

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



Rima Sileikiene, Jolanta Vaskelyte, Viktorija Sileikyte, Dalia Baksiene
Lithuanian University of Health Sciences

The aim

of our study was to evaluate the changes of the conductive system of the heart, autonomic dysfunction, echocardiographic parameters in children late after atrioventricular node slow pathway ablation.

Patients and 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. 20 matched healthy children were enrolled into the study to compare echocardiographic parameters.

Results

Table 1 Heart rate and heart rate variability

Parameter	RFA group Mean (SD) n=22		P value
	Preablation	Postablation	
HR min	51.2 (5.0)	53.6 (5.4)	NS
HR mean	72.0 (9.2)	78.1 (5.3)	<0.001
HR max	132.5 (16.6)	143.9(13.0)	0.005
SDNN	159.4 (25.7)	149.8 (24.8)	NS
pNN50	26.64 (7.03)	20.63 (6.83)	0.006
rMSSD	51.2 (11.7)	42.6 (12.6)	0.034
LFC	1345.28	1224.83	NS
HFC	1014.6	706.24	0.007
Total spectrum	6134.44	6045.16	NS

Figure 1. Sinus cycle length before radiofrequency ablation of the slow pathway and at the follow-up

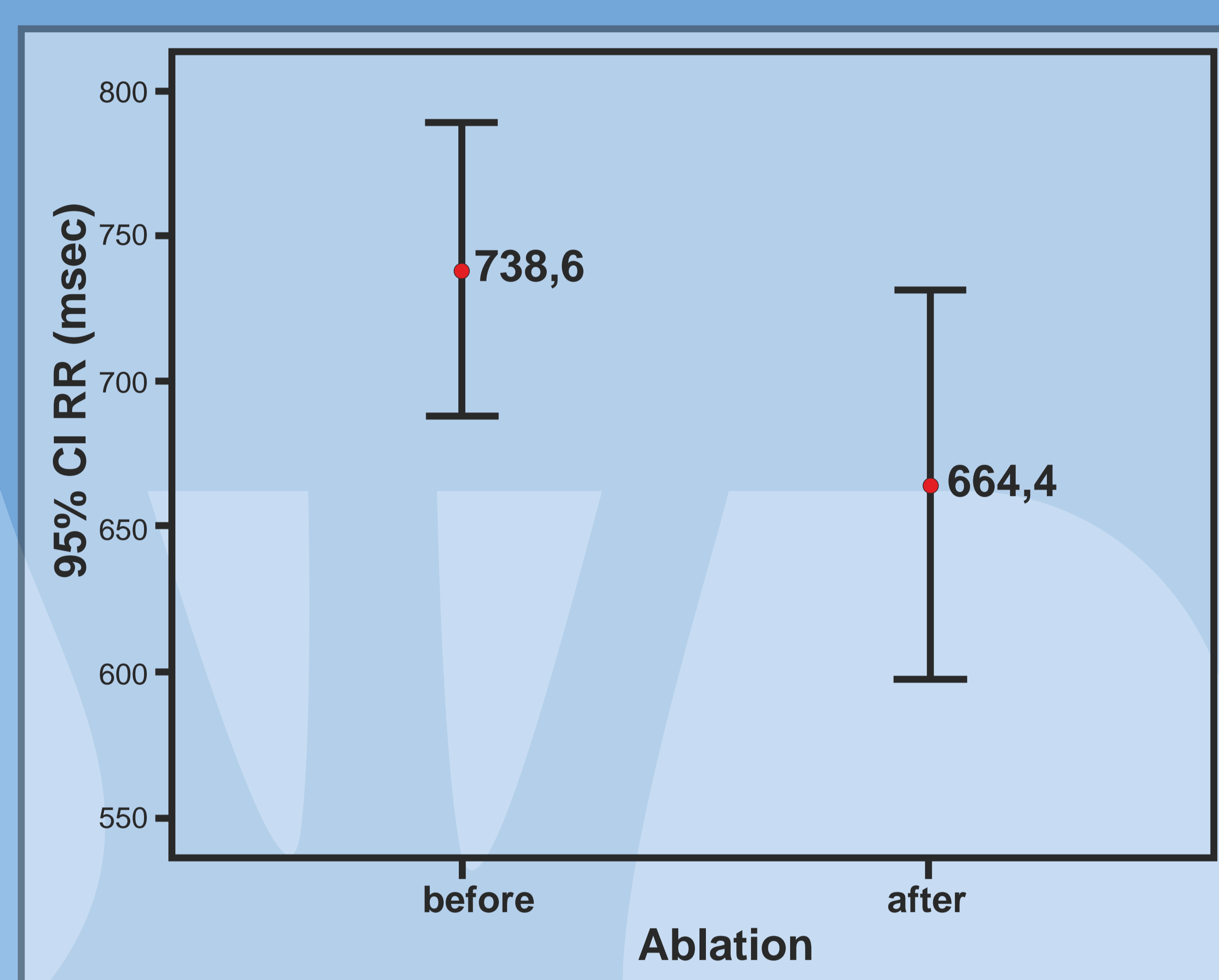


Table 2. Conventional echocardiographic parameters

Variable	Control group Mean (SD)	RFA group Postablation Mean (SD)	P value
Number	20	22	
Age (years)	16.3 (1.6)	16.6 (2.4)	NS
Body surface area (m ²)	1.6 (0.14)	1.6 (1.86)	NS
Left ventricular end-diastolic volume (ml)	103.5 (21.6)	104.5 (20.63)	NS
Left ventricular end-systolic volume (ml)	23.0 (6.8)	24.4 (8.7)	NS
Left ventricular ejection fraction (%)	56.5 (3.9)	54.5 (3.97)	NS
Left ventricle fractional shortening (%)	45.3 (4.6)	46.4 (5.62)	NS
Left ventricular myocardial mass index (g/m ²)	86.2 (3.6)	90.3 (4.5)	NS
Left ventricular early filling velocity (cm/s)	82.0 (12.1)	88.1 (7.2)	NS
Left ventricular filling velocity during atrial contraction (cm/s)	55.4 (8.0)	48.2 (2.2)	0.01
Left ventricular early filling deceleration time (ms)	162.8 (31.9)	161.4 (35.8)	NS
Right ventricular basal diameter (mm)	28.3 (2.3)	29.1(3.2)	NS
Right ventricular early filling velocity (cm/s)	61.4 (12.3)	58.8 (11.0)	NS
Tricuspid annulus motion amplitude (mm)	19.5 (0.6)	21.4 (0.4)	NS

Table 3. Atria volume parameters

Variable	Control group Mean (SD)	RFA group Postablation Mean (SD)	P value
Maximal left atrial volume (ml)	28.0 (8.7)	37.3 (13.9)	0.024
Maximal left atrial volume index (ml/m ²)	16.7 (6.0)	26.3 (9.8)	0.002
Maximal right atrial volume (ml)	16.0 (6.7)	21.5 (8.5)	0.047
Maximal right atrial volume index (ml/ m ²)	16.0 (6.6)	21.5 (8.5)	0.05
Minimal left atrial volume (ml)	11.65 (2.25)	13.64 (2.25)	0.007
Minimal left atrial volume index (ml/m ²)	7.16 (1.3)	8.36 (1.32)	0.005
Minimal right atrial volume (ml)	12.15 (4.5)	15.23 (5.01)	0.043
Minimal right atrial volume index (ml/ m ²)	7.41 (2.52)	9.36 (3.2)	0.035

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.