Usefulness of attenuated heart rate recovery immediately after exercise to predict endothelial dysfunction in patients with suspected coronary artery disease

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摘要

Abstract

Attenuated heart rate recovery after graded exercise, which is associated with decreased vagal activity, is a powerful predictor of overall mortality. Endothelial function plays a key role in determining the clinical manifestations of established atherosclerotic lesions and has shown to be suppressed by increased sympathetic tone. We designed this study to determine whether patients with an attenuated heart rate recovery after exercise could predict endothelium dysfunction. Sixty-six patients with suspected coronary artery disease were enrolled, and a noninvasive method of brachial ultrasound was used to measure endothelium-dependent flow-mediated vasodilation and endothelium-independent nitroglycerin-mediated vasodilation. The patients were divided equally into 3 groups according to heart rate recovery in 1 minute after peak exercise (n = 22 in each group): group 1 had heart rate recovery of ≤19 beats in the first minute; group 2, 20 to 28 beats; and group 3 had ≥29 beats. The endothelium-dependent flow-mediated vasodilation responses were significantly decreased in group 1 compared with groups 2 and 3 (2.5 ± 3.0 vs 5.0 ± 3.4 vs 5.4 ± 2.7%, P = 0.006), but responses to sublingual nitroglycerin showed no difference among the 3 groups (p = 0.332). According to multivariate analysis, heart rate recovery after exercise was an independent predictor of endothelial function.

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