# Renal denervation improves blood pressure and arterial stiffness

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Renal denervation improves blood pressure and arterial stiffness in patients with therapy resistant hypertension, according to research presented at ESC Congress 2012 by Mr Klaas Franzen from the University Hospital of Schleswig-Holstein. The findings suggest that renal denervation regenerates blood vessels and could reduce cardiovascular events.

Malignant arterial hypertension was historically treated with surgical thoracolumbar splanchnicectomy, a type of sympathectomy treatment that was introduced in 1938. "A significant reduction in blood pressure response was observed in at least half of the patients who underwent splanchnicectomy," said Mr Franzen. "But the treatment led to severe adverse events such as orthostatic hypotension, anhidrosis and intestinal disturbances. After the discovery of effective antihypertensive drugs, splanchnicectomy became neglected and disregarded over time."

In 2009 the concept of sympathectomy was reintroduced with intravasal catheter-based percutaneous renal sympathetic denervation (RDN) used in patients suffering from resistant arterial hypertension. Recent publications have shown that RDN significantly lowers systolic and diastolic peripheral brachial blood pressure by 32/12 mmHg after 6 months.

Mr Franzen said: "RDN with radiofrequency energy has several important advantages over surgical splanchnicectomy: it is a minimally invasive procedure without significant systematic side effects, it is well tolerated, and recovery times are short."

Arterial hypertension can irrevocably harm blood vessels in the short and long term, subsequently leading to increased aortic/arterial stiffness and arteriosclerosis. "Since central aortic pressures and arterial stiffness are much better predictors for future cardiovascular events than peripheral pressures we focused the present study on the effects of RDN on central hemodynamics and arterial stiffness," said Mr Franzen.

The researchers studied 21 patients with therapy resistant hypertension (61.9% men; mean age 64 years; 5.0±1.3 antihypertensive drugs) and 6 controls (83.3% men; mean age 57 years; 4.3±2.3 antihypertensive drugs). The inclusion criteria were: (i) use of >3 antihypertensive drugs, (ii) peripheral blood pressure at baseline ?150 mmHg, and (iii) exclusion of secondary hypertension and anatomical abnormalities of the renal arteries.

RDN was performed with an RDN radiofrequency ablation catheter system (1). Central hemodynamics and arterial stiffness, i.e. pulse wave velocity (PWV), were recorded with an Arteriograph device (2). Measurements were performed at baseline, and 3 and 6 months after the intervention.

RDN led to an improvement in all parameters compared to baseline. Peripheral systolic blood pressure improved by 7.6% (145 mmHg versus 156 mmHg, p