

Effect of erector spinae plane block on immune function and stress hormones in patient with breast cancer surgery: a prospective randomized controlled study.

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Abstract

Purpose: The purpose of the current study was to evaluate thyroid function in terms of serum thyroid-stimulating hormone (TSH, also known as thyrotropin), 3,5,3'-triiodo-L-thyronine (T3), and 3,5,3',5'-tetraiodo-L-thyronine (T4, also known as thyroxine) levels in migraineurs in comparison with non-migraineurs using a systematic review of literature and a meta-analysis.

Methods: This is a systematic review of case-control studies on serum TSH, T3, and T4 concentrations of migraineurs in comparison with non-migraineurs. After extracting the data from the finally included studies, the weighted overall standardized mean difference (SMD) was calculated.

Results: The weighted overall SMD for the impact of TSH, T3, and T4 blood levels for migraineurs in comparison with nonmigraineurs was as follows: 0.804 (95% CI, 0.045–1.564), – 0.267 (95% CI, – 0.660–0.125), 0.093 (95% CI, – 0.077–0.263), respectively. It is noteworthy that only the p value for the significance of the overall SMD for serum TSH level was statistically significant ($p = 0.038$), as examined by the z-test.

Conclusions: The results of the current study point to an association between migraine pathogenesis and changing TSH levels in comparison with those of controls.

Introduction

The physiological functions of Thyroid Stimulating Hormone (TSH) autoregulation, the ultra-short feedback loop inhibition of TSH by TSH itself, have not been determined. In this work we explored the role of TSH autoregulation in thyroid homeostasis. We synthesized the known physiology of autoregulation with the known physiological relationships between thyroid hormones; in particular between free thyroxine and TSH. We analysed the implications of TSH autoregulation, on the generation of the TSH response to free thyroxine (the 'TSH curve'), and on the variation in this

response, which might result from variations in hypothalamopituitary or thyroid gland function. Our analysis demonstrated that, in the circumstances of inter-individual and intra-individual variations to hypothalamo-pituitary function TSH autoregulation lessens variation in the TSH curve. This in turn enhances the probability of generating and maintaining a euthyroid free thyroxine value. This contribution of TSH autoregulation to the stabilisation of thyroid physiology offers a logical explanation for the evolutionary selection of this physiological process. Clinic-based studies suggest that hypothyroidism (as documented by high blood levels of TSH, also known as thyroidstimulating hormone/thyrotropin) may be a comorbid disorder as well as a pain exacerbating factor for primary headache disorders such as migraine. Interestingly, headache attributed to hypothyroidism was recently classified by the International Headache Society in the headache categories. The diagnostic criteria for headache attributed to hypothyroidism require pain resolution to have occurred within 2 months after effective treatment of hypothyroidism. Although there are original and review articles describing the hormonal levels relating to thyroid function in terms of TSH, 3,5,3'-triiodo-L-thyronine (T3), and 3,5,3',5'-tetraiodo-L-thyronine (T4) blood concentrations and migraine pathogenesis, no meta-analysis study has yet been carried out on this subject. Thus, the purpose of the current study was to evaluate the hormonal levels relating to the functional state of the thyroid gland in migraineurs in terms of serum TSH, T3, and T4 levels for migraineurs in comparison with non-migraineurs, using a systematic review and meta-analysis of original case-control studies.

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