Catheter-Based Renal Nerve Ablation and Centrally Generated Sympathetic Activity in Difficult-to-Control Hypertensive Patients

To the Editor:

With great interest we have read the article by Brinkmann et al, published recently in Hypertension. The authors demonstrated that renal denervation does not result in a decrease in muscle sympathetic nerve activity (MSNA) in 11 patients (10 men and 1 woman, with the mean age of 65 years) with difficult-to-treat hypertension. Changes in systolic blood pressure even tended to show an inverse correlation with MSNA. This is in contrast to the hypothesis that, by interruption of the renal afferent nerves by renal denervation, central sympathetic outflow decreases, resulting in a blood pressure–lowering effect. Moreover, the results are not in line with the first publication of Schlaich et al, which demonstrated that renal denervation resulted in a normalization of MSNA in 1 single person with resistant hypertension.

We feel that it is questionable whether the presented data allow for any conclusion. When looking at the list of medication presented in Table 1 of their article, it is clear that both sympathoinhibitory (eg, renin-angiotensin-aldosterone system inhibitors moxonidine and clonidine) and sympathoexcitory (eg, diuretics and amlodipine) medications were prescribed. For instance, in patients with chronic kidney disease, enalapril reduces MSNA on average by 26% and moxonidine by 23%, whereas MSNA increases during the use of amlodipine by 37% and during the use of diuretics by 79%. β-blockers usually have a neutral or lowering effect on MSNA. The effect of a mixture of these agents on MSNA is unknown. Although the authors mentioned that adherence to medication was monitored by telephone interviews, it seems difficult to believe that all of the patients used precisely the same mixture of medications (7±2 antihypertensive medications per patient) in precisely the same dosage during both MSNA measurements. We submit that, to quantify the net effect of renal denervation on MSNA, studies should be done when patients are taken off all medications known or likely to affect MSNA. If this is considered unsafe, we propose that patients are tested while on a fixed multiagent combination pill (eg, Exforge: valsartan, amlodipine, and hydrochlorothiazide).

Renal afferent and efferent nerve activity cannot be quantified directly in humans. Only the downstream effects of these nerve activities can be assessed. We agree that a decrease in MSNA could be interpreted as an indication that afferent nerves are affected by renal denervation. We agree with the authors that quantification of the effect of renal denervation on MSNA is a highly relevant study, because it can help us to understand the mechanisms of effects of renal denervation. Therefore, more studies using this methodology should be performed; however, this should be done in highly standardized study conditions.

Disclosures

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