

Poster presentation

Does central aortic blood pressure better correlate with left ventricular mass compared to brachial blood pressure measurements in pre-hypertensives?

Tarek M Mousa*, Mark Balek, Gorgi Kozeski, Sofya Kostanyan, Susan Ingenito, Karen Ngai, John Abela and Ola Akinboboye

Address: New York Hospital Medical Center of Queens, Flushing, NY, USA

* Corresponding author

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Introduction

It has been suggested that central aortic pressure might correlate better with end organ effects of high blood pressure than brachial pressures.

Purpose

We hypothesized that central aortic blood pressure would correlate better with left ventricular mass index in subjects with pre-hypertension (PHT) than brachial blood pressure.

Methods

We recruited 68 (age 54 ± 10) subjects with PHT defined as systolic blood pressure of between 120-139 mmHg and a diastolic blood pressure of between 80-89 mmHg based on JNC-7 criteria.

Central aortic pressure was derived non-invasively using radial artery applanation tonometry and waveform analysis (SphygmoCor™ apparatus). Brachial blood pressures were measured with a BPM-300 non-invasive blood pressure monitor (VSM MedTech Ltd, Vancouver, Canada) after the subject had been in a recumbent position for a minimum of 10 minutes. The device took 6 consecutive blood pressure readings, excluded the first measurement, and derived an average. Left ventricular mass was measured on 1.5 T cardiac MRI scanner using ECG-gated, breath-hold, segmented k-space, SSFP imaging sequence. Endocardial and epicardial segmentation of acquired

short axis slices were performed in diastole to derive myocardial volume and multiplied by density to yield mass (indexed to height²).

Results

The mean left ventricular mass index (LVMI) was 53 ± 10 g/m², central aortic and brachial systolic and diastolic pressures (mmHg) were $115 \pm 14/81 \pm 12$, $125 \pm 15/81 \pm 12$ respectively. Mean arterial blood pressure by both techniques correlated significantly with LVMI ($r = 0.4$; $p = 0.03$), ($r = 0.4$; $p = 0.02$) for central aortic and brachial measurements respectively. There was no difference in the strength of correlation with LVMI between brachial and central aortic blood pressure measurements.

Conclusion

Central aortic and brachial blood pressure measurements showed similar correlations with LVMI in subjects with pre-hypertension. Central aortic blood pressure did not better correlate with left ventricular mass index in the population studied when compared to brachial blood pressure.