
**OBJECTIVES**: This prospective study assessed the initial hemodynamic effects and long-term clinical benefits of dual-chamber pacing with a short atrioventricular (AV) delay in patients with chronic heart failure who had no traditional indication for pacemaker implantation.

**BACKGROUND**: Dual-chamber pacing with a short AV delay has been proposed as a nonpharmacologic treatment for drug-refractory heart failure. Both initial and long-term hemodynamic as well as functional benefits have been reported. All previous studies have used an AV delay of 100 ms. Despite encouraging results, these previous studies have been anecdotal and uncontrolled.

**METHODS**: This double-blind, randomized, crossover trial included 12 subjects with chronic congestive heart failure despite optimal medical therapy. Patients were required to be in sinus rhythm with no evidence of significant bradyarrhythmias. On the day after implantation of a dual-chamber pacemaker, invasive hemodynamic measurements were made at varying AV delays between 100 and 200 ms. Patients were then randomized to either dual-chamber pacing with a 100-ms AV delay or backup mode (VVI at 40 beats/min). After 4 to 6 weeks, crossover to the other pacing mode was programmed.

**RESULTS**: Hemodynamic measurements on the day after pacemaker implantation demonstrated no benefit of pacing with any AV delay compared with intrinsic conduction. At the optimal AV interval for each patient, neither cardiac output (4.5 +/- 1.5 vs 4.7 +/- 1.6 liters/min [mean +/- SD]) nor wedge pressure (16 +/- 10 vs 17 +/- 8 mm Hg) improved significantly from baseline measurements during intrinsic conduction. The long-term pacing protocol was completed in nine patients. Ejection fraction was 16 +/- 6% with dual-chamber (VDD mode) pacing and 18 +/- 4% in backup mode (p = NS). No patient had an increase in ejection fraction by > or = 5% with VDD pacing, nor did any patient improve in New York Heart Association functional class with short AV delay dual-chamber pacing. Also, there were no significant reductions in body weight or diuretic requirements during this pacing period.

**CONCLUSIONS**: Dual-chamber pacing with a short AV delay does not improve hemodynamic and clinical status or ejection fraction measured on the day after pacemaker implantation in patients with chronic congestive heart failure. Routine use of pacemaker therapy with a short AV delay as a primary treatment of heart failure in patients without standard arrhythmic indications is unwarranted.