Catheter ablation of intraatrial reentry tachycardia in patients with congenital heart disease - efficacy and safety

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Introduction: Prevalence of intraatrial reentry tachycardia (IART) in patients with congenital heart disease (CHD) is significant during long-term follow-up and is associated with increased morbidity and mortality. Besides antiarrhythmic medication, catheter ablation has become the treatment strategy of choice.

Purpose: Single center study on efficacy and safety of IART ablation in a large cohort of patients with CHD over more than a decade.

Patients and methods: In a total of 128 patients (25 children < 18 years) with CHD (88 patients with complex CHD) and IART, 197 ablation procedures were performed between 01/2003 and 11/2014. Median age at the first procedure was 32.4 (range 1.3 – 70) years. Mapping was performed with the non-contact mapping system and the NavX system, respectively. Radiofrequency current was delivered with irrigated tip catheters (7 F, 4 mm tip) in a temperature control mode (45 °C, 30 – 50 W, 45 seconds).

Results: After the first procedure, acute success was 78.1 % (75.0 % in patients with complex CHD and 85.0 % in patients without complex CHD, n.s.). 45 patients underwent multiple ablation procedures. Follow up data were available from 118 patients. 76 patients (64.4 %) were free from IART recurrence over a median of 21.5 (range 1 – 123) months. Median fluoroscopy time was 22.1 (IQR 15.0 – 23.7) min and median procedure duration was 260.0 (IQR 209.5 – 330.0) min. Major complications occurred in 4 patients. In 3 patients groin vessel damage required surgical revision. In one patient, stenosis of the right coronary artery after cavotricuspid isthmus ablation required angioplasty and stent implantation. There was no death and no permanent AV block. Complication rate was not related to age or complexity of CHD.

Summary and conclusions: Overall success of catheter ablation of IART in patients with CHD was 78.1% and was lower when compared with patients without CHD. A substantial number of patients needed additional procedures. Ablation procedures were safe with a low complication rate. New technologies as contact force measurement may increase efficacy of catheter ablation in this population.