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Assessment of changes in cardiac autonomic tone resulting from inflammatory response to the influenza vaccination.

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Abstract

A total of 71 healthy volunteers opting to have a routine influenza vaccination were investigated for potential changes in cardiovascular autonomic tone resulting from the temporary inflammatory effects of an influenza vaccination. A number of temporal and frequency domain parameters of heart rate and breathing were assessed 2-5 days prior to vaccination and 1-4 days postvaccination. Three lead electrocardiograph (ECG), beat-to-beat finger blood pressure and chest plethysmography signals were measured. After an extended resting period, patients performed metronome-guided breathing at six breaths per min for a period of 2 min. Standard Ewing tests of autonomic function were also performed. All volunteers completed a vaccine symptom questionnaire. A subgroup of 15 volunteers who reported significant symptomatic reaction to the vaccination for at least 24 h following vaccination were identified based on the results of the questionnaire. A significant reduction in measures of heart rate variability (HRV) obtained during metronome-guided breathing was noted following vaccination in the subgroup of 15 symptomatic volunteers. No significant changes were observed in standard Ewing assessment, fractal dimension analysis, baroreflex sensitivity assessment or resting HRV. There was no evidence of significant reduction in autonomic tone following vaccination in the full sample of 71 volunteers. Results suggest a significant change in HRV response to a small inflammatory provocation and suggest further investigation of the inflammatory causes of dysautonomia is of value.

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