LETTER TO THE EDITOR

Athletes, Ventricular Arrhythmias, Electrophysiological Testing, Microvolt T-Wave Alternans, and a Follow-Up of 30 ± 21 Months: A Need for Follow-Up Updates

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To the Editor:

The very important study by Inama et al. in the *Journal*¹ reports on the study of 85 athletes without history of cardiac disease aged 32 ± 11 years with frequent ventricular ectopy or nonsustained ventricular tachycardia on 24-hour ambulatory ECG monitoring, who underwent cardiological evaluation, consisting of history taking, physical examination, routine laboratory testing, thyroid function tests, ECG, Holter monitoring, echocardiography, cardiac catheterization, coronary angiography, magnetic resonance imaging, ajmaline provocative testing to unmask Brugada syndrome, maximal exercise stress testing, programmed electrical stimulation (PES), microvolt T-wave alternans (MTWA), myocardial biopsy and follow-up for 30 ± 21 months, with the end-points being sudden cardiac death and malignant ventricular arrhythmias. The authors found a good correlation between both positive and negative PES and MTWA, PES and nonnegative (positive + indeterminate) MTWA, but no correlation between positive or negative PES and indeterminate MTWA. The study concluded that both PES and MTWA predicted sudden cardiac death and malignant ventricular tachyarrhythmias in the athletes at follow-up. Scrutiny of the study reveals a very comprehensive cardiological evaluation of this cohort, which consisted of a consecutive series of referred athletes. In going over the details of the study one cannot

help but think that such material, as in this contribution,¹ should not only provide the raw data for a journal article, but it should continue generating information via an extended follow-up beyond what the authors reported. Thus an update on the follow-up of their cohort beyond the mean of 2.5 years could be provided by the authors of this study periodically in the future; or this could be done by registries receiving data (and follow-up updates) of individual studies of athletes, in this particular instance. This role is attempted by meta-analyses, although in this research format, the follow-up reported is a reflection of what is included in the individual articles (i.e., without an update). There were variations in pathology (arrhythmogenic right ventricular dysplasia, myocarditis, early-stage dilated cardiomyopathy, no evident heart disease) antiarrhythmic therapy (amiodarone, sotalol, beta-blockers), implantation of ICDs, disposition (allowance or disqualification to practice sports), and kinds of sports (Table 1 of the author's article). Certainly more variation would be expected in the future in one or more of the above attributes. This makes the body of the data with extended follow-up, less homogeneous muddled, or seemingly less suitable for analysis or reporting, but this could also be viewed as an advantage since it is a reflection of what happens in real life. Ongoing updates of follow-up of individual studies, or data from registries, are needed to evaluate the true role of PES

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and MTWA in predicting the clinical outcome, in athletes (as in this study, where survival expectation is greater than in patients with cardiomyopathy) or in any group of cardiac patients we focus on. What do Inama et al. feel about follow-up beyond the mean of 2.5 years?

REFERENCE

1. Inama G, Pedrinazzi C, Durin O, et al. Microvolt T-wave alternans for risk stratification in athletes with ventricular arrhythmias: Correlation with programmed ventricular stimulation. *Ann Noninvasive Electrocardiol* 2008;13:14-21.