Identification of Endocardial Trigger and Exit of Right Ventricular Outflow Tract Tachycardia: Implication for Radiofrequency Catheter Ablation

Young-Hoon Kim, Sang Weon Park, Seong Mi Park, Seung Woon Rha, Do Sun Lim, Wan Joo Shim, Young Moo Ro, Korea University Medical Center, Seoul, South Korea

Background: Catecholamine sensitive triggered activity seems to be the mechanism of idiopathic right ventricular outflow tract tachycardia (RVOT VT) and early after depolarizations (EADs) are associated with the occurrence of RVOT VT. We investigated whether the endocardial triggers during diastolic period precede the exit of RVOT VT and can be identified by non-contact mapping system (ES 3000) to guide successful radiofrequency (RF) catheter ablation (RFCA).

Methods: The study included 11 patients with RVOT VT referred for non-contact mapping and RFCA (4 women, 44±7 years, range 22 to 55). No patients had structural heart diseases as documented by normal echocardiography and cardiac magnetic resonance imaging. All patients had an inferiorly directed VT configuration, with a precordial V6 transition equal to or later than V3. VTs were induced by rapid ventricular pacing and/or after isoproterenol infusion. The multielectrode array was positioned at the RVOT to identify endocardial triggers preceding the exit points of VT. RF was applied at the exit or the area between exit and trigger.

Results: The earliest endocardial exits were registered at RVOT >27±9 ms before onset of QRS in all patients. The earliest diastolic triggers were identified within the distance of 28±15 mm from the exits and registered >71±28 ms before QRS in 8/11 patients. A line of block between exits and triggers was made in 8 patients and targeted the exits in 3 patients. At a follow up 16-46 months, recurrence was noted only in exit-targeted patients (2/3, vs. none in those without linear block).

Conclusions: The endocardial trigger and exit points could be identified in most patients with RVOT VT using non-contact mapping system and are useful to guide effective RFCA.

POSTER SESSION

1213 Prognostic Implications of New Electrophysiological Techniques

Tuesday, April 01, 2003, 3:00 p.m.-5:00 p.m.
McCormick Place, Hall A
Presentation Hour: 4:00 p.m.-5:00 p.m.

1213-3 Prolonged QRS Duration and Cardiac Death in Postinfarction Patients

Yazid Y. Farid, Wojciech Zareba, Arthur J. Moss, for the MDPIT Investigators, University of Rochester, Rochester, NY

Background: The aim of this study is to investigate the prognostic significance of QRS duration measured in a standard electrocardiogram (ECG) for predicting cardiac events in postinfarction patients.

Methods: The study population includes 2,466 postinfarction patients enrolled in the Multicenter Dilatation Postinfarction Trial (MDPIT), by which QRS duration is measured in ECGs recorded 5-7 days after an acute myocardial infarction. Cardiac death is the primary endpoint.

Results: During mean 28±15 months of follow-up, there were 26 pts (23%) who died of cardiac causes. Table shows clinical and ECG parameters, which were significantly different between survivors and cardiac death pts. Multivariate Cox analysis showed that QRS duration and RR interval were significant and independent predictors of cardiac death both in the model with those parameters as continuous variables and in the model with those variables dichotomized. Final model included: EF with hazard ratio (HR) =1.38 (p<0.0001), QRS (sd) ms 106 (25) vs. 130 (36) (p=0.004), RR (sd) ms 702 (140) vs. 829 (190) (p=0.03), and QRS with HR=1.26 per 10 ms increase (p<0.001). The optimal values identifying high-risk patients were EF<0.35, RR>700ms, (heart rate >80 bpm), and QRS>120ms. Conclusion. Simple predictive model based on EF, QRS duration, and heart rate obtained from standard ECG can be used for stratifying the risk of patients with nonischemic dilated cardiomyopathy.

1213-6 ISAR HRT Substudy: Prediction of Mortality by Beat-to-Beat Variability Parameters

Patricia Barthel, Raphael Schneider, Axel Bauer, Kurt Uhm, Georg Schmidt, 1, Medizinische Klinik & Deutsches Herzcentrum, Technische Universität München, München, Germany

Background: In the last years, markers of autonomic function became important as risk predictors of mortality after myocardial infarction. Goal of this study was to examine the predictive power different beat-to-beat variability parameters in post infarction patients receiving an up-to-date treatment.

Methods: 1015 patients with acute myocardial infarction (AMI) were included. Inclusion criteria were age>75 years, and<1 VPCs/4 hours. During the acute phase or myocardial infarction 89% of the pts underwent PTCA and/or Stenting. 99% of the pts were treated with aspirin, 93% with beta-blockers, 80% with ACE inhibitors and 84% with statins. The endpoint was the composite rate of total mortality and various subcategories. Mean follow up was 22 months. Turbulence Onset and Turbulence Slope were determined according to the published methodology. Heart rate variability was quantified by SONN, HRV index, SDANN and RMSSD in the time domain and LF, HF, ULF/ LF, and ULF in the frequency domain. All pt data were included as continuous variables. Univariate, multivariate and Cox-proportional hazards analyses and Kaplan-Meier survival curves were performed.

Results: Using the normal up perio, 8.4% of the pts reached the end point. Univariate analysis showed a significant association of all predictors with the endpoint, only in multivariate analyses, only Turbulence Onset and Turbulence Slope were significantly and independently associated with the endpoint.