

# Effect of renal denervation on muscle sympathetic nerve activity in hypertensive patients.



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## Introduction

- Renal denervation (RDN) is developed to *disrupt renal sympathetic nerves*, using radiofrequency energy.
- Central hypothesis:** Interruption of renal afferent nerves by RDN decreases central sympathetic outflow, resulting in a BP-lowering effect.
- Muscle Sympathetic Nerve Activity (MSNA) is considered a *reliable method to quantify sympathetic activity*.

## Aim

- To determine *the effect of RDN on MSNA in a standardized fashion*: after cessation of anti-hypertensive treatment or under exact same medication.

## Methods

### Study population

- Patients with *resistant hypertension* (SBP $\geq$ 160 mmHg despite  $\geq$  3 drugs) or inability to follow a stable drug regimen (SBP  $\geq$ 160 mmHg)
- Exclusion criteria for RDN:** secondary hypertension, eGFR $<$ 30 mL/min/1.73m<sup>2</sup>, non-eligible anatomy of renal arteries

### Measurements

- Baseline and 6 months after RDN: MSNA, BP
- Anti-hypertensive medication stopped* before measurements. When considered unsafe, patient instructed to use exact same medication twice for both sessions.

## Results

- 10 sets of MSNA of good quality for analysis.
- 8 patients treated because of resistant hypertension.
- MSNA was determined:
  - 5 patients: twice during a medication free interval
  - 1 patient: twice under exact same medication
  - 4 patients: different drugs

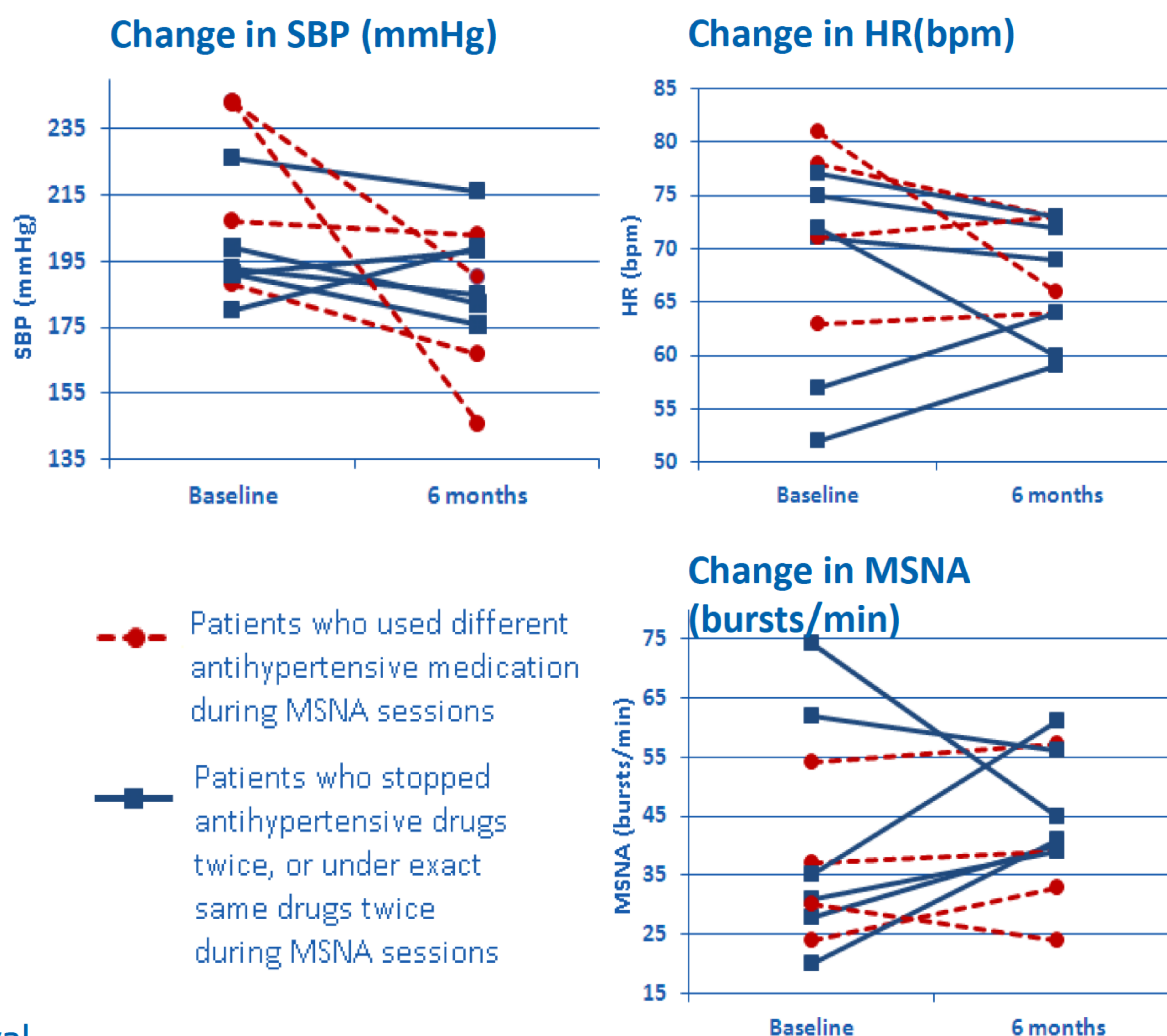
## Safety

- No procedural related events*
- Kidney function did not change* after RDN ( $p=0.161$ ).

Baseline characteristics	N=10
Age (yrs)	57 ( 3)
Sex (male/female)	4/6
Nr of antihypertensive drugs	4.3 (0.5)
Office BP (mmHg)	206( 7) / 116( 4)
Mean 24-h BP (mmHg)	174 ( 6) / 99 ( 3)
BMI (kg/m <sup>2</sup> )	30.2( 1.8)
eGFR* (mL/min/1.73m <sup>2</sup> )	85 ( 6)

	Baseline	6-months	P
SBP (mmHg)	206 ( 7)	186 ( 6)	0.059
DBP (mmHg)	116 ( 4)	106 ( 3)	0.041
HR (bpm)	70 ( 3)	67 ( 2)	0.358
MSNA (bursts/min)	40 ( 6)	44 ( 4)	0.284

Comparable results in patients with standardized medication use



## Summary & Conclusion

- Present study shows that when MSNA is measured in a standardized fashion, *RDN did not result in a change in MSNA*.
- More research* has to be done in a standardized fashion, to determine the net effect of RDN.

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