Effects of Angiotensin-Converting Enzyme Inhibitors on Central Blood Pressure

To the Editor:

From a substudy of the Australian National Blood Pressure 2 (ANBP2) trial, Dart et al.1 concluded that there was no evidence for a disproportionate lowering of central systolic pressure to explain the favorable effects of an angiotensin-converting enzyme inhibitor over diuretic in the main ANBP2 study. Results of the substudy, however, conflict with another,2 which used a Food and Drug Administration--validated method to show a greater (3.2 mm Hg) reduction of aortic systolic pressure with enalapril as compared with diuretic for the same reduction of brachial systolic pressure and with no change in heart rate.

There may be a systematic error in the method used by Dart et al.1 for calibration of the central systolic pressure. Their method assumes the identity of mean blood pressure (MP) and of diastolic blood pressure (DP) in central and peripheral arteries. This calculates central systolic pressure by extrapolation from (MP–DP) as measured in the upper limb. Authors used a Dinamap 1846XT brachial cuff device, which was developed from a previous Dinamap 845 cuff device. Accuracy of the 1846XT device has been questioned as failing to conform with British Hypertension Society standards.3 Assessment of the 845 device4 showed that it overestimated diastolic pressure and underestimated mean pressure, such that the value of (MP–DP) given by the cuff was 5.2 mm Hg on average less than measured by simultaneous aortic cannulation. With the extrapolation method used for calculating aortic systolic pressure, this could account for an error in estimation of central aortic systolic pressure of 10 mm Hg or more.

Authors are urged to consider this technological issue. It may explain the apparent identity of systolic and pulse pressure in their substudy, as was seen in the earlier assessment using the Dinamap 845 device4 (instead of the amplification usually seen). It may also explain the authors’ paradoxical findings in another substudy of ANBP2, which showed apparent superiority of brachial over central systolic pressure in predicting cardiovascular events.5

Disclosures

M.F.O. is a founding director of AtCor Medical, manufacturer of pulse wave analysis systems. W.M. is a consultant to AtCor Medical. M.E.S. has nothing to disclose.

Michael F. O’Rourke
St. Vincent’s Clinic/University of New South Wales
Sydney, Australia

Wilmer W. Nichols
Department of Cardiovascular Medicine
University of Florida
Gainesville, Fl

Michel E. Safar
Paris Descartes University
Faculty of Medicine, Assistance Publique Hôpitaux De Paris,
Diagnosis Center Hotel Dieu
Paris, France


Effects of Angiotensin-Converting Enzyme Inhibitors on Central Blood Pressure
Michael F. O'Rourke, Wilmer W. Nichols and Michel E. Safar

Hypertension. 2007;50:e63; originally published online July 16, 2007;
doi: 10.1161/HYPERTENSIONAHA.107.095646
Hypertension is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
Copyright © 2007 American Heart Association, Inc. All rights reserved.
Print ISSN: 0194-911X. Online ISSN: 1524-4563

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/50/3/e63

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/