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Right ventricular diastolic dysfunction in pediatric patients with ventricular pre-excitation

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Objectives:

To evaluate the impact of ventricular pre-excitation on right ventricular (RV) diastolic function in children with Wolff-Parkinson-Wight syndrome (WPW).

Methods: 44 pts (21 females) were included into the study. Main group – 21 asymptomatic WPW. Control group – 23 pts with absence of ventricular pre-excitation. In this pts atrioventricular nodal re-entrant tachycardia had been diagnosed. ECG, 24-hour Holter monitoring and echocardiography were performed before and 3 days after radiofrequency catheter ablation (RCA). Type of RCA: main group – RCA of accessories pathway (AP), control group – RCA of slow pathway of atrioventricular node. Invasive right ventricular pressure was recorded immediately before and 40 minutes after RCA. First negative derivate ($-dp/dt_{max}$) and time constant (τ) of RV pressure fall were calculated. Those data have been included into logistic regression model. Regression coefficients, odds ratio and probability of RV diastolic function disturbance depending on localization of AP were calculated.

Results: RV diastolic function was impaired in 10 (48%) pts in main group before interventional treatment. There were no RV diastolic dysfunctions after RCA in all cases. Disturbance of RV diastolic function was not found in control group before and after RCA in all pts. The probability (P) of RV diastolic function disturbance has been calculated using regression model. In pts with right-side AP P was 0.9, in parasaseptal – 0.7, in left-side – 0.1 ($p < 0.05$). There was no significant difference in RV diastolic function in symptomatic and asymptomatic WPW.

Conclusion: Abnormal ventricular excitation via AP causes RV diastolic dysfunction in asymptomatic WPW. Probability of RV diastolic function disturbance in right-side AP higher than in parasaseptal AP. Left-side AP associated with low risk of RV diastolic dysfunction.