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Clinical Utility of the Post-Cardiac Resynchronization Therapy Electrocardiogram

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Cardiac resynchronization therapy (CRT) is an increasingly utilized therapy for heart failure patients with inter and intra ventricular dysynchrony. Although echocardiography can detect dysynchrony, its predictive value for improvement with CRT has been limited. The best predictor of a favorable effect has been the pre-implantation electrocardiogram (ECG) with the presence of left bundle branch block (LBBB) and a QRS duration≥130 ms. The predictive value of the post-implantation ECG has not been well studied. We hypothesized that only those patients with predominant LV pacing would show benefit.

The biventricular ECG QRS is a fusion of both RV and LV pacing. Predominant LV pacing will demonstrate tall R waves in V1 and marked right axis deviation (RAD). The absence of these features indicates lack of effective LV pacing. We hypothesized that the lack of these finding would preclude any significant 1 year clinical benefit.

We retrospectively investigated 20 consecutive patients to undergo CRT implantation for the presence of tall R waves in V1 and predominant S waves in I (RV1SI pattern). 8 of the 20 patients exhibited these ECG findings post-implantation. The combined clinical outcomes of 1 year death, rehospitalization, or transplantation occurred more frequently in patients without the RV1SI pattern (50% v. 12.5%)

	Combined EP	No Endpoint	Total
ECG Findings Present	1	7	8
ECG Findings Absent	6	6	12
	7	13	

With our limited investigation, we suggest that absence of an RV1SI pattern on the post CRT electrocardiogram is associated with no clinical benefit of CRT.