Comment on Optimal Treatment for Resistant Hypertension: The Missing Data on Pulse Wave Velocity

To the Editor:

In Hypertension (October), Egan et al.1 provide a new definition of treatment-resistant hypertension and compare treatment with ≤2 versus ≥3 classes of antihypertensive agents for uncontrolled and controlled hypertensive individuals. We focus on the uncontrolled group in which blood pressure (BP) was lower with fewer drugs.

Diastolic BP and systolic BP were higher for the ≥3 (systolic BP=151.1; diastolic BP=83.7) than for the ≤2 drug group (systolic BP=149.0; diastolic BP=86.3; n=102,951 in 2 large samples: n=44,686; n=102,951). Egan et al.1 speculated that pulse wave velocity (PWV) values (the gold standard for indirect assessment of arterial stiffness) would be higher for the ≥3 drug group, but did not present data on PWV. We provide the missing data.

At the seventh wave of our community-based Maine Syracuse Longitudinal Study (MSLS),2 PWV data were obtained for the first time using the SphygmoCor system and procedure.3 At each wave, subjects were referred back to their physician for between-wave treatment for hypertension and other cardiovascular disease risk factors.4 At each wave, subjects were referred back to their physician for between-wave treatment for hypertension and other cardiovascular disease risk factors.4 At wave 7, 95% percent of our subjects were treated for hypertension. Of these, 46% had uncontrolled BP (>140 systolic BP and/or >90 diastolic BP). As in Egan et al.,1 the controlled individuals exhibited lower BP and lower PWV values.4 The question we raise is whether higher PWV would be observed for ≥3 classes of antihypertensive medications as compared with ≤2 classes of medications (including a diuretic).

Our BP findings (Table) are consistent with that of Egan et al.,1 and we find that PWV was higher in the group taking ≥3 classes of antihypertensive drugs, an association that was sustained when we adjusted age, education, sex, ethnicity, body mass index, diabetes mellitus, and total cholesterol: categorical regression coefficient (b=1.63; SE=0.055; P<0.01). We replicated these findings when the Egan et al.1 requirement that a diuretic be included in drug combinations was dropped, ≤2 (n=155) ≥3 (n=66).

We confirm Egan et al.1 with our small sample and data on PWV. These data reinforce the concern for effective management of hypertension in polypharmacy, including literature-based choice of drugs and improved patient education and adherence.1,5 This analysis was approved by the University of Maine Institutional Review Board.

Table. SBP, DBP (mm Hg), and PWV (m/s) for ≤2 and ≥3 Drug Classes Used in Treatment With Egan et al1 Drug Count Included

<table>
<thead>
<tr>
<th>Drug Classes Including Diuretic</th>
<th>≤2</th>
<th>≥3</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSLS, n</td>
<td>48</td>
<td>46</td>
</tr>
<tr>
<td>Egan et al med count*</td>
<td>1.69 (1.55–1.82)</td>
<td>3.35 (3.18–3.52)</td>
</tr>
<tr>
<td>Egan et al age, y</td>
<td>55.9 (55.8–56.0)</td>
<td>60.6 (60.5–60.7)</td>
</tr>
<tr>
<td>MSLS age, y</td>
<td>63.9 (60.5–67.2)</td>
<td>67.0 (63.7–70.8)</td>
</tr>
<tr>
<td>MSLS mean SBP*†</td>
<td>141.3 (136.5–145.9)</td>
<td>152.2 (146.6–157.7)</td>
</tr>
<tr>
<td>MSLS mean DBP†</td>
<td>85.9 (83.9–88)</td>
<td>84.7 (82.1–87.2)</td>
</tr>
<tr>
<td>MSLS PWV*</td>
<td>10.3 (9.6–10.6)</td>
<td>12.9 (11.9–13.9)</td>
</tr>
</tbody>
</table>

Data presented are mean values with 95% confidence intervals. BP indicates blood pressure; DBP, diastolic BP; med, medication; MSLS, Maine Syracuse Longitudinal Study; PWV, pulse wave velocity; and SBP, systolic BP.

*Significant difference between ≤2 and ≥3 drug groups in MSLS at P<0.01 was obtained.
†BP measures are based on 15 assessments at wave 7.

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