

Identification of electrophysiological substrate in patients with repaired tetralogy of Fallot.-

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Introduction: Patients with repaired tetralogy of Fallot (TOF) represent a new category of patients referred to electrophysiology laboratory for ventricular arrhythmia (VA) mapping and ablation. Different anatomical regions have been identified as potentially responsible for reentry: ventricular septal defect (VSD) patch, surgical incisions, right ventricular outflow tract (RVOT) patch. We aimed to investigate electrophysiological substrate responsible for potential VA in patients with repaired TOF.

Methods: All patients with repaired TOF referred to the CHU de Bordeaux for VA evaluation from January 2008 to april 2010 underwent right ventricular (RV) 3D. Sinus activation and voltage mapping was then performed before VA induction \pm ablation.

Results: 7 patients (4 male, $42,5 \pm 12$ years old) underwent RV mapping during VA evaluation. Surgical repair of TOF had been realized 36 ± 11 years before the procedure. All patients displayed a right bundle branch block on 12 lead electrocardiogram. Sinus rhythm RV activation begins in all patients in the septum and then activates the RV centrifugally with a zone of slow conduction with a double potential (100 ± 30 ms) going from the tricuspid annulus (TA) to the RVOT. Voltage maps (figure) show systematically the same pattern of a zone of low voltage (< 1.5 mV) due to the VSD repair close to the RVOT scar area. This area fits with the slow conduction area. In the 2 patients with sustained ventricular tachycardia (VT), critical isthmus was located in this area.

Conclusions: Specific activation and voltage pattern was found in these Fallot patients. In the 2 patients with sustained VT, the critical isthmus was found between VSD repair patch and RVOT scar.

