The Rate of Complications of 24-Hour Ambulatory Blood Pressure Monitoring (ABPM) Is Low

Ambulatory blood pressures monitoring (ABPM) has become the ultimate tool in evaluating hypertension and the control thereof. As this tool is becoming more and more widely accepted by clinicians, questions arise as to what the complications or potential problems (or even contraindications) might be. Although there are case reports of petechial skin lesions, compartment syndromes, and redness of the arm after the use of ABPM, to our knowledge there are no series that have established the incidence of these complications. We conducted this study to examine the rate of complications with ABPM.

To ascertain the complication rate of ABPM we monitored and documented prospectively all complications relating to ABPM. After they returned their ABPM monitors, 219 successive patients who were referred to our hypertension subspecialty clinic and underwent ABPM were questioned by a hypertension nurse regarding any complications. If patients reported any complications, they were examined by a physician and all visible complications were photographed. At the conclusion of data collection, the medical records of these patients were reviewed for potential risk factors, particularly if these patients had any indications or findings relating to atherosclerotic disease.

We found that only four of 219 patients had complications. These patients developed petechiae distal to the blood pressure cuff. None of these patients reported pain over these lesions, and none developed any gangrenous or ischemic lesions. The petechiae disappeared in all four patients in 2–4 weeks after their appearance.

Chart review for all four patients revealed that they all had documented peripheral vascular bruits indicating vascular atherosclerotic lesions (two patients also had abdominal bruits). Three of these four patients were former smokers, and three of four had a history of cerebrovascular accidents. One patient also had significant superficial abrasions from the periodically inflating blood pressure cuff. We found no patients with compartment syndrome or venous thrombosis of the arm. Characteristics of patients with petechiae are shown in Table 1.

Ambulatory blood pressure monitoring is becoming an increasingly accepted and better recognized procedure to establish the presence and the degree of hypertension in the course of general medical practice. ABPM appears to be a safe and a very effective tool in blood pressure evaluation. The degree of left ventricular mass index, the presence of left ventricular hypertrophy, the degree of carotid intimal thickening, and improvement of left ventricular hypertrophy with treatment correlate much better with ABPM than with office readings. The importance of performing ABPM to establish the presence of persistent hypertension and to ascertain the success of antihypertensive therapy is most important for those patients who have already developed end-organ damage from hypertension. It is equally important to know how safe it is to perform ABPM. Some case reports indicate petechial lesions, perifollicular hemorrhage on the skin, and compartment syndromes on the arm where the monitor was worn, whereas others describe nerve injuries.

In this prospective series, ABPM seemed to be quite safe in the general hypertensive population, with a low incidence of complications. However, it seems that those patients who do develop complications with ABPM are the ones who are at highest risk for hypertension-associated complications and end-organ damage, those with established atherosclerotic disease. In fact, the presence of the petechial lesions indicates a vascular atherosclerotic pathology. This is confirmed by the fact that all of these patients either had vascular bruits by physical examination or were smokers.

We conclude that ABPM is safe, with a low (2%) rate

Table 1. Physical findings and historical characteristics of patients with petechiae

<table>
<thead>
<tr>
<th>Patient No., Age (y), Sex</th>
<th>Carotid Bruits</th>
<th>Abdominal Bruits</th>
<th>Femoral Bruits</th>
<th>Former Smoker</th>
<th>DM</th>
<th>History of CVA or TIA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient 1, 74 F</td>
<td></td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
<td>+</td>
</tr>
<tr>
<td>Patient 2, 85 F</td>
<td>+</td>
<td></td>
<td>+</td>
<td></td>
<td></td>
<td>+</td>
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<tr>
<td>Patient 3, 71 F</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
<td>+</td>
</tr>
<tr>
<td>Patient 4, 74 M</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
<td>+</td>
</tr>
</tbody>
</table>

DM = diabetes mellitus; CVA = cerebro vascular accident; TIA = transient ischemic attack.

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of complications. The most frequent of these complications is peripheral petechiae, which may be related to underlying vascular abnormalities.

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References


