New Research

Blood Pressure Measurement in Hemiparetic Patients: Which Arm?

To the Editor:
In non-hemiplegic patients, hypertension guidelines advise to initially measure blood pressure in both arms and subsequently use the arm with the highest blood pressure. These guidelines do not advise, however, which arm to choose in hemiplegic patients. This is striking because accurate control of blood pressure in stroke survivors is of great importance in secondary prevention. Hypertension is by far the most important modifiable risk factor for recurrent stroke. A diastolic blood pressure reduction of 6 mmHg reduces the risk of recurrent stroke by one third. To accurately control blood pressure, adequate blood pressure measurement is essential, especially for high-risk patients.

Methods
We performed a literature survey on inter-arm differences in hemiparetic patients to find out which arm we should use for reliable blood pressure measurement. We used the following search string in PubMed: blood pressure (MESH) OR blood pressure determination (MESH) AND paralysis (MESH).

Results
We found four studies that investigated the inter-arm differences in hemiparetic patients. Dewar et al measured non-simultaneously the bilateral blood pressure of 103 hemiparetic patients. In case of a flaccid stroke (n=56), mean blood pressure was significantly lower in the paretic arm (135/68 mmHg) compared to the unaffected arm (140/74 mmHg). Conversely, in patients with a spastic stroke (n=41), blood pressure was significantly higher in the paretic arm (138/76 respectively 132/71 mmHg).

Moorthy et al measured blood pressure in 14 hemiparetic patients. All five patients with flaccidity had lower blood pressure in the paretic arm compared with the intact arm. Five of the nine patients with spasticity had higher blood pressure in the paretic arm.

Panayiotou et al found that in 15 stroke patients with a flaccid hemiparesis the mean blood pressure was higher in the paretic arm in eight cases and higher in the unaffected arm in seven cases.

Yagi et al measured blood pressure in 47 stroke patients of whom it was unknown whether they had a flaccid or spastic hemiparesis. The mean systolic blood pressure was 2 mmHg higher, and the mean diastolic blood pressure was 5 mmHg higher in the paretic arm compared to the unaffected arm.

Conclusions
Inter-arm blood pressure differences exist in hemiparetic patients: the muscle tone in the affected arm can influence the measured blood pressure either by increasing or decreasing the measured values. So, the measured blood pressure in the affected arm is not representative of the real blood pressure in the body. Therefore, we advise to measure stroke patients’ blood pressure in the unaffected arm to provide optimal prevention of recurrent stroke.

Annemarie A. Uijen, MD
Lieke J.A. Hassink-Franke, MD
Department of General Practice
Radboud University
Nijmegen Medical Centre
Nijmegen, The Netherlands

Corresponding Author: Address correspondence to Dr Uijen, Radboud University Nijmegen Medical Centre, Department of General Practice 117, PO Box 9101, 6500 HB, Nijmegen, The Netherlands. 0031-243619779. Fax: 0031-243541862. a.uijen@hag.umcn.nl