THE ANATOLIAN JOURNAL OF CARDIOLOGY

Official journal of the TURKISH SOCIETY OF CARDIOLOGY

Reply to Letter to the Editor: "2D LGE or 3D High-Resolution LGE: Role of Cardiovascular Magnetic Resonance Imaging in the Treatment of Ventricular Arrhythmias"

LETTER TO THE EDITOR
REPLY

To the Editor,

We are pleased that our paper raised interest among readers of the *Anatolian Journal of Cardiology*. Even though the late gadolinium enhancement cardiac magnetic resonance (LGE-CMR) imaging was first established for ventricular tissue characterization in localizing ventricular tachycardia (VT) ablation targets (CMR-aided), it is by now widely used as a clinical tool to guide VT ablation (CMR-guided) through the detection of the arrhythmogenic substrate and conducting channels. While the CMR-derived information has been used alongside electroanatomic mapping (EAM) data to aid VT ablation (CMR-aided), the CMR-guided approaches, where EAM acquisition is completely avoided, make procedures faster, and the operator relies solely on imaging data.[1] As the authors reported, the analysis of CMR images with software, which is known as ADAS (ADAS 3D, Barcelona, Spain), is very helpful for identifying these conducting channels.[2] The preliminary results showed that the mean procedure duration was lower in CMR-guided when compared to CMR-aided and No-CMR substrate ablation (109 ± 61 vs. 206 ± 70 and 233 ± 48 minutes, respectively; $P < .001$ for both comparisons).[1] VOYAGE is a prospective, randomized, multicenter controlled open-label study designed to compare in terms of efficacy, efficiency, and safety of a CMR-aided or guided workflow to standard EAM-guided VT ablation.[3]

As the authors stated, the 3-dimensional high-resolution (3D-HR) LGE CMR imaging is the ideal sequence for ADAS software processing, provides finer details, and allows for a better characterization of the scar morphology than the 2-dimensional (2D) LGE navigator sequence. However, we utilized conventional 2D T1 without phase-sensitive inversion recovery LGE sequence. However, the quality of LGE sequences with conventional CMR remains a problem particularly in patients with implantable cardioverter-defibrillator (ICD) due to metal-induced artifacts, especially in the anterior and lateral parts of the LV due to the proximity of this region to the ICD generator.[4] Since the current case had no ICD generator, the conduction channels were well correlated with 2 opposite reentry around the inferior aneurysm with simultaneous peri-mitral reentry.[2] The coherent mapping and isochronal late activation mapping (ILAM) were perfectly compatible with the CMR-guided channel delineation. In near future, real-time CMR-guided ablation would expect to be available in many centers for increased procedure efficacy, efficiency, and safety. Large prospective studies are needed to confirm the role of both pre-procedural and real-time CMR in the analysis of substrate and ablation lesions and their relationship with clinical endpoints.[2]

REFERENCES

1. Soto-Iglesias D, Penela D, Jáuregui B, et al. Cardiac magnetic resonance-guided ventricular tachycardia substrate ablation. *JACC Clin Electrophysiol*. 2020;6(4):436-447. [CrossRef]

Meryem Kara[1]
Nilgün Işıksalan Özbülbül[2]
Hande Elif Özcan Çetin[1]
Ahmet Korkmaz[1]
Özcan Özeke[1]
Serkan Çay[1]
Fırat Özcan[1]
Serkan Topaloğlu[1]
Dursun Aras[3]

[1]*Department of Cardiology, Health Sciences University, Ankara City Hospital, Ankara, Turkey*
[2]*Department of Radiology, Health Sciences University, Ankara City Hospital, Ankara, Turkey*
[3]*Department of Cardiology, İstanbul Medipol University, İstanbul, Turkey*

Corresponding author:
Özcan Özeke
✉ ozcanozeke@gmail.com

Cite this article as: Kara M, Işıksalan Özbülbül N, Özcan Çetin HE, et al. Reply to letter to the editor: "2D LGE or 3D high-resolution LGE: Role of cardiovascular magnetic resonance imaging in the treatment of ventricular arrhythmias". *Anatol J Cardiol*. 2023;XX(X):1-2.

DOI:10.14744/AnatolJCardiol.2023.3267

2. Kara M, Işıksalan Özbülbül N, Özcan Çetin HE, et al. Cardiac magnetic resonance-guided conducting channel delineation of an aneurysmal ventricular tachycardia with the same circuit in the reverse direction. *Anatol J Cardiol*. 2023;27(2):E5-E6. [CrossRef]
3. Lilli A, Parollo M, Mazzocchetti L, et al. Ventricular tachycardia ablation guided or aided by scar characterization with cardiac magnetic resonance: rationale and design of VOYAGE study. *BMC Cardiovasc Disord*. 2022;22(1):169. [CrossRef]
4. Roca-Luque I, Van Breukelen A, Alarcon F, et al. Ventricular scar channel entrances identified by new wideband cardiac magnetic resonance sequence to guide ventricular tachycardia ablation in patients with cardiac defibrillators. *Europace*. 2020;22(4):598-606. [CrossRef]