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.

Serkan Çay, Özcan Özeke, Fırat Özcan
Department of Cardiology, Division of Arrhythmia and Electrophysiology, University of Health Sciences, Yüksek İhtisas Heart-Education and Research Hospital, Ankara-*Turkey*

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Address for Correspondence: Dr. Serkan Çay
Sağlık Bilimleri Üniversitesi Yüksek İhtisas Kalp Eğitim ve Araştırma Hastanesi Kardiyoloji Anabilim Dalı, Aritmi ve Elektrofizyoloji Bölümü
06100, Sıhhıye, Ankara-*Türkiye*
E-mail: cayserkan@yahoo.com

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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).

First, our main purpose was to evaluate the association of repolarization dispersion represented by Tp-e interval with ventricular arrhythmic events (VAEs) in patients with hypertrophic cardiomyopathy (HCM). QTc duration derived by applying Bazett's formula has been already reported to be associated with VAEs in HCM (2). Second, because we designed this study according to the current 2014 European Society of Cardiology guidelines on diagnosis and management of HCM, non-sustained ventricular tachycardia (three or more consecutive ventricular extra systoles at a rate of ≥120 beats/min, terminating spontaneously within 30 s) was defined as VAEs detected by holter monitoring or implantable cardioverter defibrillator (ICD) together with sustained ventricular tachycardia (>30 sec or hemodynamic collapse) (3). Third, unfortunately, as population of our study is relatively small, we did not performe subgroup analysis for patients with ICD concerning VAEs. Fourth, inter- and intra-observer coefficients of variation in our study were 3.2% and 2.8%, respectively. Fifth, as we mentioned in the method section of our article, normally distributed variables were represented as mean±standard deviation including Tp-e interval in Table 1. Therefore, Pearson correlation test was used to indicate the correlation of maximal left ventricular thickness with Tp-e interval and Tp-e/QTc ratio. Finally, it is difficult to make a final decision according to our hypothesis-generating study with relatively limited study population. Hence, these findings need to be confirmed in further and larger prospective multicenter trials. Thereafter, these parameters may be used more in clinical practice for predicting VAEs in HCM.

Conflicts of interest: The author has no conflicts of interest to disclose.

Mehmet Kadri Akboğa
Department of Cardiology, Türkiye Yüksek Ihtisas Training and Research Hospital, Ankara-*Turkey*

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Address for Correspondence: Dr. Mehmet Kadri Akboğa
Türkiye Yüksek İhtisas Eğitim ve Araştırma Hastanesi
Kardiyoloji Bölümü, Ankara-*Türkiye*
Phone: +90 312 306 11 34
E-mail: mkakboga@yahoo.com

Who are the main actors of cardiac device follow-up? Analysis of the super follow-up study

To the Editor,

We read with great interest the excellent paper titled "Should physicians instead of industry representatives be the main actor of cardiac implantable electronic device follow-up? (Super Follow-up)" by Üreyen et al. (1) recently published in the Anatolian Journal of Cardiology 2017; 18: 23-30. The authors presented their work on the role of proper cardiac device follow-up performed by cardiologists. They commented that the errors made by representatives of industries are higher than expected—an interesting finding.

Although the study conducted by Üreyen et al. (1) is very beneficial to health professionals and individuals alike, some points warrant mention:

1. Üreyen et al. (1) did not mention the role of AF detection algorithms (automatic mode switches) to assess whether such patients were in need of anticoagulation . According to the literature, greater than 5–6 min spent in AF is an important predictor of stroke, with such patients in need of anticoagulation therapy based on CHADS2 or CHA2DS2VasC scores (2). Industry representatives may not be aware of indications for stroke prevention in patients with cardiac devices, a limitation that can leave patients at risk. Hence, responsibility of device follow-ups have to be taken by physicians only.

2. The role of industry represantives is very crucial. Physicians work in tandem with industry representatives and without their efforts, physician's quality of care would be reduced. However, due to technological improvements, it is becoming harder for physicians to acclimate themselves with improved medical technologies. During my fellowship training in Canada, there were some patients who required an industry representative to be present alongside the physician. For instance, there was a patient with inappropriate device treatments due to T-wave oversensing, which was resolved after decay delay adjustment (3). As cardiac electrophysiologists in North America, we are not allowed to change decay delay parameters in ICD patients without industry technical support.

3. Üreyen et al. (1) stated that cardiac implantable electronic devices (CIEDs) should be followed by medical doctors instead of industry representatives alone. We think that Üreyen et al. (1) meant that the efforts of cardiac rhythm device clinic specialists, including cardiac electrophysiologists and specialized trained device technicians (nurses), should be in tandem to provide patient care.

4. One of the overlooked issues is to assess percentage of biventricular pacing in patients with CRT. It is unreliable to de-