

Assessment of electrical and mechanical heart function in children after atrioventricular node slow pathway ablation

*Sileikiene R, Vaskelyte J, Sileikyte V, Baksiene D
Lithuanian University of Health Sciences, Kaunas, Lithuania*

Introduction: Alterations of heart rate (HR), the presence of persistent, inappropriate sinus tachycardia particularly after atrioventricular (AV) node slow pathway ablation have been reported in a variable percentage of patients. It has been suggested that disturbances of autonomic tone may be a contributing factor.

Purpose: To evaluate the changes of the conductive system of the heart, autonomic dysfunction, echocardiographic parameters in children late after atrioventricular node slow pathway ablation.

Methods: 22 children, who underwent radiofrequency ablation of slow pathway in mean 3,24 years ago, were enrolled into the study. 24-hour Holter recording, electrophysiological transesophageal examination, 2D echocardiography was performed.

Results: Sinus cycle length shortened from 736.6 ± 134.0 ms in preablation state in comparison with 644.4 ± 179.5 ms at the late follow-up, $p < 0.05$. Mean HR increased from 72.0 ± 9.23 bpm to 78.1 ± 5.3 bpm, $p = 0.002$; maximal HR increased from 132.5 ± 16.6 bpm to 143.9 ± 13.0 bpm, $p = 0.008$. The analysis of heart rhythm variability revealed reduction of pNN50 (the percentage of the successive normal sinus RR intervals > 50 ms (%)), from 26.2 ± 8.2 % to 20.6 ± 6.8 %, $p = 0.01$; rMSSD (root mean square of the successive normal sinus RR interval difference (ms)), from 51.2 ± 8.2 ms to 42.6 ± 12.6 ms, $p < 0.03$; and HFC (high frequency component) from 1014.6 ms² to 706.2 ms², $p = 0.007$, in children, who underwent radiofrequency ablation of slow pathway.

There were no significant differences in echocardiographic left and right ventricular parameters except left and right atrial volumes and their indices that were significantly higher at the late follow-up: left atrial volume increased from 28.0 ± 8.7 ml to 37.3 ± 13.9 ml, $p = 0.024$; left atrial volume index increased from 15.3 ± 5.3 ml/m² to 25.1 ± 8.4 ml/m², $p = 0.002$; right atrial volume increased from 16.2 ± 4.7 ml to 22.6 ± 7.4 ml, $p = 0.047$; right atrial volume index increased from 16.3 ± 5.6 ml/m² to 20.8 ± 9.5 ml/m², $p = 0.05$.

Conclusions: The changes in heart rate, heart rhythm variability, increased atrial volumes and volume indices were revealed in children who underwent radiofrequency ablation of slow pathway.