CASE REPORT

Renal denervation in fibromuscular dysplasia

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SUMMARY

Renal denervation offers novel treatment opportunities in patients with resistant hypertension, including cases with rare causes (fibromuscular dysplasia), warranting further investigation.

BACKGROUND

Left ventricular (LV) hypertrophy is a common finding in patients with resistant hypertension and is associated with high cardiovascular risk. In these patients, catheter-based renal denervation (RDN) has been demonstrated to effectively reduce blood pressure.

CASE PRESENTATION

A 62-year-old female patient presented with resistant hypertension (systolic blood pressure > 160 mm Hg despite 6 antihypertensive drugs, including a vasodilator (*hydralazine 25 mg twice/day*), ACE inhibitor (*ramipril 5 mg twice/day*), β -blocker (*metoprolol 50 mg twice/day*); diuretic (*hydrochlorothiazide 25 mg/day*); calcium-channel blocker (*lercanidipin 20 mg/day*) and an α -agonist (*moxonidin 0.3 mg twice/day*). The patient had been on a stable drug regimen for more than 3 years. However, recurrent hypertensive crises required intermittent administration of nitrates. The patient reported a history of hypothyreosis, hyperlipoproteinemia and a paracetamol-allergy. Preprocedural non-invasively significant renal artery stenosis was excluded by MR angiography. X-ray angiography identified bilateral fibromuscular dysplasia and quantitative angiography excluded significant (>50% stenosis) of the right (figure 1A)

and left renal arteries (figure 1B). Successful catheter-based RDN of both renal arteries was performed using the Symplicity RDN system (Symplicity by Ardian, Palo Alto, California, USA from Medtronic). *Postprocedure, no change in medication has been performed.* The patient's blood pressure before the treatment was on average 189/87 mm Hg and after the procedure 164/72 mm Hg. Blood pressure was measured at least three times and averaged (office measurements). At the 6-month follow-up systolic and diastolic blood pressure in 24 h measurement had dropped by ~20 and ~15 mm Hg, respectively (on average 170/70 mm Hg; figure 2). *The slightly lower blood pressure immediately post-RDN might be related to sedation during the procedure and more resting activity of the patient during hospital stay. Therefore, the 24 h blood pressure monitoring 6 months postprocedure might be more representative for the blood pressure control in this patient. In addition no hypertensive crisis has been reported anymore post-RDN.* In parallel, cardiac MRI demonstrated a reduction in end-organ damage, with LV mass index reduction from 52 to 45.6 g/m² (−14%) and improvement of cardiac output index from 3.9 to 4.2 L/(min×m²).

TREATMENT

We report for the first time the effect of catheter-based RDN in a patient with fibromuscular dysplasia and resistant hypertension.

OUTCOME AND FOLLOW-UP

Follow-up data have been acquired by cardiac MRI.

Figure 1 X-ray angiography identified bilateral fibromuscular dysplasia, and quantitative angiography excluded significant (>50% stenosis) of the right (A) and left renal artery (B).

To cite: Kelle S, Teller DC, Fleck E, et al. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2013-010204

Figure 2 Change of blood pressure pre/immediately post and 6 months after renal denervation procedure.

damage offer new insights into the potential role of RDN in specific patient populations and may initiate further studies about the clinical role of this novel treatment method in well-defined patient populations.

Learning points

- ▶ Potential of renal denervation.
- ▶ Treatment opportunities in patients with fibromuscular dysplasia and resistant hypertension.
- ▶ Cardiac MRI for follow-up examinations.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

DISCUSSION

We describe, for the first time, the effects of RDN in a patient with resistant hypertension due to fibromuscular dysplasia of the renal arteries. Our observations of a reduction in end-organ

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