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# LV only fusion pacing CRT without RV lead induces size and shape LA reverse remodelling

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**Background:** Adaptive CRT pacing induces significant left atrium (LA) reverse remodelling comparing to biventricular (BiV) pacing, although the algorithm delivers compulsory BiV pacing in heart rate over 100/min! Purpose: to assess LA remodelling in LV only pacing without RV lead in a real-life situation of permanent CRT fusion pacing.

**Methods:** Prospective data were analysed from a cohort of patients with CRT-P indication implanted with right atrium/left ventricle (RA/LV) DDD pacing system. Complete follow-up at every 6 months included device interrogation, exercise test, transthoracic echocardiography (TE) and individualised drug optimisation. LA evaluation included: parasternal dimension (LAd), 4 chambers view: mid-LA transverse diameter (LAt), basal LA maximal transverse diameter (LAb); volume (LA vol) and shape assessment: trapezoidal LA shape was defined by LAt less than Lab, the reverse situation was considered ellipsoidal shape.

**Results:** 55 pts (30 males) with idiopathic DCM aged  $62 \pm 11$  y.o. were included. Baseline characteristic: QRS  $164 \pm 18$  ms; EF  $27 \pm 5.2\%$ ; mitral regurgitation was severe in 22 pts, moderate in 27 pts and mild in 6 pts; 15 pts had type III diastolic dysfunction, 37 pts with type II diastolic dysfunction, 3 pts with type I diastolic dysfunction. Average follow-up was  $42 \pm 18$  months: all patients were responders, EF increased at  $37 \pm 7.9\%$ ; mitral regurgitation decreased in 38 pts (69%), diastolic profile improved in 36 pts (65%). Trapezoidal LA shape was documented in 31 (56%) patients. Atrial fibrillation was noted in 4 pts (7%) and cardioversion was needed. Non-sudden cardiac death occurred in 5 patients (9%), all deaths were noted in pts with severe LA vol, trapezoidal shape and type III diastolic dysfunction. Statistically significant LA reverse remodelling was noted regarding LA volume, but not shape.

**Conclusions:** RA/LV fusion CRT pacing was associated with important LA reverse remodelling and a low incidence of AF. Larger randomised studies are needed to validate these results and assess the role of LA shape remodelling in CRT.

	before RA/LV CRT-P	Follow-up $42 \pm 18$ months	p
LV EF, %, mean $\pm$ SD	$27 \pm 5.2$	$37 \pm 7.9$	$<0.0001$
LA diameter (mm), mean $\pm$ SD	$50 \pm 4.9$	$44 \pm 2.8$	$<0.0001$
LA area (cm <sup>2</sup> ), mean $\pm$ SD	$24 \pm 5.6$	$22 \pm 0.7$	0.0138
LA volume (ml), mean $\pm$ SD	$104.9 \pm 34$	$80 \pm 28.2$	0.0001

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