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INSIDE THIS ISSUE

STATE-OF-THE-ART REVIEW

Ventricular Tachycardia Ablation in Nonischemic Cardiomyopathy



1123

Katja Zeppenfeld

Catheter ablation is being increasingly performed as adjunctive treatment to prevent recurrent implantable cardioverter-defibrillator therapies in patients with nonischemic cardiomyopathy and ventricular tachycardia (VT). In the context of VT ablation, nonischemic cardiomyopathy usually refers to dilated cardiomyopathy (DCM) as one morphological phenotype. Over the past decades, progress has been made to better characterize distinct subtypes and to differentiate between causes of DCM, which has important practical and prognostic implications. The goal of this review is to summarize available data on VT ablation in patients with DCM and, more specifically, review data on procedural and outcome data in specific etiologies and substrate location. It will focus on the current understanding of nonischemic scars, as well as the value of multimodal imaging, image integration, and electroanatomic mapping for substrate identification, procedural planning, and ablation. In addition, recent findings from whole human heart histology of patients with DCM and VT and their potential implications for imaging and mapping will be discussed.

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FOCUS ON VENTRICULAR ARRHYTHMIAS AND CARDIOMYOPATHY

Outcomes of Catheter Ablation of Ventricular Tachycardia Based on Etiology in Nonischemic Heart Disease: An International Ventricular Tachycardia Ablation Center Collaborative Study

1141

Marmar Vaseghi, Tiffany Y. Hu, Roderick Tung, Pasquale Vergara, David S. Frankel, Luigi Di Biase, Usha B. Tedrow, Jeffrey A. Gornbein, Ricky Yu, Nilesh Mathuria, Shiro Nakahara, Wendy S. Tzou, William H. Sauer, J. David Burkhardt, Venkatakrishna N. Tholakanahalli, Timm-Michael Dickfeld, J. Peter Weiss, T. Jared Bunch, Madhu Reddy, David J. Callans, Dhanunjaya R. Lakkireddy, Andrea Natale, Francis E. Marchlinski, William G. Stevenson, Paolo Della Bella, Kalyanam Shivkumar

In this large multicenter retrospective study, competing risk analysis and Cox proportional hazard models were used to report ventricular tachycardia (VT) recurrence rates and freedom from VT, death, and transplantation of 780 nonischemic cardiomyopathy (NICM) patients by etiology after VT ablation. Patients with myocarditis, dilated idiopathic cardiomyopathy, and arrhythmogenic right ventricular cardiomyopathy had similar and superior outcomes, whereas patients with hypertrophic cardiomyopathy, sarcoidosis, and valvular cardiomyopathy had relatively poorer outcomes, after adjusting for important confounders including age, heart failure class, and left ventricular ejection fraction. These findings impact physician-patient discussions of risks, benefits, and expectations in patients with specific etiologies of NICM and VT, who are being considered for catheter ablation procedures.

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EDITORIAL COMMENT

Catheter Ablation of Ventricular Tachycardia in Nonischemic Cardiomyopathy: The Relevance of Pathology Subtype and Experience of Centers: The More the Better?

1151

Thomas Deneke, Andreas Mügge, Elena Ene, Karin Nentwich, Philipp Halbfaß



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Importance of the Interventricular Septum as Part of the Ventricular Tachycardia Substrate in Nonischemic Cardiomyopathy **1155**

Jackson J. Liang, Benjamin A. D'Souza, Brian P. Betensky, Erica S. Zado, Benoit Desjardins, Pasquale Santangeli, William W. Chik, David S. Frankel, David J. Callans, Gregory E. Supple, Mathew D. Hutchinson, Sanjay Dixit, Robert D. Schaller, Fermin C. Garcia, David Lin, Michael P. Riley, Francis E. Marchlinski

Septal scar was characterized using electroanatomic mapping (EAM) and cardiac magnetic resonance (CMR) imaging in 95 patients with nonischemic left ventricular cardiomyopathy (NILVCM) and ventricular tachycardia (VT). Bipolar and unipolar EAM voltage abnormalities were seen in 44 (46%) and 79 (83%) patients. Of the 12 patients without septal scar on magnetic resonance imaging (MRI), 6 (50%) had isolated unipolar septal voltage abnormalities (VAs). The optimal unipolar cutoff correlating with MRI septal scar was 4.8 mV. Septal substrate, as defined by unipolar or bipolar EAM in patients with NILVCM and VT, is common. Some patients with normal CMR imaging and normal bipolar EAM may have septal unipolar VAs.

■ EDITORIAL COMMENT

Characterization of Septal Scars in Nonischemic Left Ventricular Cardiomyopathy by Cardiac Magnetic Resonance Imaging Versus Electroanatomical Mapping: Superior, Inferior, or Complementary? **1163**

Katja Zeppenfeld, Sebastiaan R.D. Piers

Predictors and Clinical Impact of Late Ventricular Arrhythmias in Patients With Continuous-Flow Left Ventricular Assist Devices **1166**

Vincent Galand, Erwan Flécher, Vincent Auffret, Stéphane Boulé, André Vincentelli, Camille Dambrin, Pierre Mondoly, Frédéric Sacher, Karine Nubret, Michel Kindo, Thomas Cardi, Philippe Gaudard, Philippe Rouvière, Magali Michel, Jean-Baptiste Gourraud, Pascal Defaye, Olivier Chavanon, Constance Verdonk, Walid Ghodbane, Edeline Pelcé, Vlad Gariboldi, Matteo Pozzi, Jean-François Obadia, Pierre-Yves Litzler, Frédéric Anselme, Gerard Babatasi, Annette Belin, Fabien Garnier, Marie Bielefeld, David Hamon, Costin Radu, Bertrand Pierre, Thierry Bourguignon, Romain Eschalier, Nicolas D'Ostrevy, Marie-Cécile Bories, Eloi Marijon, Fabrice Vanhuysse, Hugues Blangy, Jean-Philippe Verhoye, Christophe Leclercq, Raphaël P. Martins, on behalf of the ASSIST-ICD Investigators

This study evaluates the incidence, clinical impact, and predictors of late ventricular arrhythmias (VAs) in left ventricular assist device (LVAD) recipients. Among 659 LVAD recipients, 494 were included. Late VAs occurred in 133 (26.9%) patients. Multivariable analysis identified 6 independent predictors: VAs and atrial fibrillation before LVAD implantation, idiopathic etiology of the cardiomyopathy, heart failure duration >12 months, early VAs (<30 days post-LVAD) and no angiotensin-converting enzyme inhibitors during follow-up. The VT-LVAD score was created, identifying 4 risk groups: low, intermediate, high, and very high. The rates of VAs at 1 year were 0%, 8%, 31%, and 55% respectively.

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