

Permanent Pacing is Associated With Significant Decline in Blood Pressure Among Elderly Patients With Drug Resistant Hypertension: A New Paradigm in Pacing?

Eli S. Gang, MD, FHRS*; Carly Pierson; Michael Burnam MD.** DD06

*Cardiovascular Medical Group of Southern California; ** Founder of BaroPace LLC.

ABSTRACT

Hypertension (HTN) is a major contributor to cardiovascular mortality. A significant number of patients with HTN require 3 or more drugs for treatment and are defined as having drug resistant hypertension (DRH). Many patients with DRH also require permanent pacing (PP). There are scant data suggesting that PP may improve DRH.

OBJECTIVE

To evaluate the effect of PP on DRH in elderly patients with DRH.

METHODS

We retrospectively reviewed the charts of 2 groups of elderly patients with dual chamber PP and DRH, from 2 separate clinics. Effects of PP on systolic and diastolic BP (SBP and DBP), number of drugs taken and LVEF, were assessed at 6 months post implantation. Extent of pacing in each chamber was also analyzed.

RESULTS

Group I consisted of 28 older patients (mean age 87) with DRH (mean SBP 171 SD 7.6; DBP 99 SD 8) and preserved LVEF (56% SD 5). Group II consisted of 26 somewhat younger patients (age 82), with better controlled DRH (SBP 139 SD 17, DBP 71 SD 9) with similar LVEF (59% SD 16).

At 6 months post initiation of PP, both Groups had significant reduction in SBP, Group I also had a significant reduction in DBP: (-21% SBP, -18% DBP, $p < 0.01$, Group I; -5% SBP, $p < 0.01$, DBP=NS, Group II). LVEF was unaffected by pacing in Group II (55% SD 14, NS), follow up LVEF was not available in Group I. Number of BP drugs decreased in both Groups (3.7 to 2.1, $p < 0.001$); 3.5 to 3.0, Group II, NS). Percent atrial pacing was correlated with drop in BP ($p < 0.05$, two-tailed t-test), RV pacing was not.

Population Figures and Averages

	Population Size (n)	Gender	Mean Age	Mean Number of Drugs: Before	Mean Number of Drugs: After	Mean sBP: Before	Mean sBP: After	Mean Baseline LVEF	Mean LVEF: After
Group I	28	M: 7 F: 21	87	3.7	2.1	171	135	58%	N/A
Group II	26	M: 17 F: 9	82	3.5	3.0	139	130	59%	55% ($p=N.S.$)

Figure 1. The number of drugs taken, the sBP, and the LVEF were recorded for each patient, before and after the pacemaker implant. LVEF post-implant for Group I was not recorded, and the change in LVEF for Group II was insignificant. dBP data is not displayed in the table because only Group I showed a significant mean percent change in patient dBP.

RESULTS

Statistically Significant Reductions in sBP and Number of Medications

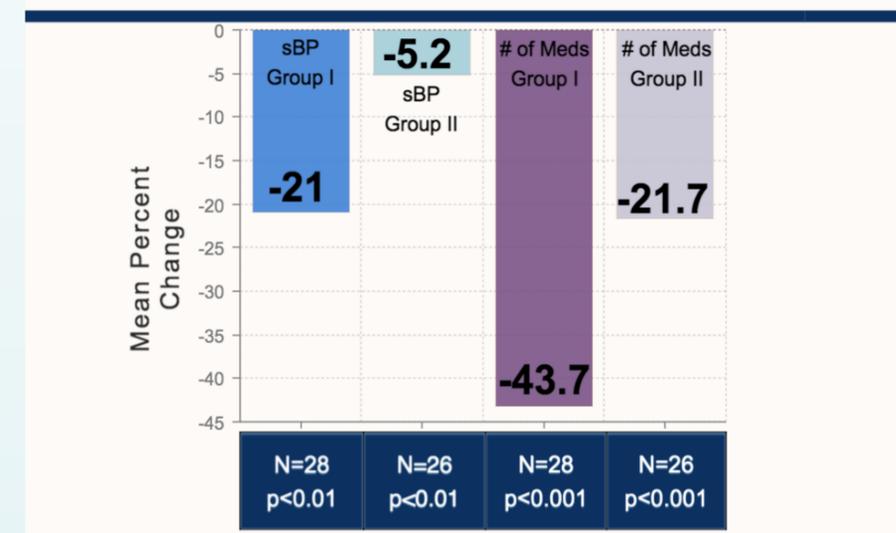


Figure 2. The mean percent changes in sBP and the number of drugs taken by each patient were negative and significant for both groups.

CONCLUSIONS

These preliminary data support prior observations that PP in elderly patients with preserved LVEF and DRH results in significant improvement in BP control. The mechanism for this drop in BP is unknown, but the correlation with chronic atrial pacing in this study raises the intriguing possibility of a pacing effect on natriuretic peptide secretion. This observation warrants further study.