C034
ANEROID SPHYGOMANOMETERS ARE ACCURATE IN THE HOSPITAL AND CLINIC SETTING
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The aneroid sphygmomanometer (AS) is commonly used for indirect BP measurement despite concerns about its accuracy. Concern about the environmental toxicity of mercury, however, has placed the continued use of mercury sphygmomanometers (MS) under scrutiny. Due to external pressures to become mercury-free, many MS at our institution have been replaced by AS. An annual maintenance protocol was developed to insure proper function and accuracy of these devices.

Methods: Using MS as the reference standard, we studied 283 aneroid devices chosen randomly from the hospital and outpatient setting. Simultaneous pressure readings using a Y-connector were obtained at 20 mm Hg intervals over the range of 60 to 240 mm Hg.

Results: MS vs AS readings (mean ± SD): 60 vs 59.9 ± 1.9, 80 vs 79.9 ± 1.9, 100 vs 100.0 ± 1.8, 120 vs 120.3 ± 1.8, 140 vs 140.7 ± 1.4, 160 vs 160.7 ± 1.7, 180 vs 189.9 ± 1.3, 200 vs 200.7 ± 5.0, 220 vs 221.0 ± 1.3, and 240 vs 240.8 ± 1.6 (r = 0.99, p < .001). As overestimated MS by a mean of 0.5 mm Hg (95% CI, 0.3 to 0.7 mm Hg). Virtually 100% of AS readings were within the 4 mm Hg range recommended by the Association for the Advancement of Medical Instrumentation.

Conclusion: These results demonstrate that AS can provide accurate measurements when a proper maintenance protocol is followed.

Key Words: Blood pressure measurement; aneroid sphygmomanometer

C035
HOME BLOOD PRESSURE MEASUREMENT: RELIABILITY OF PATIENTS’ REPORTS, ACCEPTABILITY AND COMPARISON WITH OFFICE AND AMBULATORY BLOOD PRESSURE

Home blood pressure (HBP) measurement has been used in clinical practice. Thus, the objectives of this study were: 1-evaluate the acceptability and reliability of HBP; and 2-compare HBP with office blood pressure (OBP) and ambulatory blood pressure (ABP) measurement. Two hundred and eighteen hypertensive patients (54 ± 12 yrs, 155 female, 124 white, 118 treated with placebo, and 100 with antihypertensives) recorded their blood pressure at home with an automatic oscillometric device (OMRON—HEM 705CP), during seven days of the week, twice in the morning (7:00/8:00 AM), in the afternoon (2:00/3:00 PM) and at night (7:00/8:00 PM). The OBP was taken by the nurse using an automatic oscillometric device (DIXITAL DX 2710) with the patient in the sitting position after 5 min of rest. The results showed (mean ± SD): 1-The acceptability of HBP indicated that it did not disturb or if so just a little (88%), and it was not difficult (51%); the patients found it easy to handle the device (75%), and calmed down as they could know their blood pressure measurements during one week (54%), they accept to repeat HBP (90%); and HBP was more comfortable than ABP (48%). 2-There was 76% of agreement between patients’ reports and print out by the device. Age, marital status and education level correlated with reliability of patient’s reports which underestimated the print out by the device (142 ± 31/89 ± 24 vs 145 ± 25/90 ± 15 mm Hg, p < 0.05). 3-HBP (149 ± 19/93 ± 12 mm Hg) was significantly lower (p < 0.05) than OBP (160 ± 20/98 ± 15 mm Hg), and similar to daytime ABP (149 ± 18/94 ± 11 mm Hg). The results showed that HBP had good acceptability and that the patients’ reports were unreliable.

Key Words: Home blood pressure measurement; reliability; hypertension

C036
INCREASE IN BLOOD PRESSURE IN THE LOWER EXTREMITY ON STANDING IN NORMAL AND HYPERTENSIVE SUBJECTS

Peripheral vascular disease (PVD) is a known complication of hypertension (HTN) yet also occurs in patients with normal blood pressure. Little attention has been paid to changes in blood pressure (BP) in the legs while standing as an etiologic factor in PVD. We evaluated the differences in BP supine vs standing in the arms (A) and legs (L) in 15 treated HTN (9M/6F) and 14 normotensive subjects (5M/9F). Systolic BP (SB), diastolic BP (DB), and pulse pressure (PP) were recorded supine (Sup) and standing (Stnd) in triplicate at 1 minute intervals with a Dinamap (Critikon) in the right arm (A) and right leg (L) above the ankle supine. The subject then stood for 5 minutes and 3 measurements were recorded in the R arm and R leg standing. The mean ± SD of the 3 values for each parameter obtained showed:

<table>
<thead>
<tr>
<th>n</th>
<th>Pos</th>
<th>SB-A</th>
<th>SB-L</th>
<th>DB-A</th>
<th>DB-L</th>
<th>PP-A</th>
<th>PP-L</th>
</tr>
</thead>
<tbody>
<tr>
<td>HTN</td>
<td>15</td>
<td>148 ±25</td>
<td>168 ±39</td>
<td>85 ±9</td>
<td>91 ±12</td>
<td>64 ±19</td>
<td>86 ±19</td>
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<tr>
<td></td>
<td></td>
<td>143 ±16</td>
<td>226 ±34</td>
<td>88 ±12</td>
<td>151 ±15</td>
<td>56 ±14</td>
<td>81 ±13</td>
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<tr>
<td>NOR</td>
<td>14</td>
<td>118 ±9</td>
<td>142 ±19</td>
<td>68 ±8</td>
<td>73 ±9</td>
<td>50 ±7</td>
<td>69 ±12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>114 ±16</td>
<td>213 ±24</td>
<td>70 ±10</td>
<td>139 ±19</td>
<td>43 ±9</td>
<td>73 ±11</td>
</tr>
</tbody>
</table>

Both groups show large and statistically significant increases in SB and DB on standing in the leg compared with the supine position (p < 0.01) within each group for SB and DB parameters in L Sup vs Stnd. Both groups had an increased PP in the leg compared with the arm in the Sup and Stnd positions. The HTN group showed a small decrease in PP while the NOR group showed a small increase in PP on standing. Antihypertensive drug treatment may have blunted the PP on Stnd vs Sup in the leg of the HTN subjects. The data show a surprisingly large increase in BP and PP in the leg compared with the arm on standing. Such increases in PP in L may be a risk factor for developing PVD which disproportionately affects the leg circulation. Studies in subjects with PVD are underway.

Key Words: Peripheral vascular disease; pulse pressure; risk