Response to Blood Pressure and Sympathetic Nervous System Response to Renal Denervation

Dr Schlaich et al suggest that differences in blood pressure and muscle sympathetic nerve responses to renal nerve ablation between studies could be explained by differences in patient characteristics. All of our patients fulfilled diagnostic criteria for treatment-resistant arterial hypertension and had office blood pressure measurements in the hypertensive range, despite treatment with multiple antihypertensive drugs. Yet, we assessed blood pressure after an almost 60-minute resting period in the supine position. In the SYMPLICITY trials, office blood pressure measurements were taken in the seated position. Thus, baseline blood pressure is difficult to compare between studies. Even if blood pressure readings were somewhat lower in our patients, their referral to renal denervation therapy reflects the current clinical practice in Germany.

The idea that patients with a larger neurogenic component of hypertension might respond more to renal nerve ablation is intriguing. The concept is based on the assumption that renal sensory afferents stimulate efferent sympathetic nerve traffic. Yet, the picture may be more complex: Afferents from other regions, central integration, and efferent nerve traffic to organs other than skeletal muscle may play a role, including the coupling between electrical nerve activity and norepinephrine release, receptor sensitivity, and so on. Detailed autonomic cardiovascular profiling may be required to unravel the underlying mechanisms. Criteria identifying patients more or less likely to respond have not yet been defined. In the future, device-based treatments, including renal nerve ablation and electrical carotid sinus stimulation, should be restricted to patients most likely to experience a clinical benefit.

Schlaich et al suggest that a significant proportion of our patients exhibited reductions in muscle sympathetic nerve activity. Sympathetic inhibition was not a typical response because the average change in muscle sympathetic nerve activity was close to 0. None showed a muscle sympathetic nerve activity reduction as pronounced as the patient reported by Schlaich et al. Remarkably, patients with reductions in muscle sympathetic nerve activity in our study exhibited increases rather than reductions in blood pressure, which indicates that baroreflex blood pressure buffering may be involved. In the patient with the largest blood pressure reduction of 66 mm Hg, sympathetic activity did not change. The observation is not consistent with a central sympatholytic response elicited by renal nerve ablation. Our study does not exclude that interruption of renal afferent nerve traffic may attenuate centrally generated sympathetic activity and blood pressure in some patients.

Disclosures

None.

Karsten Heusser
Jens Tank
Julia Brinkmann
Institute of Clinical Pharmacology
Hannover Medical School
Hannover, Germany

Bernhard Schmidt
Jan Menne
Department of Nephrology and Hypertension
Hannover Medical School
Hannover, Germany

Gunnar Klein
Johann Bausachs
Department of Cardiology and Angiology
Hannover Medical School
Hannover, Germany

Hermann Haller
Department of Nephrology and Hypertension
Hannover Medical School
Hannover, Germany

Fred C. Sweep
Department of Chemical Endocrinology
Radboud University Nijmegen Medical Centre
Nijmegen, the Netherlands

Andre Diedrich
Division of Clinical Pharmacology
Department of Medicine
Vanderbilt University
Nashville, TN

Jens Jordan
Institute of Clinical Pharmacology
Hannover Medical School
Hannover, Germany

Response to Blood Pressure and Sympathetic Nervous System Response to Renal Denervation

Karsten Heusser, Jens Tank, Julia Brinkmann, Bernhard Schmidt, Jan Menne, Gunnar Klein, Johann Bauersachs, Hermann Haller, Fred C. Sweep, Andre Diedrich and Jens Jordan

Hypertension. 2013;61:e14; originally published online December 17, 2012;
doi: 10.1161/HYPERTENSIONAHA.111.00520

The online version of this article, along with updated information and services, is located on the World Wide Web at:
http://hyper.ahajournals.org/content/61/2/e14

An erratum has been published regarding this article. Please see the attached page for:
/content/61/5/e53.full.pdf

Permissions: Requests for permissions to reproduce figures, tables, or portions of articles originally published in Hypertension can be obtained via RightsLink, a service of the Copyright Clearance Center, not the Editorial Office. Once the online version of the published article for which permission is being requested is located, click Request Permissions in the middle column of the Web page under Services. Further information about this process is available in the Permissions and Rights Question and Answer document.

Reprints: Information about reprints can be found online at:
http://www.lww.com/reprints

Subscriptions: Information about subscribing to Hypertension is online at:
http://hyper.ahajournals.org//subscriptions/

Not all of the authors were listed in this Letter to the Editor response. The complete author listing is as follows:

**Karsten Heusser**  
**Jens Tank**  
**Julia Brinkmann**  
*Institute of Clinical Pharmacology*  
*Hannover Medical School*  
*Hannover, Germany*

**Bernhard Schmidt**  
**Jan Menne**  
*Department of Nephrology and Hypertension*  
*Hannover Medical School*  
*Hannover, Germany*

**Gunnar Klein**  
**Johann Bauersachs**  
*Department of Cardiology and Angiology*  
*Hannover Medical School*  
*Hannover, Germany*

**Hermann Haller**  
*Department of Nephrology and Hypertension*  
*Hannover Medical School*  
*Hannover, Germany*

**Fred C. Sweep**  
*Department of Chemical Endocrinology*  
*Radboud University Nijmegen Medical Centre*  
*Nijmegen, the Netherlands*

**Andre Diedrich**  
*Division of Clinical Pharmacology*  
*Department of Medicine*  
*Vanderbilt University*  
*Nashville, TN*

**Jens Jordan**  
*Institute of Clinical Pharmacology*  
*Hannover Medical School*  
*Hannover, Germany*

This correction has been made to the current online version of the article, which is available at http://hyper.ahajournals.org/content/61/2/e14.full.