

Results of RFA of tachyarrhythmias in small children

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The use of radiofrequency ablation (RFA) for the management of supraventricular tachycardia (SVT) in infants and small children remains controversial. Although SVT in the majority of small children can be managed medically, and SVT in infants can spontaneously resolve within 18 months, RFA is occasionally necessary for patients with drug-refractory tachycardias complicated by hemodynamic compromise. The aim of the study was to evaluate the safety and efficacy of RFA in critically ill small children (< 1 year of age) with drug resistant tachycardia accompanied by arrhythmogenic cardiomyopathy and heart failure.

Material: The study included 26 patients aged 4.2 ± 3.9 months. Wolff-Parkinson-White syndrome and atrial tachycardia were detected in 15 (57.7 %) and 11(42.3 %) patients, respectively. Patients with structural heart pathology, including congenital heart diseases and laboratory-confirmed myocarditis, were excluded from the study.

Results: Unsuccessful ablation was observed in two 1-month-old patients who underwent successful ablation 3 months later. The follow-up periods ranged from 0.5 to 9 years (average 4.1 years). 4 patients (15.4%) had tachycardia recurrence during first 2 months after RFA. Later all these patients were performed repeated RFA successfully. The total RFA success rate, considering recurrences and retreatment, was 100%. Only one patient had major complication – damage of mitral valve leaflet that accompanied by mitral regurgitation. Later it became a reason for mitral valve plasty. Heart failure disappeared within 5–7 days after RFA. Complete normalization of cardiac chambers sizes was documented within 1 month after effective RFA. A three-dimensional CARTO system was used in 4 patients with body weight > 7 kg. The use of the CARTO system resulted in a remarkable decrease of the fluoroscopy time without vascular injury or other procedure-related complications in all cases.

Conclusions: Our study suggested that RFA may be considered as the method of choice for SVT treatment in small children when drug therapy is ineffective and arrhythmogenic cardiomyopathy progresses. Taking into account technical aspects of catheter interventions in small children, RFA of tachyarrhythmias should be performed in specialized clinics with relevant experience.

Key words: supraventricular tachycardia, infants, radiofrequency ablation.