

Letter to the Editor

BLOOD PRESSURE MEASUREMENT IN OBESE PATIENTS WITH CONE-SHAPED ARMS

Dear Editor:

Arterial blood pressure (BP) measurement in obese patients, mainly in those with cone-shaped arms, is a controversial issue. This topic was discussed in *The Journal of Clinical Hypertension (JCH)* by Townsend,¹ who suggested that, in these cases, the solution would be to perform the BP measurement in the forearm or at the wrist with an appropriate device. The reason for this is that the use of the thigh cuff on the arm overlaps the antecubital fossa, making auscultation of the Korotkoff sounds difficult or impossible. Nevertheless, these recommendations deserve special attention, since the proposed alternative solutions present problems.

Studies conducted in our hypertension unit² show that forearm arterial BP measurements overestimate values when compared with the values obtained through the finger arterial pressure (Finapres) instrument and through upper arm measurements with an appropriate cuff (Figure 1). The differences between upper arm and Finapres systolic and diastolic BPs were within 10 mm Hg in 34% and 22% of the patients, respectively. Between the upper arm and forearm, the differences were 19% and 28%, respectively. BP differences were more than 20 mm Hg in 25% and 28% of the patients between forearm and Finapres systolic and diastolic BP, respectively. Differences between upper arm and Finapres systolic and diastolic BPs were more than 20 mm Hg in only 3% and 16% of the patients, respectively (Figure 2).

Hypertension was diagnosed in 23% of the patients using upper arm measurement, while 34% were diagnosed as hypertensive based on forearm

BP measurement (Figure 3). Optimal BP values were present in 53% of the patients when upper arm measurements were considered, compared with only 18% when the forearm measurement was considered ($P < .05$).

Our study results suggested the following equations to adjust the values of forearm arterial BP assessed with a standard cuff bladder and to correct the error found for individuals with arm circumferences between 32 cm and 44 cm:

$$\text{Systolic BP measurement} = 33.2 + 0.68 \times \text{systolic forearm BP measurement}$$

$$\text{Diastolic BP measurement} = 25.2 + 0.59 \times \text{diastolic forearm BP measurement}$$

It was observed that forearm measurements in obese people do not replace the upper arm measurements recorded with an appropriate cuff bladder size. The forearm BP measurement could overestimate the prevalence of hypertension in obese patients.

Another aspect worth mentioning is the use of devices that record arterial BP at the wrist. Entities such as the Association for the Advancement of Medical Instrumentation (AAMI), the British Hypertension Society (BHS), and the European Hypertension Society (ESH) have been studying equipment validation. The great majority of devices that monitor arterial BP measurement at the wrist are questionable in terms of accuracy.³⁻⁵ Thus, they should not be recommended until their efficiency is proved in new studies.—*Josiane Lima de Gusmão, PhD, RN; Decio Mion Jr, PhD, São Paulo, Brazil*

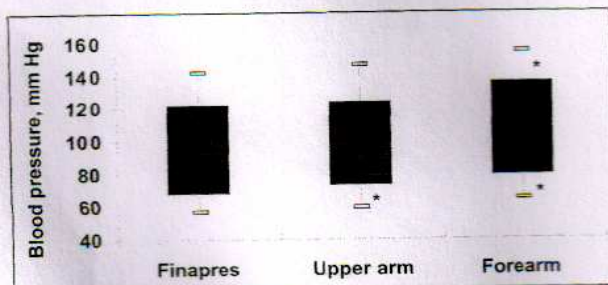


Figure 1. Blood pressure measurement performed with finger arterial pressure (Finapres) and with an appropriate bladder cuff on upper arm and standard bladder cuff on forearm. * $P < .05$: Finapres vs upper arm diastolic and forearm systolic and diastolic blood pressure.

REFERENCES

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