P7.18: VALIDATION TESTING FOR THE NON-INVASIVE MEASUREMENT OF AORTIC RESERVOIR CHARACTERISTICS FROM BRACHIAL CUFF OSCILLOMERIC PRESSURE WAVEFORMS

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To cite this article: Xiaoqing Peng*, Martin Schultz, Justin Davies, Dean Picone, Andrew Black, Nathan Dwyer, Phil Roberts-Thomson, James Sharman (2015) P7.18: VALIDATION TESTING FOR THE NON-INVASIVE MEASUREMENT OF AORTIC RESERVOIR CHARACTERISTICS FROM BRACHIAL CUFF OSCILLOMERIC PRESSURE WAVEFORMS, Artery Research 12:C, 34–34, DOI: https://doi.org/10.1016/j.artres.2015.10.321

To link to this article: https://doi.org/10.1016/j.artres.2015.10.321

Published online: 7 December 2019
p = 0.242). On the other hand, XSP significantly increased from the aorta to the brachial and radial arteries (21±8, 41±15, 58±19 mmHg respectively, p < 0.001). However, neither RP or XSP (either measured by peak or integral) were significantly associated with either systolic BP or pulse pressure at any arterial location (p = 0.05 all).

Conclusion: RP is relatively constant between the aorta and radial arteries, whereas XSP increases significantly. Neither indices are related to BP, thus supporting the independent pathophysiological relevance of aortic reservoir characteristics.

P7.18 VALIDATION TESTING FOR THE NON-INVASIVE MEASUREMENT OF AORTIC RESERVOIR CHARACTERISTICS FROM BRACHIAL OSCILLOMETRIC PRESSURE WAVEFORMS

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Background: Aortic reservoir pressure (RP) and excess pressure (XSP) derived non-invasively from radial tonometry independently predict cardiovascular events and mortality. However, whether RP and XSP can be derived non-invasively from brachial oscillometric cuff pressure waveforms has never been undertaken. This study sought to determine the validity of measuring aortic reservoir characteristics from non-invasive oscillometric cuff waveforms.

Methods: 97 participants (aged 62±11 years, 67% male) undergoing coronary angiography had simultaneous measurement of one of ascending aortic pressure (via fluid-filled catheter) and oscillometric brachial cuff pressure (via SphygmoCor XCEL). RP and XSP were derived non-invasively from cuff waveforms with significant correlations observed between methods (p = 0.001). The multivariate linear regression showed that OSA was independently associated with RP (r = 0.25, p = 0.03) and XSP (r = 0.30, p = 0.01) in the male group.

Conclusion: Aortic reservoir characteristics of RP and XSP can be derived non-invasively from oscillometric pressure waveform, thus providing a mean for widespread research and clinical use.

P7.19 ARTERIAL STIFFNESS AND DISEASE-RELATED ORGAN DAMAGE IN SYSTEMIC LUPUS ERYTHEMATOSUS

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Background: Aortic stiffness in patients with systemic sclerosis (SS) is associated with an increase in aortic augmentation (as a measure of the contribution of reflected wave to central waveforms), but not in aortic or upper-limb arterial stiffness. Microvascular involvement might occur earlier than stiffening of the large arteries in SS.

Conclusions: In subjects with SLE under active treatment, SLICC damage index had a significant independent association with cf-PWV. Further studies are needed to explore the role of arterial stiffness as a predictor of disease-related organ damage in SLE.

P7.20 THE IMPACT OF OBSTRUCTIVE SLEEP APNEA ON ARTERIAL STIFFNESS IS INDEPENDENT OF GENDER IN PATIENTS WITH HYPERTENSION

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Introduction: In men with hypertension, obstructive sleep apnea (OSA) is associated with increased arterial stiffness. However, it is not clear if the impact of OSA on patients with hypertension is similar in women.

Methods: We recruited consecutive patients with established diagnosis of hypertension under a standardized antihypertensive treatment (hydrochlorothiazide plus enalapril or losartan). All patients were submitted to full polysomnography and carotid-femoral pulse wave velocity (PWV). We performed analysis according to the presence of OSA (defined by an apnea-hypopnea index > 15 events/hour of sleep) and by gender (male and females).

Results: Ninety-five patients were studied (14 males without OSA; 28 males with OSA, 29 females without OSA and 24 females with OSA). OSA frequency was 66% in males group versus 45% in females group (p = 0.02). The age of female with OSA (59±10yrs) was significantly higher than female without OSA (52±10yrs), while the age did not differ between the male with(58±10yrs) or without OSA(56±8yrs). The BMI was also significantly greater in female with OSA (32.8±5 vs. 28.7±3kg/m²), while was similar in male with(30.5±4.5) or without OSA(29.5±2.3). The blood pressure was not different in the patients with or without OSA. PWV was significantly higher in both(12.7m/s) and female(13.2m/s) with OSA than the counterparts without OSA(male-11 m/s, female-11.7 m/s) even after adjustments by age. The multivariate linear regression showed that OSA was independently associated with PWV (p = 0.008).

Conclusion: In patients with hypertension, the presence of OSA is associated with higher PWV regardless of gender.

P8.1 CENTRAL HEMODYNAMICS IN SYSTEMIC SCLEROSIS: A CASE-CONTROL STUDY

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Background: Although a few studies have suggested an alteration in aortic stiffness in patients with systemic sclerosis (SS), a disease characterized by immunological and microvascular changes and by tissue fibrosis, the functional properties of the large arteries have been understudied in SS.

Methods: 34 women with SS [age 60±14 years, BP 123/70±17/10 mmHg] and 34 healthy age- and BP-matched women underwent determination of carotid-femoral pulse wave velocity (PWV, a direct measure of aortic stiffness) and aortic augmentation (SphygmoCor, AtCor). All participants also underwent determination of carotid-radial PWV, as a measure of stiffness of upper-limb arteries. We excluded participants with overt cardiovascular disease and comitant important disease.

Results: Age and brachial BP were nearly identical in the 2 groups. Patients and controls did not differ by carotid-femoral PWV (9.2±3 vs 9.1±2 m/s, p = 0.91) or carotid-radial PWV. Aortic augmentation, was higher in women with SS; unadjusted: 16.1±8 vs 11.5±7, p = 0.014; adjusted for pulse pressure and heart rate (AIX@75): 30.9±16 vs 22.2±12, p = 0.012. SS independently predicted AIX@75 in a multivariate analysis. Among patients with SS, age, brachial mean BP and serum C-reactive protein all predicted carotid-femoral PWV. Age and mean BP were the only predictors of AIX@75. Organ damage scores had no significant correlation with central hemodynamics parameters.

Conclusions: SS is associated with an increase in aortic augmentation (as a measure of the contribution of reflected wave to central waveform), but not in aortic or upper-limb arterial stiffness. Microvascular involvement might occur earlier than stiffening of the large arteries in SS.