## Core 4. Heart Rhythm Disorders and Resuscitation Science

Session Title: Clinical Cardiac Electrophysiology IV

# Abstract 16822: Magnetic Resonance Imaging Based Signal Intensity Mapping Predicts Appropriate Therapies After Prophylactic Ventricular Tachycardia Substrate Ablation in Patients With Previous Myocardial Infarction and Secondary Prevention Implantable Cardioverter-Defibrillator Implantation

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Background: Prophylactic ventricular tachycardia substrate ablation (PVTSA) reduces the rate of appropriate therapies in secondary prevention ICD patients. Scar characteristics assessed by contrast-enhanced magnetic resonance (ceMRI) predict VT recurrences after ICD implantation.

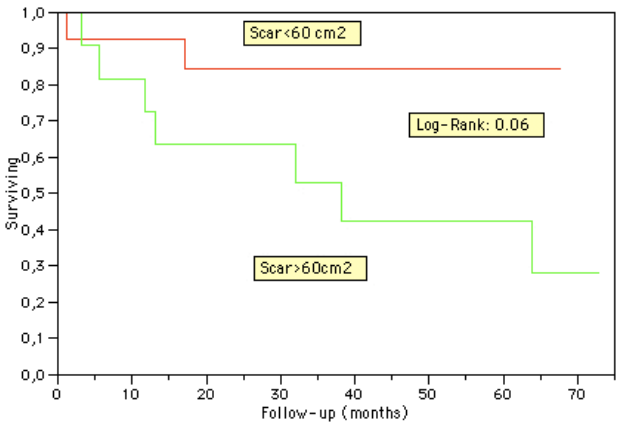
Objectives: The aim of this study was to determine the capability of ceMRI based signal intensity (SI) mapping to predict appropriate ICD therapies after PVTSA.

Methods: Twenty-six consecutive patients with previous myocardial infarction (Age: 68±9 years, LVEF: 32±9%) and secondary prevention indication for ICD implantation were included. Prior to PVTSA and ICD, a ceMRI was obtained and the averaged subendocardial and subepicardial SI was projected onto 3D endocardial and epicardial shells in which dense scar, heterogeneous tissue (HT) and normal tissue were differentiated based on SI (Scar: SI>2SD above SI in normal tissue; Dense scar: SI> 3SD; HT: 2SD<SI<3SD) and measured.

Results: During a mean follow-up of 40± 23 months, 17 patients were free of appropriate therapies (65%) and 9 (35% ) presented at least with 1 appropriate therapy. No differences were observed in LV end diastolic volume (221±87 vs. 262±52 cc, p:.2), LV end systolic volume (153±83 vs. 183±41 cc, p:.3), LVEF (33±10 vs. 32±7, p: ns) and infarct mass ( 40±40 vs. 48±30 grams, p: ns.). The table shows SI mapping differences. The figure shows survival curves when the endocardial total scar was dichotomized above and below the median value.

Conclusion: ceMRI based SI mapping identifies the group of

patients with a better outcome after ablation. This information could help select the patients for PVTSA prior to ICD implantation.




| | Endocardial SI mapping | | | Epicardial SI mapping | | |
|---|---|---|---|---|---|---|
| Extension (cm2) | Total Scar | Dense scar | HT | Total Scar | Dense scar | HT |
| VT recurrence | 74±18 | 26±8 | 47±14 | 70±21 | 16±10 | 54±20 |
| No VT recurrence | 53±27 | 22±17 | 31±14 | 53±29 | 15±20 | 38±17 |
| | 0.05 | 0.4 | 0.01 | 0.1 | 0.9 | 0.04 |

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Key Words: Magnetic resonance • Signal averaging • Ventricular tachycardia • Ablation • Implantable cardioconvert defibrillator