

Thyroid-Stimulating Hormone as a Stress Biomarker in Thyroidectomy Patients: A Cohort Study

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Abstract : In this study, we investigated the relationship between stress and thyroid dysfunction in such patients who underwent thyroidectomy. This study included 101 patients who underwent thyroidectomy from January 2015 to June 2020 and experienced hypothyroidism. The included patients had good drug compliance with the same dosage of levothyroxine (LT4). The male-to-female ratio was 1:4.6, and the mean age was 45.4 years at surgery and 50.2 years at stressful events. Eighteen patients underwent lobectomies and, of these, 12 did not take LT4. The mean follow-up period was 49(8-93) months. Statistical analyses were performed using the paired t-test, Wilcoxon signed-rank test, and McNemer test using PROC MIXED with SAS 9.4. Forty-five patients (44.6%) had hypothyroidism with thyroid-stimulating hormone (TSH) >10 μ IU/mL. There was distress in 81 patients and eustress in 10 patients. TSH levels increased during a mean 5.8 months (min 1, max 12) in 24 patients who specified the date of their life events. Even though each patient took the same dose of LT4, when the patients were under stress, both the free T4 and T3 decreased and TSH increased, regardless of whether the patient experienced distress or eustress ($P < 0.001$). While adjusting for the effect of the free T4 and T3, TSH increased significantly in the patients after stress ($P < 0.001$). For patients with thyroid cancer who are simultaneously experiencing life events, TSH may be used as a stress biomarker to enable the implementation of appropriate treatment and counseling strategies.

Keywords : endocrine, thyroid, thyroid function, biomarker, stress

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