

Ventricular Arrhythmias During Clinical Treadmill Testing and Prognosis

Nora TOMA, MD, Research Fellow in Cardiology
Cardiology Department, University Hospital, Bucharest, Romania

Exercise testing is an important prognostic tool, but the prognostic significance of exercise-associated ventricular arrhythmias remains uncertain. Frequent ventricular ectopy during and after exercise has been independently associated with adverse prognosis in some populations, but not in others. Frequent ectopy was defined as ectopy composing greater than 10% of all complexes or greater than 7 premature ventricular complexes (PVCs) per minute. In the Framingham community cohort, however, PVCs during exercise were associated with increased mortality at lower and more prevalent PVC rates than had been previously reported. Thus, while some authors have proposed that ectopy be used as a new criterion for exercise test positivity, the optimal definition of significant arrhythmia and utility for risk stratification of individual patients are yet unresolved. Furthermore, the relative prognostic significance of exercise and recovery-period ectopy also remains unclear.

The purpose of this study was to evaluate the clinical correlates and relative prognostic significance of exercise and recovery PVCs in subjects referred for clinical exercise treadmill

testing. There were included 2075 subjects which underwent symptom-limited treadmill testing and associations between PVCs during and after exercise and outcomes were analyzed by means of Kaplan-Meier and propensity-adjusted Cox proportional hazards analyses. Premature ventricular complexes were observed during or after exercise in more than half of the individuals in our large heart failure – free clinical cohort. The study found that recovery PVCs were robustly associated with adverse prognosis regardless of the presence of PVCs during exercise and that PVCs during exercise were associated with increased mortality rates only if accompanied by PVCs after exercise.

In conclusions PVCs occurring during recovery from exercise testing have prognostic significance that augments established risk factors and other exercise test findings, whereas PVCs occurring solely during exercise have limited prognostic significance. More sensitive noninvasive testing with exercise echocardiography, myocardial scintigraphy, or evaluation of left ventricular systolic function may be warranted in subjects with recovery PVCs, particularly those with intermediate findings during exercise treadmill testing.

Comment on the paper:

Frederick E, Dewey BA, John R Kapoor, et al. – Ventricular Arrhythmias During Clinical Treadmill Testing and Prognosis
Arch Intern Med 2008; 168(2):225-234