Clinical features and outcomes of radiofrequency catheter ablation for atrial flutter in children

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Introduction: To explore the clinical features of atrial flutter (AFL) in children and evaluate the efficacy and experiences of radiofrequency catheter ablation (RFCA) for AFL.

Methods: Data were collected and analyzed on 50 consecutive pediatric patients (male 37/female 13) who underwent electrophysiology study and RFCA for AFL from February 2009 to November 2016. The average age was \(6.2 \pm 3.5\) years and body weight was \(23.7 \pm 13.5\) kg. The patients included 24 cases with congenital heart disease (CHD) and among them 22 had undergone repair surgery. The follow-up period was 1 month to 7 years after RFCA. Data were analyzed about clinical features of AFL and the outcomes of RFCA.

Result: Of these 50 children, 84% was persist AFL and 16% paroxysmal AFL. The occurrence rate of sick sinus syndrome (SSS) was 36% and there was no difference between the groups without CHD and with CHD (27% VS 46%, \(P=0.2395\)). Of 49 children who underwent RFCA, the acute success rate was 96%, the follow-up recurrence rate was 8%. No complication of the procedures was observed during the follow-up period of 1 month to 7 years. The mechanism of AFL in the patients without CHD was the cavo-tricuspid isthmus (CTI)-dependent. However, in the children with CHD after the repair surgery, 10 (45%) cases was CTI-dependent AFL; 4 (8%) atrial scars-dependent AFL or 8(16%) both the mechanisms. There was no difference about the acute success rate (96% VS 100%, \(P=1.0000\)) and the follow-up recurrence rate (21% VS 14%, \(P=0.7008\)) between these two groups.

Conclusion: RFCA was an effective and safe treatment for pediatric AFL. There was no difference on the acute success rate, the follow-up recurrence rate, as well as occurrence of SSS between the groups without CHD and with CHD. The mechanism in the children with CHD was involved in the CTI-dependent AFL, atrial scars-dependent AFL or both.