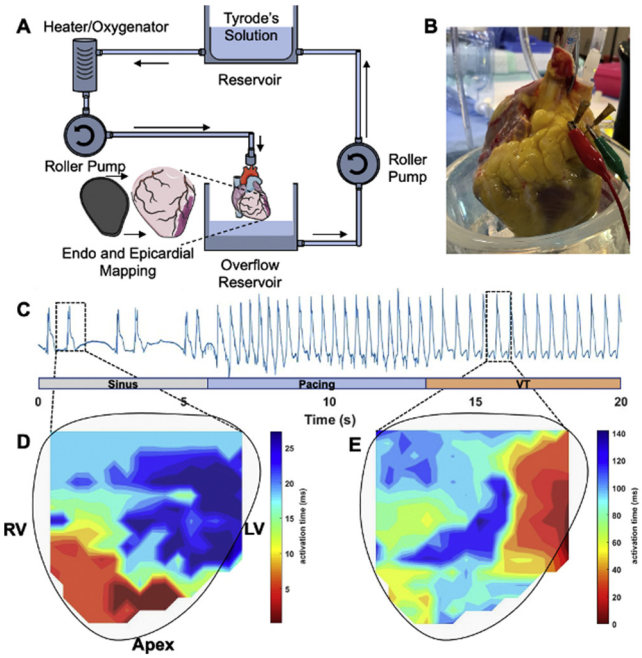
based on animal studies or single surface recordings which have limited utility. Human based investigations of VT are often limited by hemodynamic collapse and lack viable ways to assess the myocardial electrical propagation.
Objective: The authors seek to provide a novel method for the experimental evaluation of VT in human hearts with correlation to high resolution MRI fibrosis imaging.
Methods: Human donor hearts were obtained from discarded transplant specimens. Following explant, the hearts were cannulated to the Langendorff apparatus and ventricular tachycardia was induced using a programmed ventricular stimulation protocol. Custom built 3D printed epicardial and endocardial mapping probes were deployed to map whole ventricular contraction. The hearts were imaged using high-resolution late gadolinium enhancement 4T MRI for fibrosis quantitation.
Results: A total of 8 human hearts underwent complete mapping procedures with 3 spontaneously beating VT hearts and 5 control hearts. High resolution mapping demonstrated VT originated from epicardial regions in all 3 hearts. Site of origin of VT was identified in all 3 human hearts and correlated to MRI fibrosis mapping.
Conclusion: This study highlights new methods for the interrogation of ventricular tachycardia substrates using a novel human Langendorff heart model. The integration of mapping and imaging techniques in this study provides new insights into the mechanisms underlying VT. These efforts may help clinicians to provide more targeted ablation procedures.

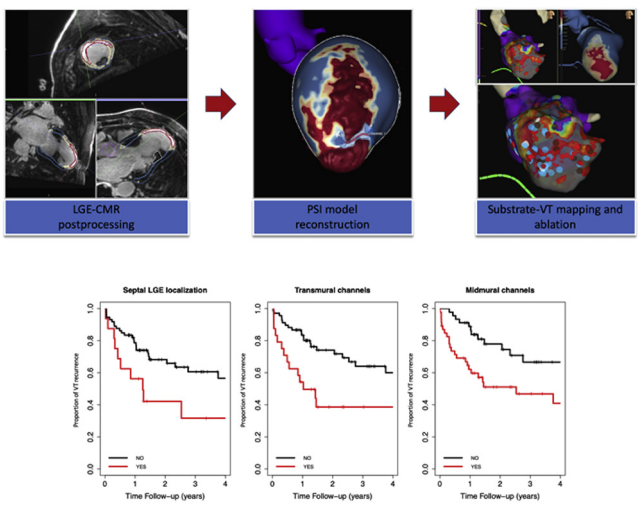


B-011-21

CARDIAC MAGNETIC RESONANCE PREDICTORS OF VENTRICULAR TACHYCARDIA RECURRENCE AFTER SUBSTRATE BASED ABLATION

Levio Quinto MD, Paula Sanchez-Somonte MD, Francisco Alarcon, Paz Garre, Fatima Zaraket, Susanna Prat-Gonzalez, Sílvia Montserrat MD, Rosario Jesus Perea, Eduard Guasch, Jose Maria Tolosana MD, Rodolfo San Antonio MD, Elena Arbelo MD, MSci, PhD, Marta Sitges, Josep Brugada Terradellas PhD, Antonio Berruezo PhD, Lluis Mont MD and Ivo Roca-Luque MD, PhD

Background: Ventricular tachycardia (VT) substrate-based ablation has become increasingly important in patients with structural heart disease-related VT.
Objective: Our study aims to analyze the role of LGE-CMR in identifying predictors of VT recurrence after ablation.
Methods: We analyzed 110 consecutive patients who underwent VT ablation from 2013 to 2018. All patients underwent a preprocedural LGE-CMR, and in 94 patients (85.5%), the CMR was used to aid the ablation. All LGE-CMR images were semi-automatically processed using dedicated software to detect scarring, border zone (BZ) and conducting channels (CC).
Results: After a median follow-up of 2.7±1.6 years, the overall VT recurrence was 41.8%. The amount of BZ (26.6±13.9 vs. 19.6±9.7 g, p=0.012), the total amount of scarring (37.1±18.2 vs. 29±16.3 g, p=0,033), and left ventricle (LV) mass (168.3±53.3 vs. 152.3±46.4 g, p<0.001) were associated with VT recurrence. LGE septal distribution (62.5% vs. 37.8%; HR 1.67 [1.02-3.93], p=0.044), CC with transmural path (66.7 % vs 31.4 %, HR 3.25 [1.70-6.23], p<0.001) and midmural CC (54.3% vs 27.6%, HR 2.49 [1.21-5.13], p=0.013) were related with VT recurrence. Multivariate analysis showed that the presence of septal LGE (HR 3.67 [1.60-8.38], p=0.002), transmural CC (HR 2.32 [1.15-4.72], p=0.019) and LV mass (HR 1.01 [1.005-1.019], p=0.002) were independent predictors of VT recurrence.
Conclusion: Pre-procedural LGE-CMR is a helpful and feasible technique to identify patients with high risk of VT recurrence after ablation. LV mass, septal LGE distribution and transmural CC were predictive factors of post-ablation VT recurrence.



B-011-22

MACHINE LEARNING TO PREDICT RECURRENT EVENTS FOLLOWING UNEXPLAINED CARDIAC ARREST

Christopher C. Cheung MD, Brianna Davies BS, MS, CGC, Jason D. Roberts MD, Rafik Tadros MD, PhD,