

18 Years of Paediatric Catheter Ablation in One Country: Long-Term Results

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Objectives: To evaluate long-term results of pediatric catheter RF ablation in one country

Methods: From 1993 to 2010 a total of 695 pediatric ablation procedures were performed in 625 consecutive pts <18 yrs (median age at first ablation 14.8, interquartile range (IQR) 12.4 – 16.5 yrs) in 3 centers in the Czech Republic to treat 701 different arrhythmogenic substrates (accessory pathway=427, AVNRT=203, Mahaim=19, focal atrial tachycardia=16, ventricular tachycardia=16, atrial flutter=13, incisional atrial tachycardia=4, twin AV nodes=3). Structural congenital heart disease was present in 43 pts (7.5 %). Indications were patient preference (76.6 %), drug refractoriness (14.6 %), malignant arrhythmias (6.2 %), other (2.1 %). Antiarrhythmic drugs were administered in 44.2 % of pts. Median follow-up was 13.6 (IQR 4.3 – 21.1) mos.

Results: Acute/long-term success of the primary procedure was 89.1/73.4% for all substrates (AVNRT 98.2/80.3%, accessory pathways 86.9/74.9%, Mahaim 90.0/58.8%, focal atrial tachycardia 61.1/46.2%, ventricular tachycardia 80.0/27.3%, atrial flutter 71.4/58.3%, incisional atrial tachycardia 50.0/25.0%, twin AV nodes 75.0/75.0%). Re-ablation was performed in 74/170 substrates after a primary unsuccessful procedure resulting in long-term cumulative efficacy of 81.1% (533 of 657 attempted substrates). Between 1993-2005 and 2006-2010 median procedure and fluoroscopy time decreased from 154 to 105 and from 24 to 11 min., resp. (P<0.001 for both). Routine use of non-fluoroscopic navigation (Localisa®, Medtronic Inc.) in one of the centres from 2010 (36 procedures) carried further decrease in median fluoroscopy time from 14 (period 2006 – 2010) to 4 min. (P<0.001). Serious complications occurred in 9 pts (1.4 %): 3rd degree AV block in 3 (2/203 pts with AVNRT [1,0%], 1 pat with septal pathway), neurological complication in 2, pseudoaneurysm and rupture of femoral artery in 3 and 1 pat, resp.

Conclusions: RF catheter ablation was a safe method of arrhythmia treatment in children with long-term efficacy approaching 80 %. Patient choice was the most common indication. Procedure and fluoroscopy time decreased with increasing experience and x-ray exposure may further be significantly limited using non-fluoroscopy navigation. (Supported by the research project of Univ. Hosp. Motol No. MZOFNM2005)