

# RENAL DENERVATION IN HYPERTENSIVE PATIENTS NOT ON BLOOD PRESSURE LOWERING DRUGS

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## Introduction

- Studies on the blood pressure (BP) lowering effect of renal denervation (RDN) in resistant hypertensive patients have produced conflicting results.
- Change in medication usage during the studies may be responsible for this inconsistency.

## Study aim

To investigate the BP lowering effect of RDN in unmedicated hypertensive patients.

## Methods

We composed a cohort of patients, who were not on BP lowering drugs at baseline and during follow-up, from eight tertiary centers. Data were used when patients:

- were treated with RDN and
- had a baseline office systolic blood pressure (SBP)  $\geq 140$  mmHg and/or 24-hour ambulatory SBP  $\geq 130$  mmHg.

## Primary outcome

Change in office and 24-hour SBP at 12 months after RDN, compared to baseline.

### Baseline characteristics of the study population

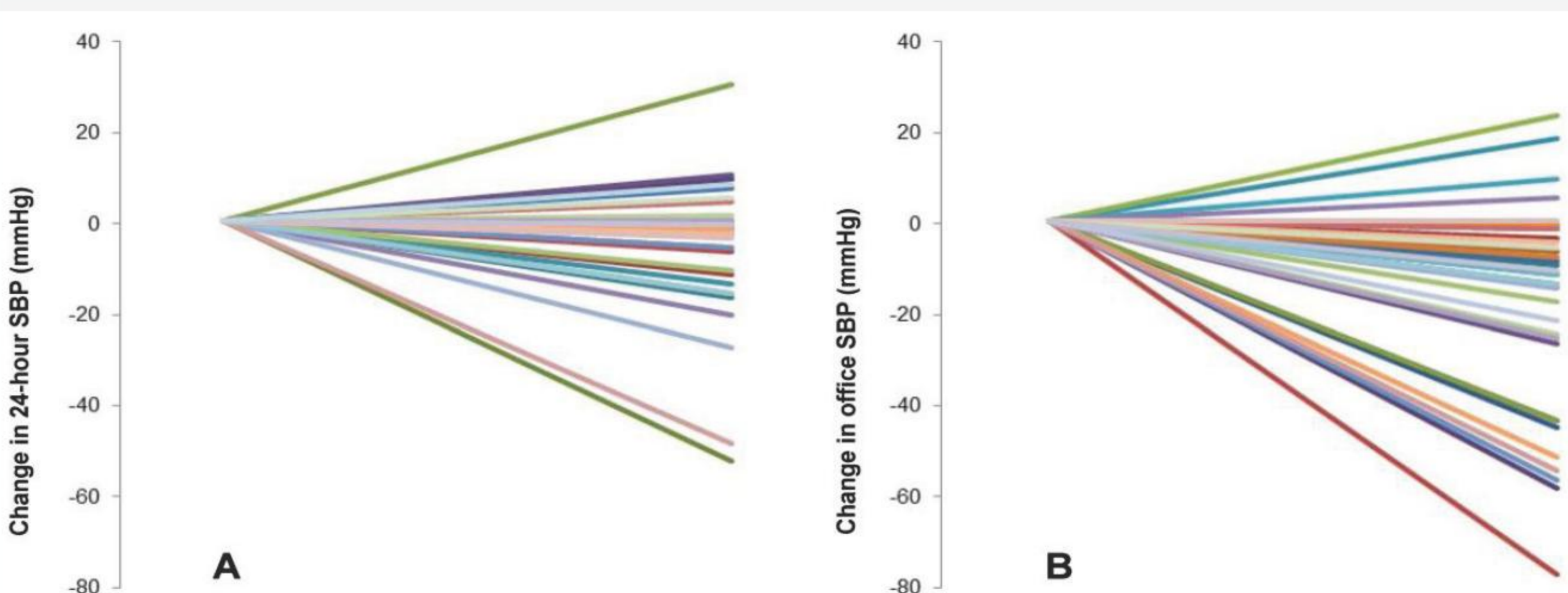
|   | All patients (n=53) |
|---|---------------------|
| Age (yrs) <sup>φ</sup>                            | 62 (35-80)          |
| Gender (male) <sup>†</sup>                        | 24 (45.3)           |
| Caucasian <sup>†</sup>                            | 53 (100)            |
| Body-mass index (kg/m <sup>2</sup> )              | 28.4 (±4.9)         |
| Nr. of antihypertensive drugs <sup>φ</sup>        | 0 (0-0)             |
| Office blood pressure                             |                     |
| Systolic/diastolic (mmHg)                         | 180/101 (±24/14)    |
| Heart rate (bpm)                                  | 72 (±10)            |
| Ambulatory blood pressure                         |                     |
| 24-hour systolic/diastolic (mmHg)                 | 160/94 (±17/11)     |
| 24-hour heart rate (bpm)                          | 72 (±9)             |
| eGFR, CKD epi (mL/min/1.73m <sup>2</sup> )        | 85 (±18)            |
| Presence of accessory renal arteries <sup>†</sup> | 13 (25)             |
| Not all renal arteries treated <sup>†</sup>       | 7 (15)              |
| Device used                                       |                     |
| Symplicity <sup>†</sup>                           | 42 (79)             |
| Other <sup>†</sup>                                | 11 (21)             |
| Nr. of ablations <sup>φ</sup>                     | 13 (2-25)           |

Data are expressed as mean  $\pm$ SD, unless stated otherwise. Bpm, beats per minute; eGFR, estimated glomerular filtration rate.  $\phi$  Data are mean (range),  $\dagger$  Data are n (%)

### Change in blood pressure and heart rate after RDN

|                             | N  | Mean change compared to baseline (95%CI) |
|-----------------------------|----|--|
| 24-hour systolic BP (mmHg)  | 43 | -5.7 (-11.0 to -0.4)                     |
| 24-hour diastolic BP (mmHg) | 43 | -4.0 (-6.6 to -1.4)                      |
| 24-hour heart rate (bpm)    | 35 | -1.1 (-3.8 to 1.7)                       |
| Office systolic BP (mmHg)   | 47 | -13.1 (-20.4 to -5.7)                    |
| Office diastolic BP (mmHg)  | 47 | -4.4 (-7.8 to -1.1)                      |
| Office heart rate (bpm)     | 25 | -2.6 (-6.7 to 1.5)                       |

N represents the number of patients with available information at baseline and follow-up.



Individual changes in BP after RDN, in patients with solitary renal arteries (A, n=35 and B, n=34). SBP, systolic blood pressure. Both office and 24-hour SBP data were available in 34 out of 40 patients.

## Results

Fifty-three patients were included. There were three different reasons for not using BP lowering drugs:

- documented intolerance or allergic reaction (57%)
- temporary cessation of medication for study purposes (28%)
- reluctance to take antihypertensive drugs (15%)

Mean change in 24-hour SBP was -5.7 mmHg (95% confidence interval [CI] -11.0 to -0.4; P=0.04). Mean change in office SBP was -13.1 mmHg (95% CI -20.4 to -5.7; P=0.001).

No changes were observed in other variables, such as eGFR, body-mass index and urinary sodium excretion.

## Conclusion

This explorative study in hypertensive patients on no medication suggests that at least in some patients RDN lowers BP.

