Simple electrocardiographic parameters predicting risk of hypertrophic cardiomyopathy: Too simple?

To the Editor,

We have read with great interest the article titled "Tp-e interval and Tp-e/QTc ratio as novel surrogate markers for prediction of ventricular arrhythmic events in hypertrophic cardiomyopathy" by Akboğa et al. (1) in the latest issue of the Anatol J Cardiol 2017; 18: 48-53. The authors investigated Tp-e interval and Tp-e/QTc ratio in patients with hypertrophic cardiomyopathy and ventricular arrhythmic events. Some important issues, however, should be mentioned:

1. As stated by the authors, these measurements and resulted calculation are heart rate-dependent. Bazett's formula overestimates corrected QT interval with higher heart rates and underestimates it with lower heart rates compared with other corrections, including Fridericia, Framingham, and Hodges formulas, although this correction formula are widely used in current clinical standards (2). It has been shown that Fridericia and Framingham formulas are better predictors of all-cause mortality. Furthermore, Bazett's correction has been shown to be inferior to Fridericia and Framingham formulas, even in patients with normal heart rate (2).

2. It is important to note that not all ventricular arrhythmic episodes are related to increased risk of sudden cardiac death. Extended monitoring using Holter monitors, loop recorders, and implantable cardioverter–defibrillator (ICD) recordings are related to high frequency of non-sustained ventricular tachycardia (NSVT) in patients with hypertrophic cardiomyopathy and in particular, episodes with faster, longer, and repetitive events are highly associated with device-treated arrhythmias compared with non-recurrent, slower, and shorter runs of ventricular arrhythmias, such as three to four ventricular contractions at 120–130 bpm (3). In the current study, the number, rate, and duration of episodes recorded from Holter monitoring and their relation to electrocardiographic parameters seem as important gaps in knowledge.

3. The percentage of patients with an ICD, extended monitoring, and the detection of ventricular arrhythmic events using ICD and device-treated events in relation to electrocardiographic parameters should also be discussed.

4. Current guidelines differ in predicting risk and recommending ICD therapy. The European Society of Cardiology guideline uses NSVT as a binary variable. However, the ACCF/AHA guideline evaluates NSVT as a minor risk factor, which gains an indication in the presence of other risk factors (4). No data is present regarding cut-off values of Tp-e interval and Tp-e/QTc ratio in predicting risk. Furthermore, these simple (or complex) electrocardiographic parameters can be continuous variables instead of binary variables. Therefore, proven risk with increasing measurements is of utmost importance.

5. In such studies that use measurements, correlation coefficients for intra- and inter-observer reliabilities should be presented.

6. Lastly, Pearson correlation seems as a good choice to investigate any correlation if data are normally distributed and continuous. However, no information was given regarding the distribution of variables. Assuming that the data were appropriate using Pearson correlation, the identified correlation coefficients were moderate and weak, not strong, for maximal LV thickness/Tp-e interval and maximal LV thickness/Tp-e/QTc ratios, respectively.

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DOI:10.14744/AnatolJCardiol.2017.8021

Author`s Reply

To the Editor,

I thank the journal readers for their great interest in our original article titled "Tp-e interval and Tp-e/QTc ratio as novel surrogate markers for prediction of ventricular arrhythmic events in hypertrophic cardiomyopathy" recently published in The Anatolian Journal of Cardiology (1).