Predictors of Echocardiographic Response to Cardiac Resynchronization Therapy

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Background: Cardiac resynchronization therapy (CRT) has been demonstrated to improve ejection fraction and to reduce end systolic and end diastolic volumes. These parameters of reverse remodeling are regarded by some authors as the only objective measures of success.
Aim: We sought to determine predictors of reverse remodeling with CRT.
Methods: We studied 145 pts successfully implanted with CRT/D systems according to guideline-based indications. Baseline and follow up data were collected over a 3 month to 1 year post implantation period. Response was defined by a combined score including the following two parameters ≥5% absolute increase in LVEF and ≥10% relative increase LV end systolic volume.
Results: In this cohort of patients we observed a 45.5% echocardiographic response rate. Predictors of response are listed in the table:

	Responders (n= 66)	Non-Responders (n= 79)	p value
NYHA Class III (vs. IV)	89.4%	75.9%	0.04
Previous Pacemaker	42.4%	22.7%	0.01
RBBB or IVCD (vs. LBBB)	11.5%	26.0%	0.056
Yu SD ≥ 32 ms	66.7%	83.0%	0.075
LV End Diastolic Diameter, mm	61.5 ± 8.1	64.5 ± 9.8	0.03
LV End Systolic Diameter, mm	51.0 ± 9.4	55.1 ± 9.0	0.009
Systolic Pulmonary Artery Pressure (mmHg)	42 ± 16	47 ± 17	0.03

There were no significant differences between groups in mean age, gender, etiology of cardiomyopathy, QRS width, LVEF, right ventricular function, septal to lateral delay or interventricular dyssynchrony.
Conclusions: The only predictors of echocardiographic reverse remodeling included higher NYHA functional class, upgrading of a previous pacemaker, smaller LV diameters and lower systolic pulmonary pressure. Other commonly used clinical and echocardiographic measures failed to predict reverse remodeling.