

LONG-TERM MENTAL LOAD INFLUENCES VAGAL-IMMUNE PATHWAY IN HEALTHY SUBJECTS

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Introduction: The vagal inhibitory function plays a key role in the immune response *via* cholinergic anti-inflammatory pathway. We addressed hypothesis that long-term mental load could affect the allostatic biomarkers - cardiac vagal activity, inflammation and oxidative stress in otherwise healthy undergraduate students.

Methods: Continuous resting ECG signal was monitored in the group of sixteen female healthy students (age: 23.2 ± 0.2 y.) in two periods: at the term beginning after holidays (rest period, P1) and at the day before final exam (stress period, P2). Heart rate variability spectral analysis in the high frequency band (HF-HRV) - as an index of the cardiac vagal activity - was evaluated. In addition, mean R-R interval was calculated. Plasma concentrations of the markers indicating immune response and oxidative stress (tumor necrosis factor α -TNF- α , thiobarbituric acid-reactive substances-TBARS) were assessed in both periods.

Results: The spectral activity in HF-HRV was significantly reduced in the stress period(P2) compared to the rest period (P1; $p=0.045$). The TNF- α was significantly higher in the P2 compared to the P1 ($p=0.025$). No significant changes were found in the other parameters.

Conclusion: Our results revealed decreased cardiovagal activity associated with a greater immune response indicating potential altered vagal-immune interaction as a result of allostatic load in response to long-term mental stress in young healthy medical students. It could help to illuminate the pathway linking health and stress-related diseases.

Support: Grants VEGA 1/0059/13, 1/0087/14, 1/0057/11, UK/299/2013