

**A Prospective Evaluation of the Effect of Simvastatin on Heart Rate Variability in  
Non-ischemic Cardiomyopathy**

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**Abstract**

**Objective:** We examined the effect of simvastatin on heart rate variability (HRV) in patients with non-ischemic dilated cardiomyopathy to evaluate for an anti-sympathetic effect of statins independent of anti-ischemic properties.

**Background:** Modulation of sympathetic tone may contribute to statin-mediated reduction in sudden cardiac death.

**Methods:** The study was a prospective, open label, self-controlled trial. Frequency domain analysis of HRV was assessed in 25 patients with non-ischemic dilated cardiomyopathy at baseline and after a 6-week course of simvastatin. The primary endpoint was the change in 5 minute sitting total spectral power (TSP) as a composite measurement of autonomic nervous system modulation. Secondary endpoints included the change in respiratory frequency area (RFa) with deep breathing (parasympathetic stress) and in low frequency area (LFa) with valsalva (sympathetic stress).

**Results:** Simvastatin had no effect on 5 minute sitting total spectral power (baseline  $1932 \pm 1165 \text{ms}^2$  vs. post-treatment  $2570 \pm 1877 \text{ms}^2$ ;  $p=0.770$ ), RFa with deep breathing (baseline  $19 \pm 7 \text{bpm}^2$  vs. post-treatment  $14 \pm 4 \text{bpm}^2$ ;  $p=0.31$ ) or LFa with valsalva (baseline  $26 \pm 6 \text{bpm}^2$  vs. post treatment  $32 \pm 8 \text{bpm}^2$ ;  $p=0.342$ ). Bivariate analysis demonstrated no correlation between LDL change and change in TSP or RFa, but did demonstrate an inverse relationship between change in LDL and change in LFa with valsalva stress ( $r = -0.45$  and  $p = 0.041$ ).

**Conclusion:** Although simvastatin did not change baseline HRV, a modest relationship exists between the extent of LDL reduction and sympathetic responsiveness to stress.