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Radiofrequency ablation of atrial arrhythmias in children: one-center experience

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Objective: To analyze the radiofrequency ablation (RFA) results of atrial arrhythmias (AA) in children
Materials and Methods: The study group included 45 patients with AA: chronic focal atrial tachycardias (ATs) - 8(17.8%), recurrent focal ATs - 15(33.3%), paroxysmal ATs - 14(31.1%), frequent atrial premature beats - 2(4.4%), atrial flutter (AF) - 4(8.9%), atrial fibrillation (AFib) - 2(4.4%). There were 29 (64.4%) boys. The mean age was 10.5±6.5 (3,6-17,9 y.o.). Age of AA debut was from 2 months to 17 years (6.2±4.7). The etiology: idiopathic in 68,9%(31/45), suspected myocarditis in 22,2%(10/45), post-incisional in 8,9%(4/45), CHD in 2,2%(1/45). Arrhythmia-induced cardiomyopathy was established in 8,8% cases. All patients received antiarrhythmic therapy prior to RFA.
Results: Between 2008 and 2017, 45 patients underwent 52 RFA. One-year follow up was possible for 40 patients (88,8%). The mean age of primary RFA was 14.3±2.75 y.o. (from 3.6 to 17). Substratum localization: 6-crista terminalis, 5-coronary sinus ostium, 5-auricle of the LA, 3-anterolateral wall of the RA, 2-posterior-lateral wall of the RA, 1-near to AV node, 1-auricle of the RA, 3-interatrial septum, 5-cavatricuspid isthmus, 2-pulmonary veins, and in 12 cases AA was multifocal. The primary RFA efficiency was 77.8%(35/45), the second - 84.4%(38/45). The ineffectiveness was most often associated with complexity of arrhythmia's induction and mapping or in multifocal AT. We observed early AA recurrence (within 7 days) in 9 cases (17.3%) and in 3 cases (5.8%) - after 4, 7 and 12 months. Arrhythmia recurrence wasn't associated with substratum localization or etiology. AFib was inducted intraoperatively in 15.3%, AF with transition to AFib in 5.8%, AF+AFib in 3.9% in the cases of right AA only. Electrical cardioversion was carried out in 9.8% cases. Subtotal AV block developed in one patient.
EMB were performed in 7 patients: chronic myocarditis –4/7, cardiomyopathy –1/7, no pathology –2/7.
Conclusion: The primary RFA efficiency was 77.8%, the second -84.4%. The most difficulties were in cases of multifocal AT, nonsustaned AA during EP study and the younger age group. In our study intraoperative induction of AFib/AF was observed only in patients with right-located AAs. One-year follow up shows good results in 70% patients.