Abstract: P473

Complications of radiofrequency ablation in children

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The Radiofrequency ablation (RFA) prevails antiarrhythmic therapy as it is a radical method of arrhythmia treatment. Children without structural heart diseases completely recover after RFA. However, RFA possibilities are limited by risk of complications in small children.

A total of 227 procedures were performed in 210 children with arrhythmias at the age from 0 to 7 years old from 2004 to 2017 years. Nosological arrhythmia groups included atrioventricular reentry tachycardia at WPW (52%), atrial tachycardia (30%), atrioventricular nodal reentry tachycardia (AVNRT) (12%), and ventricular arrhythmia (8%). Symptomatic arrhythmia, arrhythmogenic cardiomyopathy, clinical signs of heart failure, refractoriness to drug therapy are the main indications to RFA. Taking into account repeat procedures due to ineffective RFA and recurrences, the total RFA efficiency was 94.7%. Analysis of RFA complications was performed. The so-called "major" and "minor" complications are used to describe complications of RFA in literature. Mortality due to RFA procedures also in small children was absent. All the cases of "major" complications are associated with RFA of left-sided accessory pathway and tachycardia focus and are presented by mitral valve damage in 3 patients (1.4%). Transitory or, so-called, "minor" complications were marked in 16.8% of patients. The most of them are transitory AV blocks and His bundle blocks that were connected with RFA of tachycardias located at AV node and His bundle.

In spite of high efficiency of RFA in our study, risk of heart damage is preserved even in children of early age. That is confirmed by coincidence of RFA exposure areas and segments where mitral valve failure is marked. Development of technology and equipment accounting the necessity of RFA process visualization is required as such complications, as a rule, are appeared after the procedure. Compulsory Echo at RFA of left-sided accessory pathway helps to decrease the risk of valve damages during radiofrequency exposure, especially in small children.