TSH levels and levothyroxine compliance are investigated in differentiated thyroid cancer patients.

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Abstract

Several experts agree that a significant majority of patients using Levothyroxine (LT4) for hypothyroidism caused by various causes have poor adherence to therapy, necessitating multiple alterations and adjustments throughout their treatment. Inadequate dosage can lead to hypothyroidism or hyperthyroidism, both of which have major consequences on multiple levels.

Keywords: TSH, Hypothyroidism, Thyroid carcinoma.

Introduction

Hyperthyroidism and its related cardiac symptoms, as well as weight loss, sleeplessness, and heat sensitivity, are all signs of overtreatment. On the other hand, overt and subclinical hypothyroidism have both been associated with unfavorable changes in several metabolic parameters, including lipid profile and glucose control, as well as with higher blood pressure and insulin resistance, all conditions that may amplify the cardiovascular disease risk in type 2 diabetes. Thyroid-Stimulating Hormone has also been linked to similar outcomes (TSH) [1].

Lack of compliance, changes in the LT4 formulation, dosage errors, increasing serum levels of T4-binding globulin, body mass changes, and food habits are all common reasons for LT4 dose adjustments. Calcium supplements, ferrous sulphate, proton-pump inhibitors, bile acid sequestrants, and sucralfate taken at the same time can all affect LT4 absorption and metabolism.

LT4 is a medicine with a limited therapeutic index, and its absorption is influenced by the pH of the stomach. Acid production is reduced in individuals with chronic gastritis or gastric atrophy, those taking proton-pump inhibitors, and those infected with Helicobacter pylori: all of these disorders have been linked to a higher thyroxine need.

By increasing gastric acidity and thus lowering LT4 bioavailability, some gastrointestinal diseases and their therapies can lead to inadequate LT4 function. Patients with past gut surgery, celiac disease, lactose intolerance, autoimmune gastritis, or Helicobacter pylori infection have been documented to have thyroid hormone absorption problems [2].

The majority of the controversy in the past has centered on LT4 dosage and potentially administration timing. However, in recent years, more emphasis has been dedicated to the formation of LT4. For LT4 replacement therapy, the liquid form is now accessible in two forms: a soft gel capsule and an oral solution. A population-based research of 55,000 LT4 users found that transitioning from the tablet to the liquid form reduced the frequency of TSH readings significantly, especially in individuals using medicines that may interfere with LT4 absorption. These articles addressing the liquid form indicate some positive results in thyroidectomy patients as well.

Another essential consideration is whether or not suppressive thyroid hormone therapy is required in patients who have had a complete thyroidectomy for Differentiated Thyroid Carcinoma (DTC). This could indicate a long-term LT4 treatment, making it even more crucial to individualise the therapy in these patients to appropriately balance the medication's stated benefits against the possibility of side effects during follow-up. The significance of proper selection rises to the fore [3].

Thyroid carcinoma that has been identified and categorized

Treatment with thyroid hormones is crucial in the postoperative management of DTC. Long-term treatment with LT4 should, however, be tailored to the patient's needs and assessed against the risk of side effects, and individuals who require suppressive medication should be carefully chosen. Thus, it is critical to assess if poor general health and comorbidities (in particular, bone and cardiac disorders) contraindicate TSH suppression before starting LT4 therapy, in addition to the risk of chronic or recurring sickness and the response to the initial treatment. TSH-suppression medication following thyroidectomy due to DTC, can cause sadness, short-term memory and attention problems, and word selection anomia [4].

Given the evidence that aggressive TSH-suppressive therapy provided little or no benefit in nearly all patients who underwent total thyroidectomy for DTC, ATA guidelines

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recommended a scheme that carefully balances the potential benefits of this therapy against its cardiovascular and skeletal collateral effects. The TSH goal should be carefully chosen, especially in elderly individuals who have an elevated risk of osteoporosis and atrial fibrillation.

Unless contraindicated by comorbidities or advanced age (move the aim to 0.1-0.5 mU/L), patients in the ATA high-risk category should be maintained at TSH suppression below 0.1 mU/L after initial medication, according to the most recent Italian Consensus on Diagnosis and Treatment of DTC. TSH levels in patients in the ATA intermediate-risk category should be kept between 0.1 and 0.5 mU/L. Finally, patients in the ATA low-risk category with undetectable thyroglobulin should keep their TSH levels between 0.5 and 2 mU/L, however if the thyroglobulin is low, the amount drops to 0.1-0.5 mU/L. The low- and intermediate-risk categories should both maintain TSH levels between 0.5 and 2 mU/L in the case of comorbidities or advanced age.

Patients with excellent response to medication should maintain a TSH level between 0.5 and 2 mU/L during follow-up, independent of comorbidities or age, regardless of the initial ATA class risk assessment. In addition, patients with a biochemical incomplete or indeterminate response should maintain a TSH level of 0.1 to 0.5 mU/L, which should be increased to 0.5 to 2 mU/L if they have comorbidities or are older. Finally, patients with a structural partial response should keep their TSH below 0.1 mU/L unless they have comorbidities or are above the age of 65, in which case the aim should be 0.1–0.5 mU/L[5].

Conclusion

They found that moderate thyroid hormone suppressive therapy, with TSH maintained in the subnormal to normal range, was linked to improved overall and disease-free survival across all stages of DTC, while aggressive thyroid hormone suppressive therapy (TSH kept undetectable-subnormal) had no additional survival benefit.

References

1. Ernst FR, Barr P, Elmor R, et al. The Economic Impact of Levothyroxine Dose Adjustments: the CONTROL HE Study. Clin Drug Investig. 2017;37(1):71-83.
2. Mistry D, Atkin S, Atkinson H, et al. Predicting thyroxine requirements following total thyroidectomy. Clin Trial Clin Endocrinol. 2011;74(3):384-7.
3. Chen SS, Zaborek NA, Doubleday AR, et al. Optimizing Levothyroxine Dose Adjustment After Thyroidectomy With a Decision Tree. J Surg Res. 2019;244:102-6.
4. Giandalia A, Russo GT, Romeo EL, et al. Influence of high-normal serum TSH levels on major cardiovascular risk factors and Visceral Adiposity Index in euthyroid type 2 diabetic subjects. Endocrine. 2014;47(1):152-60.
5. Benvenga S, Pantano R, Saraceno G, et al. A minimum of two years of undertreated primary hypothyroidism, as a T result of drug-induced malabsorption of L-thyroxine, may have metabolic and cardiovascular consequences. J Clin Transl Endocrinol. 2019;16:100189.

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