More Research Is Needed to Investigate the Effect of Denervation on Blood Pressure

To the Editor:

I read with great interest a review article published in the advanced online edition of this journal. This article reviewed some critical issues on renal denervation, including patient selection, efficacy, safety, etc. This article summarized the impressive office blood pressure-lowering effect of renal denervation in the Symplicity HTN studies. However, it did not cite other studies that did not observe a decrease in blood pressure after renal denervation. For example, Fadl Elmula et al. and Hart et al. separately reported that renal denervation did not decrease office systolic blood pressure. In addition, some studies, for example, the report of Witkowski et al., showed that renal denervation did not decrease ambulatory blood pressure.

These studies call for more research to investigate the blood pressure-lowering effect of renal denervation. The underlying reasons for the nonsignificant finding in these studies are not clear. It may be because of small sample sizes (eg, n=6–10 in the 3 studies cited above). Another reason may be because the observation time was short, because the Symplicity HTN-1 study suggests that the magnitude of the drop in office blood pressure after renal denervation may increase over time. A third reason may be because of the variation in the blood pressure response to renal denervation. The responder rates (a decrease in systolic blood pressure of ≥10 mmHg) were only 33% and 50%, respectively, in the reports from Fadl Elmula et al. and Hart et al., and these values were lower than those in the Symplicity HTN-1 study. These studies highlight that a big variation in the blood pressure response to renal denervation exists, and that in some patients blood pressure may increase. This statement is supported by the results from 10 European expert centers (n=109), which showed that office systolic blood pressure was increased in 22.9% of patients 6 months after the procedure. Therefore, it is urgent to investigate predictors of the response of blood pressure to renal denervation and thus to avoid possible harm to those nonresponders.

In addition, some studies showed that renal denervation decreased office but not ambulatory blood pressure. For example, Witkowski et al. reported that renal denervation significantly decreased office systolic blood pressure by 34 mmHg at 6 months after renal denervation; however, 24-hour ambulatory systolic blood pressure was only decreased by 6 mmHg (P=0.05). Ambulatory blood pressure monitoring is regarded as the gold standard to diagnose true hypertension and to assess cardiovascular risk. Compared with office blood pressure, ambulatory blood pressure provides better estimates of a patient’s cardiovascular prognosis. However, in the available studies, ambulatory blood pressure was designed as a secondary outcome, or even not included in the trial design. Therefore, a need is highlighted to investigate the effect of renal denervation on ambulatory blood pressure.

Disclosures

This work is funded by a grant from the National Health and Medical Research Council (1062671).

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Hypertension. 2014;63:e85; originally published online February 17, 2014;
doi: 10.1161/HYPERTENSIONAHA.113.03042

Hypertension is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
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Print ISSN: 0194-911X. Online ISSN: 1524-4563

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World Wide Web at:
http://hyper.ahajournals.org/content/63/4/e85

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