P1.29: ONE CLINIC MEASURE OF LIGHT EXERCISE CENTRAL BLOOD PRESSURE IS A STRONGER CORRELATE OF LEFT VENTRICULAR MASS THAN 24 HOUR AMBULATORY BLOOD PRESSURE MONITORING

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Background: Twenty four hour ambulatory blood pressure (24ABPM) is the gold standard for assessing blood pressure (BP) control. However, central BP during daily activity may be a stronger determinant of cardiovascular risk. This study aimed to compare 24ABPM with light exercise central BP (mimicking daily activity) for predicting left ventricular (LV) mass.

Methods: Study population comprised 54 patients (aged 58±17 years; 20 men) including those with treated hypertension (n = 16), untreated masked hypertension (n = 23) and normotensive controls (n = 15). Subjects underwent 2D echocardiography for determination of LV mass (indexed; g/m^2.7), resting brachial BP, 24ABPM and estimated central BP by radial tonometry during graded cycle ergometry. Central systolic BP (SBP) was estimated from the radial second systolic peak (P2) as well as the derived central waveform.

Results: The range of LV mass index and 24ABPM SBP were 17.8-55.1 g/m^2.7 and 107-153 mmHg respectively. As expected, 24ABPM SBP was significantly associated with LV mass index (r = 0.30, p = 0.02), but not with clinic resting brachial BP (r = 0.21; p = 0.14) or central SBP (r = 0.20; p = 0.14). However, the strongest correlates of LV mass index were light exercise (50% heart rate reserve) radial P2 (r = 0.54; p < 0.001) and central SBP (r = 0.47; p < 0.001). On multiple regression analysis, radial P2, but not 24ABPM SBP, was independently associated (β = 0.45; p < 0.01) with LV mass index after accounting for other confounding variables.

Conclusion: A one-off clinic estimate of light activity central SBP outweighs other confounding variables.

Aim: MRI provides a non-invasive method for assessing segmental aortic pulse wave velocity (aPWV). However, the best mathematical algorithm for transit time calculation using MRI flow waves is unclear.

Methods: Seven different algorithms were applied to aortic flow waveforms measured by MRI (10 subjects, 36±7 years, 4 male). Two measurements were recorded in each subject on different days for repeatability analysis. PWV was calculated between 5 sites along the aorta. Outlier PWV results were classed as a "failed" measurement and the success rate calculated. Bland-Altman plots were constructed for each algorithm, and repeatability calculated. Agreement between different methods was calculated using repeated measures analysis.

Results: The method of intersecting lines of fit during late diastole and early systole had the highest success rate followed by the Fourier analysis phase-slope method (99%; 98% respectively). Repeatability of measurement was highest using the phase-slope method followed by the method of intersecting lines (standard deviation 1.9; 2.2 m/s respectively). Methods of deviation of a systolic line of fit, maximum of second derivative, intersecting lines of fit, and the corner detection algorithm had the highest agreement, corrected for repeatability (corrected standard deviation range 1.8-1.9 m/s).

Conclusions: Whilst agreement between several PWV algorithms was high, no one algorithm was better in all categories. The intersection of lines of fit method was most robust. The phase-slope method showed the greatest repeatability. These findings are important in aPWV measurement, and for reliable and accurate PWV measurement in general.

Background: Pediatric hypertension is increasing in prevalence with the rising epidemic of obesity across the Indian subcontinent. Given the healthcare challenge of cardiovascular morbidity that faces Asia, the assessment of paediatric hypertension and obesity amongst children is an important consideration for prevention strategies.

Methods: 46 subjects (19 controls; 27 patients with risk factors but without clinical cardiovascular disease; 31 women; age 43±18) were studied. PWVcf