Experiences of Catheter Ablation with Substrate/Pace Mapping for Hemodynamically Unstable Ventricular Tachycardias

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It is ideal to find arrhythmia circuits and therapeutic targets by activation mapping during ventricular tachycardia (VT), which is sometimes difficult due to unstable hemodynamics and non-inducibility. We treated 6 patients with drug-resistant VT with catheter ablation according to substrate/pace mapping supported by the CARTO system. The underlying heart disease were, old myocardial infarction (n=2), arrhythmogenic right ventricular cardiomyopathy (ARVC) (n=1), undetermined cardiomyopathy (n=1), state of post myocarditis (n=1), repaired state of tetralogy of Fallot (TOF) (n=1). For procedure, we firstly performed substrate mapping during sinus rhythm (SR) and voltage maps were projected to the CARTO system. Then, pace mapping was performed to image the breakout site and lining of arrhythmogenic channel. Based on these analyses, border zone of low voltage assumed to be the breakout and possible arrhythmogenic channels were ablated. Within low voltage areas, delayed potentials during SR were targets of ablation especially if paced QRS morphology mimicked clinical tachycardia. Immediate results were acceptable. We have been following up at out patient bases for 15 months and only 1 patient had VT recurrence and others free from VT episodes. We conclude that catheter ablation using substrate/pace mapping is an effective and feasible therapeutic option for VTs with poor hemodynamic tolerance.

Keywords: ventricular tachycardia, catheter ablation, substrate mapping