

## Prognostic Value of Heterogeneity of Ventricular Repolarization in Survivors of Acute Myocardial Infarction

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### Summary

**Background:** The expansion of indications for implantation of cardioverter-defibrillators (ICD) has enhanced the need for risk stratification of patients post myocardial infarction (MI), while the improved treatment of acute MI has decreased mortality and diminished the prognostic power of traditional risk variables.

**Hypothesis:** Increased heterogeneity of ventricular repolarization quantified by TCRT (total cosine R-to-T, angular difference between spatial QRS and T loops, decreased with increase in repolarization heterogeneity) is an independent predictor of mortality in patients post MI.

**Methods:** Left ventricular ejection fraction (EF), QRS duration on signal-averaged ECG, number of ventricular ectopic beats (VE)/h, heart rate variability (HRV) triangular index, heart rate turbulence slope on 24-h Holter recording, and TCRT were analyzed in 334 survivors of acute MI followed up for  $41 \pm 20$  months.

**Results:** In multivariate analysis, EF < 35% (relative risk [RR] 2.3, 95% confidence interval [CI] 1.1–4.7,  $p = 0.023$ ), VE > 10/h (RR 2.2, CI 1.0–4.6,  $p = 0.044$ ), HRV < 20 U (RR 2.2, CI 1.1–4.5,  $p = 0.032$ ), and TCRT <  $-0.896$  (RR 4.3, CI 2.2–8.5,  $p = 0.00001$ ) were independent predictors of cardiac mortality (11%). Independent predictors of arrhythmic mortality (5%) were VE, HRV, and TCRT (RR 5.8, CI 2.1–15.6,  $p = 0.0004$ ). Cardiac and arrhythmic mortality of patients with both EF < 35% and TCRT <  $-0.896$  were > 60 and > 30%, respectively, compared with 17 and 7% in those with only EF < 35% or TCRT <  $-0.896$ .

**Conclusion:** Decreased TCRT, which reflects increased repolarization heterogeneity, is a strong and independent predictor of cardiac and arrhythmic death in patients post MI.

**Key words:** risk stratification, myocardial infarction, ventricular repolarization, ventricular gradient, electrocardiogram

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