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Survival and Benefit of Cardiac Resynchronization Therapy in Concomitant Right and Left Ventricular Dysfunction

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Background: The effect of Cardiac resynchronization therapy (CRT) on patients with right ventricular (RV) dysfunction and high pulmonary artery pressure (PAP) has not been thoroughly studied.
Methods: Patients (n= 353) with CRT were divided into 4 groups according to their characteristics at implantation: RV dysfunction (RV fractional area change (FAC) < 40%) with normal PAP (< 38mmhg) (group A, n=25), RV dysfunction and high PAP (group B, n=84), normal RV function and high PAP (group C, n=85), normal RV function and normal PAP (group D, n= 170). Clinical response to CRT was defined by a combined score of improvement in NYHA class, QOL and 6mw (<-1/0/>1). Echocardiographic response was defined as a combined score of absolute increase in LVEF ≥5% and relative increase in LVESV ≥10% (<-1/0/>1). Responders had to have a combined score of ≥1 and alive. All parameters were assessed at baseline and 1 year post implantation. Duration of follow up was up to 8 years. All cause mortality was analyzed by Kaplan- Meier method and was compared between groups.
Results: Patients from all 4 groups had similar response (table). In the long term, the hazard ratio (HR) for mortality for those with RV dysfunction and high PAP was 1.59 (95% C.I.: 1.02-2.49) compared to all the others (P=0.04).

	A	B	C	D	P value
Clinical response (n= 210)	12 (55%)	52 (68%)	55 (66%)	91 (54%)	0.1
Echocardiographic response (n=150)	13 (52%)	34 (40%)	48 (56%)	55 (55%)	0.2

Conclusions: Patients with concomitant RV and LV dysfunction with or without high PAP , and pts with high PAP and LV dysfunction benefit from CRT as much as patients with lone LV dysfunction. Patients with RV and LV dysfunction with high PAP have a higher long term all cause mortality rates in spite of CRT. Patients treated with CRT who have RV dysfunction in addition to LV dysfunction but with normal PAP and patients with PAP without RV dysfunction have similar long term mortality rate as those with lone LV dysfunction.