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±3.5) years and body weight was (23.7±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.