

Is RV resynchronization the key to cardiac remodeling?

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Introduction: Right ventricular dysfunction is an important issue after surgical correction of a tetralogy of fallot. Dysfunction is thought to be due to residual pulmonary stenosis or regurgitation as well as electromechanical dyssynchrony. Currently there are only limited data, particularly focussing on the latter aspect.

Case presentation: A 32-years-old male patient with repaired tetralogy of fallot presented with impairment of the right ventricular (RV) function resulting in a reduced physical capacity (NYHA class II). Cardiac magnetic resonance imaging showed a decreased RV-EF of 31% despite only mild regurgitation and no significant stenosis of the pulmonary xenograft. The ECG showed a cRBBB with a QRS duration > 180 ms. Therefore we opted for a RV cardiac resynchronization therapy (RV-CRT). Two bipolar endocardial leads have been placed in the RV. One at the RV free wall and a second in the RV apex. An atrial lead was placed in the atrium and the AV delay was set to achieve narrowing of the QRS width via fusion of the paced and intrinsic ventricular depolarization wave.

Results: Post-interventional the QRS duration was markedly decreased and echocardiographically the left ventricular function has improved. Yet, the right ventricular function showed no measureable improvement in the 6-months follow-up, but the MRI displayed a reduced right ventricular enddiastolic volume. Subjectively the physical resilience has remained unchanged.

Conclusions: Studies showed that the possibility of a RV remodeling is diminished, if the QRS length exceeds 150 ms, therefore the possibility in our patient was reduced beforehand. Nevertheless after the electric resynchronization we see a relevant increase in the left ventricular function, supposedly due to a better preload. To evaluate the relevance of RV-CRT in patients with RBBB after cardiac surgery and reduced RV function further studies need to be implemented.

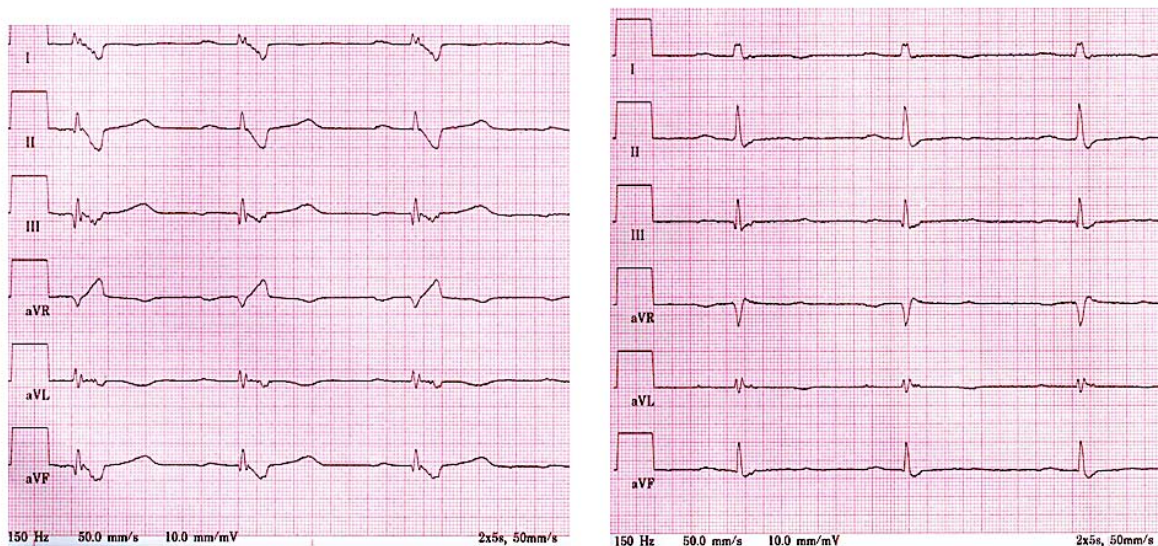


Figure: Left: ECG (50mm/s) before CRT, right: ECG (50mm/s) after CRT.