

BETA BLOCKER THERAPY BLUNTS THE BLOOD PRESSURE LOWERING EFFECT OF ATRIAL PACING IN HYPERTENSIVE PATIENTS: A POSSIBLE CONFIRMATION OF THE SYMPATHOLYTIC EFFECT OF PACING.

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Abstract:

Background: We have previously published retrospective data in patients with permanent pacing and drug resistant hypertension (HTN), showing a significant decline in systolic BP (SBP) that was strongly correlated with atrial pacing. It has also been reported that cardiac pacing inhibits sympathetic autonomic nerve activity. In an office-based study, we tested the acute effects of increasing atrial pacing rate in patients with pre-existing HTN and permanent pacemakers.

Methods: A total of 12 patients with HTN and previously implanted pacemakers for routine clinical indications were included in this study. Patients with atrial fibrillation were excluded. After a one-hour rest period, atrial pacing was increased by 10% over baseline atrial pacing or sensing rate every 15 minutes. If the SBP did not decline by > 10 mmHg, pacing rate was increased by additional 10% increments for a maximal total of 4 interventions/patient, when applicable. If SBP declined by > 10 mmHg at any stage, no further pacing changes were made.

Results: A total of 33 treatment events, i.e., changes in programmed atrial pacing rate, were performed in the 12 patients. Mean drop in SBP was 8.1 ± 7.5 mmHg; diastolic BP (DBP) declined 6.1 ± 3.6 mmHg ($p < 0.01$). Patients taking beta blockers (BB) were significantly less likely to show this effect (63% interventions vs 14%, BB vs no BB, $p = 0.01$). No patient on BB therapy showed a SBP decline > 10 mmHg vs 37% treatment events in patients not on BB ($p = 0.013$).

Conclusion:

In hypertensive patients, incremental atrial pacing results in significant acute drops in SBP and DBP. This effect is largely blocked by chronic beta blocker therapy. The latter may be secondary to a pre-existing low sympathetic tone in patients treated with BB.

Clinical implications: The results of this preliminary study suggest that further investigation of atrial pacing in patients with HTN is warranted. As well, the current paradigm of treating HTN with BB may not apply to patients with permanent atrial pacing.