ing, and dynamics of cognitive function were found. Improvements of long-term verbal memory correlated well with increases in rCBF in left superior frontal region and right occipital region. Significant correlations between dynamics of mentation and attention and changes of rCBF in right posterior parietal region were demonstrated.
Conclusion: Obtained data suggest that RFA of the renal arteries leads to normalization of cerebral blood flow and improves cognitive function in patients with rHTN through favourable effects on the parameters of the mean 24-h levels of ABP and on the blood pressure load indexes.

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Long-term follow up of a pacemaker-mediated programmable hypertension control therapy

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Background: Despite prescription of multi-drug regimens, many patients with hypertension continue to have systolic blood pressures (SPBs) above guideline-recommended levels. We recently demonstrated that a pacemaker-based programmable hypertension control (PHC) therapy employing a sequence of variably timed short and long atrio-ventricular intervals reduces office and ambulatory SBP by ~11 and 16 mmHg, respectively after 3 months of therapy.
Purpose: The purpose of this study was to test the long-term durability of early PHC results.
Methods: 27 patients with an indication for a dual chamber pacemaker with office SBP>150 mmHg despite stable medical treatment with ≥2 antihypertensive drugs for >2 months were implanted with a ModeratoTM implantable pulse generator (BackBeat Medical, New Hope, PA, USA). Subjects were followed for 1 month with conventional pacing (to ensure persistence of office SBP >140 mmHg) and then had PHC therapy activated. 21 patients agreed to follow beyond the 3 month study period with active PHC therapy and were seen at 6, 12 and 18 months; 12 of these patients have reached 24 months follow up.
Results: Patients (mean age 72±7 years, LVEF 63±5%) had office SBP of 165±10/79±10 mmHg despite an average of 3.3 antihypertensive medications. Office and ambulatory SBPs decreased by 8±13 and 5±12 mmHg ($p<0.05$), respectively, during the initial run-in period with conventional pacing. Following subsequent PHC activation, average office SBP decreased significantly during the entire follow up period (Figure). At 18 months, SBP decreased 14±15 mmHg and diastolic BP decreased 7±9 mmHg (both $p<0.002$) compared to respective pre-activation values. Heart rate decreased by 8±11 bpm during the active period (p=0.002). Average LVEF did not change (-1±6%, p=ns), but LV end-diastolic volume decreased by 17±28 ml (p=0.036). Similar effects were noted in the 12 patients reaching 24 months.

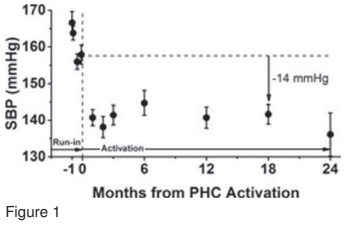

Figure 1

Conclusions: In patients requiring a dual chamber pacemaker and elevated SBPs despite appropriate medical therapy SBP decreased significantly during long-term follow up even after accounting for an initial drop during the initial run-in period. LV function remained unaltered and end-diastolic volume decreased. Heart rate also decreased suggesting reduction in sympathetic tone. These data support the durability and safety of PHC therapy. A prospective, randomized, double-blind study has been initiated.
Acknowledgement/Funding: The Study was founded by BackBeat Medical, Inc.

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Barostimulation for drug-resistant arterial hypertension: mid-term results in 40 patients

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Background: Drug-resistant arterial hypertension (5–10% of hypertensive population) is associated with a high risk of cardiovascular and renal events. After disappointing results of invasive renal-artery denervation, alternative approaches are under study. Since 2012, minimally-invasive system for baroreflex activation therapy was introduced to the clinical practice. So far, only limited number of patients was observed and long-term data is not available.
Purpose: We conducted this prospective, single center trial to evaluate the efficacy of carotid baroreceptor stimulation.
Methods: All consecutive patients receiving CVRX neo barostimulator at our institution between Nov 2013 and December 2016 were included to the study. Indication of implantation was resistant arterial hypertension with mean 24h blood pressure (BP) ≥160 /100 mmHg and ≥4 drugs incl. diuretic or ≥140 / 90 mmHg and ≥6 drugs and/or intolerance of drugs. Stimulation lead was positioned unilaterally to one of the specified sites at carotid sinus and pulse generator was implanted ipsilateral in pectoral region. Barostimulator device was activated 4 weeks after procedure. Regular follow-up with 24-hours blood pressure (BP) measurements were scheduled at every 3 months during first 12 months and every 6 months afterwards. Procedural and follow-up data were retrospectively evaluated and statistically analyzed.
Results: A total of 40 patients (68% males, mean age 61 years) underwent barostimulator implantation. Clinical follow-up showed clinically significant response to barostimulation (achievement of goal systolic BP <140 mmHg or systolic BP drop of >20 mmHg) in 37 patients (92.5%). In the whole study population, mean drop of systolic BP was 40 mmHg after 24 months (Fig. 1). Mean number of used antihypertonics was reduced from 6.3 to 5.3. Non-responders (n=3) had fluctuating and/or lower pre-implantation systolic BP than responders (p=0.02).

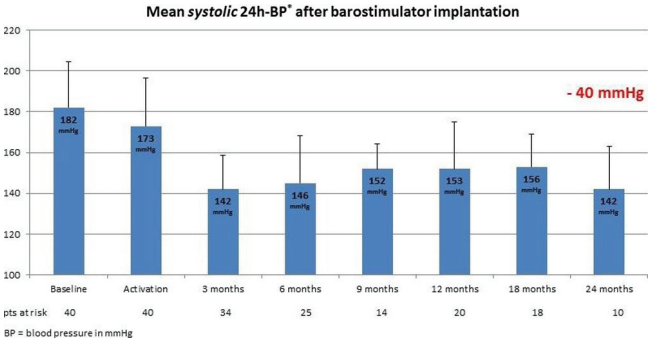

Figure 1

Conclusion: Minimally-invasive system for barostimulation is a safe and effective method for treatment of drug-resistant arterial hypertension. Patients with lower baseline BP are less likely to respond to the therapy.

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Infiltration of the sphenopalatine ganglion decreases blood pressure in newly diagnosed and never treated patients with essential hypertension

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Background: Sphenopalatine ganglion (SPG) is connected with the central nervous system through sympathetic and parasympathetic nerves. We hypothesized that SPG block through sympathetic nerves anesthesia might decrease blood pressure (BP) in recently diagnosed and never treated middle-aged hypertensive patients.
Methods: We performed SBG block in 27 hypertensive patients (mean age 47±12 years, 19 men). All patients have been subjected to 24 hour ambulatory blood pressure monitoring prior the procedure and in a period of 21–30 days after the SBG block in order to estimate differences in 24h average systolic (24h SBP) and diastolic blood pressure (24h DBP), daytime, nighttime, pre-awake and early morning SBP and DBP as well as BP load and BP variability (STD).
Results: We found that 24h SBP (p=0.003) and DBP ($p<0.001$), daytime SBP (p=0.003) and DBP ($p<0.001$) as well as daytime SBP and DBP load (p=0.007 and $p<0.001$, respectively) were decreased in total population at 21–30 days after SPG block. In 12/27 responders (24h SBP decrease >5 mmHg), SBP and DBP were reduced during overall 24h ($p<0.001$), daytime ($p<0.001$) and nighttime periods (p=0.005 and p=0.03, respectively) while only SBP was decreased during 2 hours pre-awake and 2h after awake periods ($p<0.05$). Additionally, daytime SBP and DBP ($p<0.001$) and nighttime SBP load (p=0.002) were also decreased.
Conclusions: SBG block might be a promising, non invasive, safe, painless and easy to perform therapeutic option of BP decrease. As with renal denervation, SBG should be effective in those hypertensive patients with an activated SNS, so a period of patient selection should precede the application of this procedure.