in fasting state at 8 a.m. Blood samples were collected at the beginning and after 2, 4, 6 and 24 h and TSH, fT_4 and fT_3 were measured (Fig. 1). Within 4 h a decrease of TSH level (from 59.7 to 55.6 μUI/ml) and a marked increase in fT_4 levels (from 0.8 to 15.5 pg/ml) were observed. After 24 h the TSH level decreased further to 45 μUI/ml, while the fT_4 value had dropped (9.8 pg/ml) as compared to the 4 h post-thyroxine value. Her fT_3 level gradually increased during the test, but without reaching the lower inferior limit of normal range (from 0.3 pg/ml to 0.8 pg/ml after 24 h). A diagnosis of thyroid hormone pseudomalabsorption was made.

The patient continued to deny withholding her thyroid medication even after the results of the absorption test had been explained and insisted on her preference for intravenous therapy. Considering the age of the patient and the fact that she

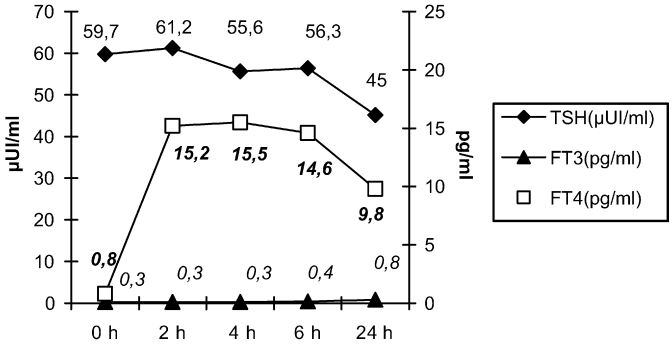

Fig. 1. Serum TSH, fT4 and fT3 responses to 1000 μg oral thyroxine administration.

Fig. 1. Modifications des taux plasmatiques de la TSH, fT4 et fT3 après l'administration de 1000 μg de thyroxine per os.