

**BACKGROUND:** One third of patients with chronic heart failure have electrocardiographic evidence of a major intraventricular conduction delay, which may worsen left ventricular systolic dysfunction through asynchronous ventricular contraction. Uncontrolled studies suggest that multisite biventricular pacing improves hemodynamics and well-being by reducing ventricular asynchrony. We assessed the clinical efficacy and safety of this new therapy.

**METHODS:** Sixty-seven patients with severe heart failure (New York Heart Association class III) due to chronic left ventricular systolic dysfunction, with normal sinus rhythm and a duration of the QRS interval of more than 150 msec, received transvenous atrioventricular pacemakers (with leads in one atrium and each ventricle). This single-blind, randomized, controlled crossover study compared the responses of the patients during two periods: a three-month period of inactive pacing (ventricular inhibited pacing at a basic rate of 40 bpm) and a three-month period of active (atrioventricular) pacing. The primary end point was the distance walked in six minutes; the secondary end points were the quality of life as measured by questionnaire, peak oxygen consumption, hospitalizations related to heart failure, the patients' treatment preference (active vs. inactive pacing), and the mortality rate.

**RESULTS:** Nine patients were withdrawn from the study before randomization, and 10 failed to complete both study periods. Thus, 48 patients completed both phases of the study. The mean distance walked in six minutes was 22 percent greater with active pacing (399+/-100 m vs. 326+/-134 m, P<0.001), the quality-of-life score improved by 32 percent (P<0.001), peak oxygen uptake increased by 8 percent (P<0.03), hospitalizations were decreased by two thirds (P<0.05), and active pacing was preferred by 85 percent of the patients (P<0.001).

**CONCLUSIONS:** Although it is technically complex, atrioventricular pacing significantly improves exercise tolerance and quality of life in patients with chronic heart failure and intraventricular conduction delay.