LETTERS TO THE EDITOR

Inquiries about Tpe and ventricular arrhythmias in patients with takotsubo syndrome.

To the Editor:

Vazirani and colleagues[1] reported on the advantages of the employment of the T-wave peak–end (Tpe) interval uncorrected and corrected for heart rate, over the traditional QT interval corrected for heart rate, using Bazett's formula, as a predictor of ventricular arrhythmias (VAs) (monomorphic and polymorphic ventricular tachycardia and ventricular fibrillation) in patients with takotsubo syndrome (TTS), based on the data from the RETAKO (REgistro nacional multicéntrico sobre síndrome de TAKOtsubo) registry. The authors also found that the precordial lead–derived longest Tpe may be an easier and more reliable marker than the QT interval corrected for heart rate, for the prediction of VAs in TTS. Because the study included only 13 patients, the authors' findings need to be corroborated by larger cohorts. I will appreciate a response to the following: (1) the study employed only the first electrocardiogram for Tpe measurements, and evaluation of subsequent hospital and follow-up electrocardiograms may be of value for short- and long-term VA prediction; (2) because typical or atypical TTS left ventricular morphological variants were encountered, one wonders whether Tpe was different in these 2 variants; (3) while the authors refer to monomorphic ventricular tachycardia and focal gadolinium enhancements, it may be of value to also refer to the presence and degree of myocardial edema and Tpe[2,3]; and (4) the greater prevalence of ST-segment elevation in the control group may point to a later hospital presentation of the patients with VA.

John E. Madias, MD, FACC, FAHA (madiasj@nychhc.org)

Icahn School of Medicine at Mount Sinai, New York, New York; Division of Cardiology, Elmhurst Hospital Center, Elmhurst, New York

Funding Sources: This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Disclosures: The authors have no conflicts to disclose.

Authorship: All authors attest they meet the current ICMJE criteria for authorship.

References

1. Vazirani R, Martínez E, Uribarri A, et al. RETAKO researchers. Repolarization parameters and ventricular arrhythmias in Takotsubo syndrome: a substudy from the RETAKO national registry. Heart Rhythm O2 2023; 4:517–519.
2. Madias JE. Takotsubo syndrome/QTc interval prolongation/myocardial edema/cardiac sympathetic denervation/cardiac arrhythmias: a quintet needing exploration. Int J Cardiol 2016;203:259–261.
3. Perazzolo Marra M, Zorzi A, Corbetti F, et al. Apicobasal gradient of left ventricular myocardial edema underlies transient T-wave inversion and QT interval prolongation (Wellens' ECG pattern) in Tako-Tsubo cardiomyopathy. Heart Rhythm 2013;10:70–77.

Reply to the Editor: Inquiries about Tpe and ventricular arrhythmias in patients with takotsubo syndrome

To the Editor:

The comments regarding repolarization parameters and ventricular arrhythmias[1] in the RETAKO (REgistro nacional multicéntrico sobre síndrome de TAKOtsubo) registry[2] are welcome. We proceed to address the raised issues.

First, we used the first electrocardiogram (ECG), as few patients had long-term ECG recordings available.[3] Further studies are needed to assess the value of T-wave peak–end measurements in takotsubo syndrome as a marker of long-term ventricular arrhythmogenesis, similar to what has been observed in hypertrophic cardiomyopathy.[4] Second, the repolarization appears more altered in typical forms, possibly due to the presence of more extensive ventricular segmental abnormalities, resulting in a trend toward longer corrected QT and T-wave peak–end intervals in precordials that did not reach statistical significance. Additionally, no relevant differences were observed in limb leads. Third, cardiac magnetic resonance imaging was not available for most patients. We hope to include more parameters in our registry in the future to address this and other questions. Fourth, when analyzing the time from symptom onset to diagnosis in cases with arrhythmia, we observed a longer duration compared with controls (41.50 ± 68 hours vs 12.18 ± 24.81 hours; $P < .001$). This could potentially influence the higher prevalence of ST-segment elevation in the control group, as this ECG finding tends to occur later in the presentation.[5]

Ravi Vazirani, MD*, Eduardo Martínez, MD*, Aitor Uribarri, MD, PhD†, Emilia Blanco-Ponce, MD, PhD‡, Manuel Martínez-Sellés, MD, PhD§, Miguel Corbí-Pascual, MD‖, Alessandro Sionis, MD, PhD¶, Jorge Salamanca, MD#, Oscar Vedia, MD*, Iván J. Núñez-Gil, MD, PhD*,**,†† (ibnsky@yahoo.es)

https://doi.org/10.1016/j.hroo.2023.11.010

[*]*Instituto Cardiovascular, Hospital Clínico San Carlos, Madrid, Spain;* [†]*Servicio de Cardiología, Hospital Universitario Vall d'Hebron, Barcelona, Spain;* [‡]*Servicio de Cardiología, Hospital Universitario Arnau de Vilanova, Lérida, Spain;* [§]*Servicio de Cardiología, Hospital General Universitario Gregorio Marañón, Centro de Investigación Biomédica en Red Enfermedades Cardiovasculares, Universidad Europea, Universidad Complutense, Madrid, Spain;* [||]*Servicio de Cardiología, Hospital Universitario de Albacete, Albacete, Spain;* [¶]*Unidad de Cuidados Intensivos Cardiológicos, Servicio de Cardiología, Hospital de Sant Pau, Instituto de Investigación Biomédica Sant Pau, Barcelona, Spain;* [#]*Servicio de Cardiología, Hospital Universitario de la Princesa, Instituto de Investigación Sanitaria Princesa, Madrid, Spain;* [**]*Cardiology Department, Hospital Clínico San Carlos, Madrid, Spain;* [††]*Faculty of Biomedical and Health Sciences, Universidad Europea de Madrid, Villaviciosa de Odón, Spain*

Funding Sources: FIC (Fundación Interhospitalaria para la Investigación en Cardiología) supported RETAKO.

Disclosures: The authors have no conflicts to disclose.

Authorship: All authors attest they meet the current ICMJE criteria for authorship.

References

1. Vazirani R, Martínez E, Uribarri A, et al. Repolarization parameters and ventricular arrhythmias in Takotsubo syndrome: a substudy from the RETAKO national registry. Heart Rhythm O2 2023;4:517–519.
2. Núñez-Gil IJ, Andrés M, Almendro Delia M, et al. Caracterización del síndrome de tako-tsubo en España: resultados del registro nacional RETAKO. Rev Española Cardiol 2015;68:505–512.
3. Martín de Miguel I, Núñez-Gil IJ, Pérez-Castellanos A, et al. RETAKO investigators. Electrocardiographic characteristics and associated outcomes in patients with takotsubo syndrome. Insights from the RETAKO registry. Curr Probl Cardiol 2021;46:100841.
4. Dinshaw L, Münch J, Dickow J, et al. The T-peak-to-T-end interval: a novel ECG marker for ventricular arrhythmia and appropriate ICD therapy in patients with hypertrophic cardiomyopathy. Clin Res Cardiol 2018;107:130–137.
5. Madias JE. Plausible mechanisms of the rapid conversion of ST-segment elevation to T-wave inversion in Takotsubo syndrome. Int J Cardiol 2013;168:4593–4595.