Primary hypothyroid induced by drug interaction

Sir,

Primary hypothyroidism might be continuous due to secondary drug interaction despite substitutive hormonotherapy. It might completely disappear while considering the administration modalities of suspected drug. This might be expressed by negative feedback of the thyroxin and increased secretion of the thyroid-stimulating hormone (TSH). The case discussed below consists of peripheral hypothyroidism induced by drug interaction. We illustrate the need to study drug interaction and pharmacovigilance in drugs that patient intakes [Table 1].

The present patient was a 41-year-old woman who was consulted for spanemic amenorrhea. The patient history included thyroidectomy complicated by hypoparathyroidism. The patient underwent treatment by L-Thyroxin (200 μg/day) (LT4) and Calcium (2 g/day). Discreet clinical signs of hypothyroidism were shown without other associated signs.

The biological assessment confirmed hypothyroidism (TSHus > 100 μUI/ml), hypogonadism with moderate hyperprolactinaemia, normochromic normocytic anaemia, hypercholesterolaemia, and without adrenal function abnormality. Hence, the L-Thyroxin malabsorption was confirmed after two hours of administration; then the L-Thyroxin resistance syndrome was discarded.

The therapeutic efficiency was suspected considering the increased TSHus of 200 μg/day. Finally, the drug interaction between L-Thyroxin and calcium was evoked, and the diagnosis was confirmed by pharmacovigilance assessment.

The calcium dose was decreased to 1 g/day and the L-thyroxin to 100 μg/day that were alternated in time with enough intake spacing of two hours. The evolution in three months was marked by a complete disappearance of the hypothyroid signs, the spanemic amenorrhea, and normalization of LT4 and TSHus rates.

L-Thyroxin drug is frequently prescribed for treating hypothyroidism and also as cancers breach treatment or thyroid nodules. However, conditions might modify the need in L-Thyroxin for each substitutive and curative therapy which would impact the absorption of the drug.[1,2]

The pathophysiology mechanism of increased TSHus, hyperprolactinamia, and cycle disorders mostly involving a broken feedback of the hypothalamic TRH with increased secretion in primary hypothyroid. Stimulated TSH and

Table 1: Drug samples interacting with thyroid hormones and mechanisms of interaction

Drugs	Interaction mechanisms with thyroid hormones
Iron salt, colestyramin, calcium components, proton pump inhibitor	Decreased absorption
Propranolol, amiodarone	Inhibition of iodine elimination
Sertraline	Increase of the clearance
Lovastatin, simvastatin, anti-convulsivants, imatinib	Increased hormonal catabolism by enzymatic induction of CYP1A2 and/or CYP3A4

PPI: Proton pump inhibitor

prolactin inhibits the secretion of gonadotrophin and thus the hypogonadism.

However, the diagnosis is based on the patient history, especially the initial TSH level; the co-existence of disorders or drugs which could interfere with the absorption of the thyroid hormones, and the patient engagement in the treatment.[3]

In our observation, the hypothyroid is due to malabsorption of L-Thyroxin by interaction with Calcium. Indeed recent studies showed that Calcium intake could decrease the absorption of L-Thyroxin.[4]

The normalization of the thyroid after two months of treatment by 100 µg/day of L-Thyroxin and 1 g/j of calcium was obtained by respecting two hours gap between undertaking each drug. This confirmed the diagnosis of primary hypothyroid by drug interaction. Indeed, most patients underestimate this medicinal interaction.[5]

It is primordial to investigate the drugs interaction in primary hypothyroid of patients ingesting more than one drug. The pharmacovigilance might play important role in demonstrating the associated disorder. This allows avoiding very invasive treatment with irreversible complications.

Thus, a hypothyroid patient should be aware of the possible drug interaction between L-Thyroxin and calcium.

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