Role of imaging in VT interventions

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Role of cardiac imaging in patients with VT.

- Underlying etiology
- Prognostic significance of VT
- Adjunctive tool to guide VT ablation procedures.
- Noninvasive imaging techniques that define activation patterns of VT wavefronts
Tools of Cardiac imaging in patients with VT

Ventricular structure and function

- Echocardiographic techniques

Substrate with a high degree of precision

- Cardiac magnetic resonance imaging (CMR)
- Multidetector cardiac computed tomography (MDCT)
- Nuclear imaging
Identifying the underlying substrate of VT
High-resolution three-dimensional late gadolinium-enhanced cardiac magnetic resonance imaging to identify the underlying substrate of ventricular arrhythmia

157 consecutive patients presenting with a first episode of ventricular arrhythmia

Alexia Hennig   Europace (2017)
IMAGING AS A RISK STRATIFICATION TOOL
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- The presence of scar has consistently been associated with increased arrhythmic risk in ICM and NICM, including hypertrophic cardiomyopathy, myocarditis, and sarcoidosis.

- Extent of scar, pattern of scar, scar transmurality, scar heterogeneity, have also been implicated as modulators of risk in ICM and NICM.

- Assessment of sympathetic innervation, which is a potentially important risk modulator.
Imaging for defining VT Substrate and determining optimal access for VT ablation
69 y old pt with DCM and electrical storm

Endocardial Bipolar Voltage Mapping

Endocardial Unipolar Voltage Mapping
69 y old pt with DCM and electrical storm
69 y old pt with DCM and electrical storm
Image integration to assist ventricular tachycardia ablation in a case of myocarditis
Example of image integration to assist ventricular tachycardia ablation in a case of myocarditis
Correlation between computer tomography-derived scar topography and critical ablation sites in postinfarction ventricular tachycardia
The Role of echocardiography in VT Ablation
Example of combining intracardiac echocardiography and CT to assist catheter navigation in a case with papillary muscle PVC.

MDCT is the most effective imaging technique for defining detailed cardiac anatomy, including the coronary arterial and venous systems, valve apparatus, left phrenic nerve, and epicardial fat and calcification.
65 y old female with idiopathic PVCs
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Catheter ablation of the posteromedial papillary muscle (Pmpap) (green circle) of the left ventricle (Transthoracic echocardiogram; parasternal short axis view)
65 y old female with idiopathic PVCs
Pt with Moderator Band PVCs
Catheter Ablation of Ventricular Arrhythmias Arising from the Distal Great Cardiac Vein

Konstantinos P. Letsas, MD, FESC*, Michael Efremidis, MD, Konstantinos Vlachos, MD, Stamatis Georgopoulos, MD, Sotirios Xydonas, MD, Kosmas Valkanas, Antonios Sideris, MD
Left Ventricular Summit
GCV PVC Ablation
Summit VT

35 yo Woman with >32000 PVCs
Noninvasive Cardiac Radiation for Ablation of Ventricular Tachycardia

Noninvasive Cardiac Radiation for Ablation of Ventricular Tachycardia

A Monthly Assessment of All VT Episodes per Patient

No antiarrhythmic medication

Phillip S. Cuculich
