Baroreflex Regulation of Sympathetic Nerve Activity in Patients With Vasovagal Syncope

To the Editor:

In their study, “Dysfunctional Baroreflex Regulation of Sympathetic Nerve Activity in Patients With Vasovagal Syncope,” Béchir et al1 implied a unilateral causal relationship between reduction of arterial baroreflex control of heart rate and increase of muscle sympathetic nerve activity (MSNA) in patients with syncope. The authors concluded that dysfunctional baroreflex regulation of sympathetic activity provides “new insights into the mechanisms of vasovagal syncope.”

We have two comments.

Baroreflex function can be depressed by suprabulbar central influences and also by vagal, somatic, or sympathetic2 afferents. This experimental evidence has provided strong support for the concept that baroreceptive input should be considered as one of the neural mechanisms underlying cardiovascular regulation3 and not the only mechanism, as suggested by the Béchir et al1 study. The observation of enhanced MSNA values in patients with syncope both at rest and during lower body negative pressure1 is in contrast to the reduced MSNA already reported4 and raises the possibility of an alternative interpretation of the results. Indeed, the depressed baroreflex function observed in patients with syncope1 may be the consequence of an increase in central sympathetic drive.

In the Béchir et al1 study, baroreflex inhibitory modulation of MSNA was inferred by using the alpha index that only assesses arterial baroreflex control of heart rate.

A comprehensive approach to arterial baroreflex modulation of heart rate and MSNA in patients with syncope has been previously published in a study4 misquoted in the Béchir et al1 paper. An exhaustive assessment of baroreflex function should consider several aspects besides alpha index, including the definition of the entire sigmoidal baroreflex curve during drug infusion and the evaluation of spontaneous reciprocal changes of heart rate, arterial pressure, central venous pressure, and MSNA during progressive tilt (or lower body negative pressure).5

Raffaello Furlan, MD
Francesca Perego, MD
Simona Colombo, MD
Unita Sincopi e Disturbi della Postura
Medicina Interna II
Ospedale “L. Sacco”
Universita di Milano
Milan, Italy


Response

We thank Dr Furlan and colleagues for their comments concerning our study.1

First, there is no doubt that there are many contributing cofactors in the pathophysiology of vasovagal syncope. Thus, a baroreceptor dysfunction is, indeed, only one underlying factor, but probably an important one. Many other studies (even one of the respondents’) have shown such an impairment.2,3 Indeed, in our study, we did not suggest impaired baroreceptor sensitivity as the only pathophysiological factor in the genesis of vasovagal syncope.

Second, there are stimulus-dependent and -independent baroreceptor testing methods. We used only a stimulus-independent one, because the infusion of vasodilators may lead to syncope, which was not the aim of our study. Furthermore, many substances can interfere pharmacologically with the endings of the baroneurons in the vasculature.4 This, in turn, might lead to a change in baroreceptor sensitivity.

Markus Béchir, MD
Christian Binggeli, MD
Roberto Corti, MD
Remy Chenevard, MD
Lukas Spieker, MD
Frank Ruschitzka, MD
Thomas F. Lüscher, MD
Georg Noll, MD
Cardiovascular Center
Department of Cardiology
University Hospital
Zürich, Switzerland

Baroreflex Regulation of Sympathetic Nerve Activity in Patients With Vasovagal Syncope
Raffaello Furlan, Francesca Perego and Simona Colombo

Circulation. 2004;109:e171
doi: 10.1161/01.CIR.0000121682.14811.C9
Circulation is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
Copyright © 2004 American Heart Association, Inc. All rights reserved.
Print ISSN: 0009-7322. Online ISSN: 1524-4539

The online version of this article, along with updated information and services, is located on the World Wide Web at:
http://circ.ahajournals.org/content/109/12/e171

Permissions: Requests for permissions to reproduce figures, tables, or portions of articles originally published in Circulation 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 Circulation is online at:
http://circ.ahajournals.org//subscriptions/