Abstract: P1111

Arrhythmogenic substrate detection in ischemic patients undergoing ventricular tachycardia ablation using multi-detector computed tomography: compared evaluation with cardiac magnetic resonance.

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Topic(s):
Ventricular Arrhythmias and SCD - Diagnostic Methods

Citation:
Background: Cardiac magnetic resonance (CMR) is capable of accurately identifying arrhythmogenic substrate (AS), leading to longer arrhythmia-free survival when used to guide ventricular tachycardia (VT) substrate ablation procedures. However, the use of CMR may be limited in certain centers or patient subsets.

Purpose: To evaluate the performance of multidetector cardiac computed tomography (MDCT) imaging in identifying heterogeneous tissue channels (HTCs) detected by CMR in ischemic patients undergoing VT substrate ablation.

Methods: Thirty ischemic patients undergoing both CMR and MDCT before VT substrate ablation were included. Using a dedicated post-processing software, two blinded operators, assigned either to CMR or MDCT analysis, characterized the presence of CMR- and CT-channels, respectively. CMR-channels were classified as endocardial (layers <50%), epicardial (layers =50%) or transmural. CMR- vs. CT-channel concordance was considered when the orientation was the same and they were located in the same AHA segment.

Results: Mean age was 69±10 years; 90% were male. Mean left ventricular ejection fraction (LVEF) was 35±10%. All patients had CMR-channels (n=76), whereas only 26/30 (86.7%) had CT-channels (n=91). Global sensitivity (Se) and positive predictive values (PPV) for detecting CMR-channels were 61.8% and 51.6%, respectively. MDCT performance improved in patients with epicardial CMR-channels (Se 80.5%), and transmural scars (Se 72.2%). In 4/11 (36%) patients with subendocardial MI, MDCT was unable to identify the AS.

Conclusion: MDCT fails to detect the presence of AS in 36% of patients with subendocardial MI and shows a modest sensitivity identifying the presence of HTCs, although its performance improves in patients with transmural scar.
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