Heart Failure

REVERSE REMODELING WITH CARDIAC RESYNCHRONIZATION THERAPY PREDICTS LONG-TERM SURVIVAL IN MILDLY SYMPTOMATIC HEART FAILURE

Oral Contributions
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Background: Cardiac Resynchronization Therapy (CRT) is effective at improving functional status, heart failure (HF) symptoms and reducing mortality. Improvement in cardiac function is a marker of CRT response, but the relationship of reverse remodeling to long-term mortality is not well-understood.

Methods: The REVERSE study randomized 419 patients with NYHA I/II HF to CRT ON with a prospectively planned long-term follow-up phase. Of these patients, 353 had paired left ventricular end systolic volume index (LVESVi) measurements at baseline and 6 months post-implant. Subjects were grouped by LVESVi change to examine mortality rates. Additionally, LVESVi change was treated as a continuous variable in Cox proportional hazards models, first independently, then with baseline covariates.

Results: Patients in whom LVESVi decreased > 15% at 6 months had a 6.9% mortality rate at four years. This was significantly lower than the 16.4% mortality rate among patients with < 15% reduction. The change in LVESVi was a significant predictor of mortality ($p<0.0001$) as a 10% decrease in LVESVi corresponds to a 13% decrease in mortality risk. Multi-variable analysis showed that less reduction in LVESVi, male gender, higher baseline LVESVi, and shorter QRS duration were independent predictors of mortality (table).

Conclusions: LVESVi change with CRT is a strong predictor of long-term survival in mild heart failure. Very low mortality rates (1-2% per year) were observed in the presence of large reductions of LVESVi.

Multi-variable Analysis of Mortality >6 Months after CRT

Parameter	Comparison	Hazard Ratio	95% CI	P-value
% Change in LVESVi	Per 10%	0.88	0.81-0.95	0.001
Age	Per 10 years	1.32	0.94-1.86	0.11
Gender	Female vs Male	0.09	0.01-0.71	0.02
Ischemic	Ischemic vs Non-ischemic	1.40	0.60-3.30	0.44
Baseline LVEF	Per 1%	1.00	0.94-1.06	1.00
Baseline LVESVi	Per 10 ml/m²	1.14	1.02-1.26	0.02
Baseline QRS Duration	Per 10 ms	0.83	0.70-0.99	0.03
LBBB	LBBB vs Non-LBBB	0.61	0.30-1.24	0.17
Baseline NYHA	Class I vs Class II	0.70	0.32-1.54	0.38
Diabetic	Yes vs No	0.89	0.44-1.82	0.75