

# Renal Sympathetic Denervation for Treatment-Resistant Hypertension

*Blood pressure dropped sharply in the denervation group.*

Animal studies and pilot studies in humans have suggested that catheter-mediated ablation of renal sympathetic nerves can lower blood pressure (BP) in patients with treatment-resistant hypertension.

In the first randomized controlled human trial of this technique (funded by the maker of the catheter system), researchers randomized 106 patients with treatment-resistant hypertension (systolic BP  $\geq 160$  mm Hg in nondiabetic patients or  $\geq 150$  mm Hg in diabetic patients despite treatment with 3 or more antihypertensive agents) to renal sympathetic denervation with radiofrequency pulses delivered via catheter or no intervention. Post-randomization changes in antihypertensive medications were allowed only when medically necessary because of symptomatic changes in BP.

At baseline, mean BP in both groups was about 178/96 mm Hg. After 6 months, office-based BPs declined by 32/12 mm Hg in the denervation group but did not change in the control group. Similarly, home-based and ambulatory BP monitoring showed sharp BP declines in the denervation group and little or no change in the control group. No serious procedure-related adverse events were reported. After 6 months, neither group experienced a change in renal function, and no significant new abnormalities were identified on renal artery imaging.

**Comment:** Like the nonselective surgical sympathectomies of years past, selective renal sympathetic denervation likely lowers BP by increasing renal blood flow, decreasing plasma renin activity, and blocking afferent renal stimulation of hypothalamic sympathetic centers. Investigators should conduct additional research to determine whether the hypotensive effect of denervation persists during long-term follow-up and to examine its effect on end-organ complications.

— **Bruce Soloway, MD**

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