Percutaneous RF ablation procedures in children with Ebstein’s anomaly

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Introduction: In Ebstein’s anomaly (Ea) the septal (and often posterior) leaflets of the tricuspid valve are displaced into the right ventricle (RV). The anomaly is often associated with ventricular pre-excitation and Wolff-Parkinson-White (WPW) syndrome or conduction abnormalities (delayed intratrial conduction, right bundle branch block -RBBB). In children with Ea tachyarrhythmias are frequently encountered. In this study we present our children with Ea treated by percutaneous radiofrequency (RF) ablation because of tachycardia.

Methods: From 2004 to 2012 we performed 598 percutaneous ablation procedures in children, in 8 of them (7 boys, mean age 13.1,8 ± 3.6 years) Ebstein’s anomaly was diagnosed. Seven children were on long lasting antiarrhythmic therapy because of tachycardia attacks. One14 year old boy was admitted to the hospital with heart failure because of his first attack of tachycardia which was ventricular. RF ablation procedures were done under general anesthesia in 5 children, we used electroanatomical system Carto XP.

Results: In the 4 children wide right accessory pathway (AP), in 1 intra-atrial reentry tachycardia (IART), in 1multifocal atrial tachycardia (MAT) and in 1 atrioventricular nodal reentry tachycardia (AVNRT) and in 1 RV outflow tract ectopic tachycardia were diagnosed. During the ablation procedure RF applications time ranged from 6.5 to 23.2 minutes (mean 14.5 minutes), it was much longer then mean application time in our laboratory (mean 5.9 minutes). We had no complications. Follow-up period ranged from 3 months to 4.3 years. Two boys required the second procedure: one with WPW and another one with AVNRT because of the arrhythmia returned two months after the first ablation. To this time 7 patients are arrhythmia free, the boy with MAT improved but he still is on pharmacotherapy, in one girl on last holter monitoring EKG we observed some WPW QRS compexes.

Conclusion: In children with Ebstein’s anomaly the most frequently arrhythmia is related to right-sided accessory pathways but other types of supraventricular and ventricular arrhythmia are possible. Catheter ablation procedure may be effective in most arrhythmias related to Ebstein’s anomaly however in children the procedure is difficult and the long time of RF energy application may be necessary.