To the Editor:
The contribution by Maeda et al. is interesting because the authors implemented the technology of T-wave alternans (TWA)/modified moving average method, in a study of 3 sets, each consisting of 21 patients (controls, patients with old myocardial infarction without episodes of sustained ventricular tachyarrhythmia, and patients with old myocardial infarction with episodes of sustained ventricular tachyarrhythmia, sudden cardiac death or cardiac death, who had received an implantable cardioverter-defibrillator). Using a value of $\geq 65 \mu V$ for a positive TWA test, the authors found such positivity most frequently in the 3rd set of patients, and that TWA was the only significant covariate of the incidence of serious ventricular arrhythmias during a mean follow-up of 6 years.

Of interest are the following. (1) The authors detected positive TWA in 24% of their controls, which points to recent information that the phenomenon of TWA can be noted even in normal subjects (existence of physiological TWA levels). (2) Although there is literature regarding the incremental merit of quantitative TWA, employing MMA, the authors report threshold results by using as positive tests those that showed $\geq 65 \mu V$ TWA. One wonders about the actual values of TWA in predicting outcomes in the 3 study groups. (3) Heart rate rise, for example during exercise-based assessment of TWA, leads to increases of the calculated values of TWA. Is it possible that heart rate changes during the course of ambulatory ECG recordings had impacted the numerical value of TWA, and thus heart rate is an independent predictor of the maximal TWA measured (but not reported) by the authors? (4) It is widely appreciated that the amplitude of the T-waves in ambulatory ECG tracings varies with time to a large degree in both normal subjects and patients, while they are asymptomatic or symptomatic during such recordings. Figure shows the variation of T-wave amplitude (compare A and B, recorded 3 h apart at heart rates 94 beats/min and 86 beats/min, correspondingly) in a 59-year-old hypertensive patient with a left ventricular ejection fraction of 55%, a previous episode of paroxysmal atrial fibrillation, who is currently asymptomatic and who underwent an ambulatory ECG recording to evaluate for underlying atrial fibrillation. The impact of such variations of the amplitude of T-waves on the calculated corresponding TWA has not been ascertained, but one wonders whether T-wave amplitude is one of the determinants of the magnitude of TWA, thus suggesting that TWA measured values probably should be adjusted for the corresponding T-wave amplitudes. Do the authors feel that adjusting the values of TWA that they measured by a parameter reflecting the heart rate and T-wave amplitudes temporally corresponding to the generated TWA magnitudes could provide better prognostic value than the cutoff value of $\geq 65 \mu V$?

References

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