Renal denervation in patients with impaired kidney function – results from the Heidelberg RDN registry

Catheter-based treatment of hypertension, heart failure and beyond – where do we stand, where do we go?

Erwin Blessing
SRH Klinikum Karlsbad-Langensteinbach
Disclosure

Speaker name: Erwin Blessing

I have the following potential conflicts of interest to report:

☐ Consulting

☐ Employment in industry

☐ Stockholder of a healthcare company

☐ Owner of a healthcare company

X Other(s) Research Grants, Speakers honoraria

☐ I do not have any potential conflict of interest
RDN for Renal Disease – Rationale

• A vicious cycle exists between hypertension and chronic kidney disease (CKD)\(^1,2\)
  – Hypertension is a consequence of renal disease
  – Systemic hypertension is an important risk factor for progressive CKD

• Worsening hypertension and progressive renal injury accelerates end stage renal disease (ESRD)\(^2\)

• Targeting the renal nerves directly using catheter-based RDN may be effective in decreasing the consequences of sympathetic hyperactivity in patients with CKD and ESRD

Symplicity HTN-2 Trial – Key Inclusion/Exclusion Criteria*

• Inclusion Criteria
  – 18-85 years of age
  – Elevated office SBP ≥160 mm Hg (or ≥150 mm Hg for type 2 diabetics)
  – Documented compliance with ≥3 antihypertensive medications

• Exclusion Criteria
  – eGFR <45 mL/min/1.73m²
  – Type 1 diabetes mellitus
  – Contraindications to MRI
  – Substantial stenotic valvular heart disease
  – Pregnancy or planned pregnancy during the study
  – Myocardial infarction, unstable angina, or cerebrovascular accident in the previous 6 months
  – Hemodynamically or anatomically significant renal artery abnormalities or prior renal artery intervention

*Inclusion/exclusion criteria in the trial settings were stringent and conservative in order to ensure a homogenous population – in clinical practice, individual patient characteristics and physician judgment should guide patient selection.
RDN safe in patients with CKD?

Renal Denervation in Moderate to Severe CKD

Dagmara Hering,*† Felix Mahfoud,‡ Antony S. Walton,§ Henry Krum,§ Gavin W. Lambert,* Elisabeth A. Lambert,* Paul A. Sobotka,¶ Michael Böhm,‡ Bodo Cremers,‡ Murray D. Esler,*§ and Markus P. Schlaich*§
Figure 1. Individual changes in creatinine-based estimated GFR before renal denervation (pre-RDN); at 1 week (W); and at 1-, 3-, 6-, and 12-month (M) follow-up (FU).
Figure 2. Office BP values at follow-up. Changes in average office BP (A) and mean decrease in office BP (B) at follow-up. Error bars represent SDs. *P<0.001 versus baseline (before the procedure). FU, follow-up; M, month; pre-RDN, prerenal denervation.
Heidelberg RDN CKD registry

8 patients (6 male, 2 female)
60.1 years (39-72)
Treatment resistant hypertension
r/o secondary causes for hypertension

OBP: 165/96 mm Hg
24 h ABPM: 147/85 mm Hg
eGFR: 35.5 (25-48) ml/min
Meds: 5.6 (3-8)
Heidelberg RDN CKD registry

Office BP
Heidelberg RDN CKD registry

24 h ABPM
Heidelberg RDN CKD registry

Creatinin based eGFR

![Graph showing creatinin based eGFR at different time points: Baseline, 1 m, 3 m, 6 m, and 12 m.]
Heidelberg RDN CKD registry

Safety:

Technical success: 100 %
Normal Duplex renal artery up to 12 months

Biomarker pending:

NGAL (plasma, urine)
Endothelin-1 (urine)
ctgf/ccn2 (plasma, urine)
tgf-beta (plasma)
NT-pro BNP (plasma)
Conclusions

- RDN could be safely performed in patients with CKD
- Trend towards improved Office BP and 24 h ABPM
- No change in kidney function during 12 month f/u
- Larger studies needed to evaluate the role for RDN in patients with CKD or even ESRD
Thanks

Dr. Felicitas Stoll
Dr. Britta Vogel
Prof. Zeier
Prof. Schwenger
Renal denervation in patients with impaired kidney function – results from the Heidelberg RDN registry

Catheter-based treatment of hypertension, heart failure and beyond – where do we stand, where do we go?

Erwin Blessing
SRH Klinikum Karlsbad-Langensteinbach