**Nelson, G., Berger, R., Fetics, B. et al. Left ventricular or biventricular pacing improves cardiac function at diminished energy cost in patients with dilated cardiomyopathy and left bundle-branch block.**


**BACKGROUND:** Left ventricular or biventricular pacing/stimulation can acutely improve systolic function in patients with dilated cardiomyopathy (DCM) and intraventricular conduction delay by resynchronizing contraction. Most heart failure therapies directly enhancing systolic function do so while concomitantly increasing myocardial oxygen consumption (MVO(2)). We hypothesized that pacing/stimulation, in contrast, incurs systolic benefits without raising energy demand.

**METHODS AND RESULTS:** Ten DCM patients with left bundle-branch block (ejection fraction 20+/−3%, QRS duration 179+/−3 ms, mean+/−SEM) underwent cardiac catheterization to measure ventricular and aortic pressure, coronary blood flow, arterial-coronary sinus oxygen difference (DeltaAVO(2)), and MVO(2). Data were measured under sinus rhythm or with left ventricular or biventricular pacing/stimulation at the same heart rate. These results were then contrasted to intravenous dobutamine (n=7) titrated to match systolic changes during LV pacing. Systolic function rose quickly and substantially from LV pacing (18+/−4% rise in arterial pulse pressure, which correlates with cardiac output, and 43+/−6% increase in dP/dt(max); both P<0.01). However, DeltaAVO(2) and MVO(2) declined -4+/−2% and -8+/−6.5%, respectively (both P<0.05). Similar results were obtained with biventricular activation. In contrast, dobutamine raised dP/dt(max) 37+/−6%, accompanied by a 22+/−11% rise in per-beat MVO(2) (P<0.05 versus pacing).

**CONCLUSIONS:** Ventricular resynchronization by left ventricular or biventricular pacing/stimulation in DCM patients with left bundle-branch block acutely enhances systolic function while modestly lowering energy cost. This should prove valuable for treating DCM patients with basal dyssynchrony.