

Prevalence of additional renal arteries in hypertensive patients and the relation with the BP-lowering effect of renal denervation.



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Introduction

- Renal denervation (RDN) is a promising treatment for resistant hypertension.
- Patients with additional renal arteries were excluded from previous studies.
- UMCU: additional arteries not considered an exclusion criterion

Aim

- To determine the prevalence of additional renal arteries in patients referred for RDN.
- To study the relation between presence of additional renal arteries and the BP-lowering effect of RDN.

Methods

Study population

- Resistant hypertension (SBP \geq 160 mmHg despite \geq 3 drugs)
- Inability to follow a stable drug regimen (SBP \geq 160 mmHg)
- Study on effect of RDN on metabolic syndrome (max 1 drug)
- Before RDN: standardized screening:
 - Diagnosis of hypertension confirmed
 - Secondary forms of hypertension excluded
 - Non-invasive imaging of the renal arteries, using MRa or CTa.
- RDN: Arteries treated if: diameter \geq 4mm & length \geq 20mm

Results

- At baseline: No relation between additional arteries and systolic BP ($p=0.879$) and respectively kidney function ($p=0.471$).

Results

- 6 months follow-up data available of 56 patients:
 - 40 patients (71%) with solitary renal arteries
 - 16 patients (29%) with additional renal arteries
 - In 5 patients (13%) all arteries treated with RDN
 - In 11 patients (69%) additional artery not treated (to small for treatment)
- Office BP decreased from 201 22/108 13mmHg at baseline to 168 24/96 14mmHg 6 months after RDN ($p<0.001$).
- Decrease in systolic BP is not different in the group with solitary renal arteries (-34(28)mmHg) compared to group with additional renal arteries (-30(19)mmHg) ($p=0.771$).
- No change in eGFR, in total group as well as in subgroups of patients with solitary (-4mL/min/1.73m², $p=0.306$) or additional arteries (-2mL/min/1.73m², $p=0.272$).

Summary

- Among patients referred for RDN, the prevalence of additional arteries is approximately 35%.
- BP-lowering effect of RDN is comparable in patients with additional renal arteries.

Conclusion

- In conclusion, present data suggest that it is questionable whether patients with additional arteries should be excluded from treatment with RDN.

Baseline characteristics and prevalence of additional renal arteries

	All patients (n=157)	Patients treated with RDN (n=96)	Patients excluded from RDN (n=61)
Age (yrs)	59 (\pm 11)	57(\pm 13)	59(\pm 14)
Gender (female)	72 (46%)	49 (51%)	23 (38%)
BMI (kg/m ²)	29.2 (\pm 5.1)	29.3 (\pm 5.4)	29.0 (\pm 4.5)
Office BP (mmHg)	184 \pm 28/101 \pm 14	191 \pm 29/104 \pm 14	173 \pm 24/95 \pm 13
eGFR* (mL/min/1.73m ²)	75 (\pm 17)	75 (\pm 17)	75 (\pm 17)
Nr of antihypertensive drugs	3 (0-8)	3 (0-8)	3(0-6)
Number of renal arteries:			
- Dual solitary arteries	100 (64%)	63 (66%)	37 (61%)
- 3 renal arteries:	40 (26%)	24 (25%)	16 (26%)
- 4 renal arteries:	14 (9%)	8 (8%)	6 (10%)
- 5 renal arteries:	2 (1%)	1 (1%)	1 (2%)
- 6 renal arteries:	1 (0.5%)	-	1 (2%)

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