



## Heart rate lowering reduces cardiovascular disease burden

George D. Giannoglou & Yiannis S. Chatzizisis

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# Letter to the Editor

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Dear Editor,

We read the ATHENA study by Kopalava *et al.* with interest<sup>1</sup>. This registry conducted in 20 cardiology and general practices in Russia investigated the achievement of optimal resting heart rate (HR <60 beats/min) with beta-blockers in 399 patients with stable ischemic heart disease (IHD) and primary hypertension. The study concludes that resting HR control in these patients is suboptimal. Such studies may increase awareness regarding HR control. HR is an easily measurable, reproducible and inexpensive predictor of IHD-related morbidity and mortality<sup>2</sup>.

The study, by design, did not compare clinical outcomes. This gap is covered by several large studies suggesting the importance of low HR in cardiovascular disease<sup>2</sup>. It seems that the effect of low HR on local hemodynamic milieu (i.e. shear stress and tensile stress) plays a key role<sup>3</sup>. Low HR attenuates the magnitude and frequency of tensile stress on the arterial wall and reduces the exposure of coronary endothelium to the systolic low and oscillatory endothelial shear stress, thereby creating a less pro-atherogenic microenvironment<sup>3</sup>.

Experimental and clinical studies elucidating the involvement of local hemodynamics are needed. Despite the lack of definitive pathobiologic evidence, clinical studies support the contribution of HR lowering in decreasing cardiovascular morbidity and mortality.

George D. Giannoglou MD PhD

*Professor of Cardiology, First Department of Cardiology, AHEPA University Hospital, Aristotle University Medical School, Thessaloniki, Greece.*

Tel./Fax: +30 2310 994837; yan@med.auth.gr

Yiannis S. Chatzizisis MD PhD

*Cardiovascular Division, Brigham and Women's Hospital, Harvard Medical School, Boston, MA, USA*

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