

Sympathovagal imbalance in thyroid dysfunctions in females: correlation with thyroid profile, heart rate and blood pressure

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Abstract

The aim of the study was to investigate the role of spectral analysis of heart rate variability (HRV) for assessing the type and degree of sympathovagal imbalance (SVI) and their link to cardiovascular morbidities in thyroid dysfunctions. Forty-five female subjects (15 control subjects and freshly diagnosed untreated 15 hypothyroid and 15 hyperthyroid patients) were recruited for the study. Thyroid profile, body mass index (BMI), basal heart rate (BHR), blood pressure (BP) and spectral indices of HRV (TP, LFnu, HFnu and LF-HF ratio, mean RR, SDNN and RMSSD) were assessed in all the three groups. LF-HF ratio was correlated with thyroid profile, BMI, BHR and BP. SVI was more prominent in hyperthyroid ($P < 0.001$) compared to hypothyroid ($P < 0.05$) subjects. LF-HF ratio was correlated with thyroid profile in both hypo and hyperthyroid subjects; but correlation with BHR and BP was significant only in hyperthyroidism. Though the SVI was found to be due to both vagal withdrawal and sympathetic activation, especially in hyperthyroidism, contribution by vagal inhibition was prominent. Vagal inhibition contributes significantly to SVI in thyroid dysfunctions, especially in hyperthyroidism. As the present study indicates poor cardiovascular health due to vagal inhibition in patients suffering from thyroid dysfunctions, attempt should be made to improve vagal tone especially in hyperthyroid subjects to attain a stable sympathovagal and cardiovascular homeostasis.