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Taking Levothyroxine with Breakfast May Be Satisfactory for Many Patients

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SUMMARY

Background

Many patients take their levothyroxine (L-T_4) tablet with breakfast because they do not have time to wait 30 to 60 minutes, as recommended, to avoid the possible interference of absorption caused by food. Does this make a difference for most people? The current study addresses this question.

Methods

This prospective, randomized, controlled, crossover study, conducted in Brazil, evaluated patients with primary hypothyroidism who were receiving L-T_4 either while fasting or during breakfast. The study included 45 patients with primary hypothyroidism who had normal serum TSH (0.5 to 3.5 mU/L) on their usual dose of L-T_4. Patients were excluded if they were pregnant or lactating, had serious chronic disease, were taking medication that could interfere with absorption or metabolism of L-T_4, or had malabsorptive disorders such as celiac disease. Only two brands of L-T_4 were used. Patients were randomly assigned to take a single brand at their customary dose for 90 days either after an overnight fast and 1 hour of fasting after taking L-T_4 before breakfast (group 1) or at the start of breakfast (group 2). Then each patient crossed over to the other regimen for 90 days. Thyroid function tests were performed at baseline and at 45, 90, 135, and 180 days, as was a clinical evaluation. Patients reported food intake at breakfast, and the nutritional and caloric content of the meals were assessed.

Results

Forty-five patients met the inclusion criteria and underwent randomization, but only 42 completed the protocol. Twenty started taking L-T_4 in the fasting state and 22 started by taking it with breakfast. The mean age was 46 years, and 90% were women. The mean (±SD) duration of hypothyroidism was 85±64 months and the mean baseline serum TSH was 1.7±1.3 mU/l.

Patients consumed approximately 381 kcal during breakfast, 58% carbohydrate, 28% protein, and 14% fat. The most consumed food items were coffee, sugar, milk, biscuits, and fruit.

When the TSH data at the end of each 3-month period from both groups were analyzed together, TSH was higher when L-T_4 was taken during breakfast (2.9±2.8), as compared with taking it with conventional fasting for 1 hour after ingestion (1.9±1.8) (P = 0.028). At the end of both treatment periods, some patients had elevated TSH levels: 6 (14%) had elevated TSH when they took L-T_4 on an empty stomach and 10 (24%) had elevated TSH when they took L-T_4 during breakfast. Specific food preferences and calculated caloric intake did not explain the elevated serum TSH levels. With regard to patient preference, 41% preferred the fasting administration because they were used to it, 33% preferred the breakfast regimen, and 26% indicated no preference.

Conclusions

Levothyroxine administration with breakfast could be an alternative regimen for patients who have adherence difficulties because of the need for delaying intake, but this regimen is more likely to cause variability in the TSH level.

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ANALYSIS AND COMMENTARY

Variation of serum TSH levels in treated hypothyroid patients is often a cause of frustration to patients and physicians. Previous studies have differed with regard to whether it is preferable to take L-T_4 after an overnight fast and then waiting 30 to 60 minutes before breakfast or to take it before sleep (1, 2), as discussed in Clinical Thyroidology in April 2011 (3). After Wenzel showed that L-T_4 absorption was reduced by simultaneous food intake (4), withholding L-T_4 ingestion for 30 to 60 minutes has been strongly advised for better absorption of the hormone. Nevertheless, there are many patients who find this very inconvenient. If a patient does not want to take it before sleep because of a late meal, what should be done? I have found that many patients have reliable and normal serum TSH levels despite taking L-T_4 with breakfast, so I do not recommend that they change this pattern of ingestion.

The data of this study may be interpreted to show that taking L-T_4 with breakfast is reasonable. However, the data also clearly show that mean TSH levels are higher when L-T_4 is ingested with breakfast as compared with the conventional fasting regimen. More importantly, elevated serum TSH levels are probably more likely to occur when the dose is taken with breakfast. In patients who should have a precise serum TSH level, such as pregnant women or those with thyroid cancer, it is preferable to use the fasting or before-sleep regimen. But in the usual patient who has hypothyroidism, maintenance of a pattern that produces a normal serum TSH, whether L-T_4 is ingested with fasting or with breakfast, probably makes no difference.

As I stated in 2011 (3), I would like to get your thoughts about this common problem of the optimal time for L-T_4 ingestion.

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