Transient hypothyroidism in a young woman

To the Editor:

A 24 year old asymptomatic women was seen for a general examination before a year long trip to India. During examination, her thyroid gland was found to be enlarged. Blood tests showed that thyroid-stimulating hormone (TSH) was elevated: 28 uiU/ml (normal range 0.39–4) and free thyroxine was low: 0.7 ng/dl (normal range 0.8–1.5). Antibodies were normal.

The patient had no time for further testing, such as ultrasound, since she was leaving for her trip. It was recommended that she start treatment with levothyroxine.

After returning from her trip she was followed by her physician. The goiter disappeared and TSH and free thyroxine returned to normal levels. On one single bi-annual checkup, her TSH level was found to be slightly above normal (4.5) with normal free thyroxine levels.

After 3 years of follow-up, with consistently normal laboratory tests, the physician decided to stop treatment and continue a laboratory follow-up. For 3 months after withdrawing therapy, TSH and free thyroxine levels remained normal.

STOPPING OR WITHDRAWING TREATMENT

As physicians, we are taught how and when to begin medical treatment for chronic conditions, but minimal research is conducted on when to stop or withdraw therapy.

In our case, we suggested that thyroxine treatment be stopped in a patient showing normal TSH and free thyroxine for 2 years. The elevated levels of TSH and thyroxine were probably due to the patient having some form of silent or transient thyroiditis. In the characteristic course of silent thyroiditis (painless, postpartum, or subacute), the initial thyroid inflammation damages thyroid follicles and activates proteolysis of the thyroglobulin stored within the follicles. The result is unregulated release of large amounts of thyroxine and triiodothyronine into the blood stream, which causes hyperthyroidism. This state lasts only until the stores of thyroglobulin are exhausted because new hormone synthesis ceases. As the inflammation subsides, the thyroid follicles regenerate and thyroid hormone synthesis and secretion resume. There may be a transient period of hypothyroidism and increased TSH secretion before thyroid secretion becomes normal again.

In a survey by Rallison and colleagues [1], spontaneous resolution of thyroiditis occurred in 15 of 32 individuals who received no treatment. Resolution occurred in 14 of 30 children treated with thyroid hormone supplement. In a study by Takasu et al. [2], 20% of patients with hypothyroidism after Hashimoto's thyroiditis recovered satisfactory thyroid function. According to a Japanese article published in 1990 [3], during a 5 year observation period of patients with Hashimoto's thyroiditis, 30% of the patients with hypothyroidism at the initial examination had become euthyroid. Kaplowitz [4] reported on two 13 year old girls with severe primary hypothyroidism accompanied by goiter and positive thyroid peroxidase antibodies. They had a complete reversal of hypothyroidism within 2 months. Two more cases were reported of spontaneous remission of hypothyroidism due to Hashimoto's thyroiditis (non-puerperal). Other studies showed recovery of thyroid function in a hypothyroid man with Hashimoto's thyroiditis and spontaneous recovery in patients with goitrous hypothyroidism with a preserved thyroid uptake of iodide [5].

CONCLUSIONS

Despite these findings, there are no guidelines in the literature on when to suspect that a patient might not need to continue medication. Further research should be conducted to give clear recommendations on when to stop unnecessary thyroxine treatment.

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Capsule

Translation of CRISPR-Cas systems into therapeutic agents

Genome editing through CRISPR-Cas systems has the potential to correct genetic mutations that occur in diseased cells, such as cancer cells. However, the ability to selectively activate CRISPR-Cas systems in diseased cells is important to ensure that gene editing only occurs where it is wanted. **Zhu** et al. developed a system in which gene editing could be activated by a magnetic field, thus allowing spatial control. The use of nanomagnets in their system also improved transduction into target cells in tumor-bearing mouse models. This approach could potentially allow the translation of CRISPR-Cas systems into therapeutic agents.

Nat Biomed Eng 2018; 10.1038/s41551-018-0318-7

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