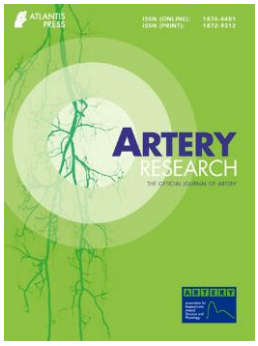

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# P6.11: RETINAL PULSE WAVE VELOCITY IN YOUNG NORMOTENSIVE AND MILDLY HYPERTENSIVE SUBJECTS

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**Objectives:** Carotid-femoral pulse wave velocity (cfPWV) is considered the gold standard measurement for assessment of aortic stiffness. cfPWV is increased in women at risk of developing, and those with, preeclampsia. We aimed to compare measurements obtained by SphygmoCor and Vicorder devices that use ECG/tonometry and compression techniques, respectively.
**Methods:** 57 consecutive women were recruited from the high risk obstetric ultrasound clinic. Smokers were excluded. Age:19-42yrs (Mean: 32.6yrs), Gestation: $24^{+0}$—$30^{+6}$ (Mean: $26^{+6}$ weeks). Women were rested supine for 10 minutes in 30° left lateral position. SphygmoCor readings were performed first followed, within 5 minutes, by Vicorder readings. Left side femoral and carotid were used for all readings. All readings were performed three times and a mean value calculated. In order to avoid false prolongation of path length, calipers were used to measure distances.
**Results:** Mean SphygmoCor cfPWV: 5.51m/s (95%CI:5.32-5.70m/s). Mean Vicorder PWV: 5.34m/s (95%CI:5.06-5.61m/s). There was significant inter-device correlation ($r=0.56$, $P<0.0001$) (Fig.1). Bland-Altman analysis showed a mean difference of 0.17m/s (95% limits of agreement: -1.52 to 1.86m/s) (Fig.2)
**Conclusions:** In the second trimester of pregnancy, both devices produce similar readings and the mean difference is unlikely to be of clinical significance. SphygmoCor measurements require a skilled operator, application of ECG leads and palpation of the femoral pulse. The Vicorder device requires less skill and is less intrusive to the subject. These are important considerations for regular use in a clinical setting. Notably the cfPWV in our study is lower than the general population and agreement at <4.5m/s appears unreliable.

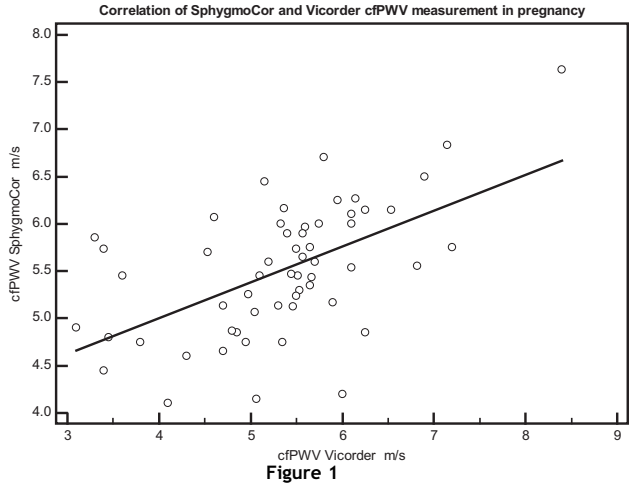

**Figure 1**

$r=0.56$, $P=0.0001$

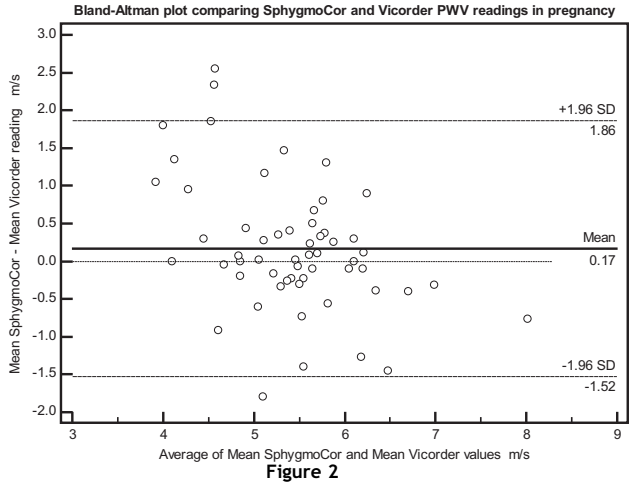

**Figure 2**

**P6.11**
**RETINAL PULSE WAVE VELOCITY IN YOUNG NORMOTENSIVE AND MILDLY HYPERTENSIVE SUBJECTS**

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Hypertension is characterized by microvascular remodeling resulting in an increased wall/lumen ratio. Increased microvascular stiffness contributes to an increase in wall/lumen ratio. We aimed to investigate the possibility to transform the measurement of macrovascular stiffness into a microvascular environment. We assessed retinal pulse wave velocity (rPWV) non-invasively in 65 male normoalbuminuric normotensive to mildly hypertensive subjects (age: 28.7±6.0 years). Time dependent alterations of retinal arterial diameter were measured by the Dynamic Vessel Analyzer. The data was filtered and evaluated by methods of signal analysis and rPWV was computed using three different methods. 'Method1' used filtration at heart rate (HR), 'Method2' filtered at higher HR multiples and 'Method3' used additionally linear fit for data averaging. Besides, office blood pressure (BP) and urinary albumine/creatinine ratio were assessed. 'Method1' was not associated with BP, while both methods applying filtration at high HR multiples showed a strong association with systolic BP throughout the cohort ($r=0.49$, $r=0.63$ $P<0.001$). Based on the highest association, 'Method3' was proposed to characterize rPWV. As the cohort was divided according to BP, mildly hypertensive patients showed significantly higher rPWV (1243±694 units/second) than subjects with high-normal BP (786±486 units/second, $P<0.01$) or normotensive subjects (442±148 units/second, $P<0.001$). Applying methodological principles for aortic PWV we consider rPWV as a non-invasive measure of microvascular stiffness. Our data suggests that filtration at higher HR multiples and linear fit result in strong association with BP. As our study was performed in normoalbuminuric subjects, rPWV may add detailed insights to early microvascular pathophysiology, potentially beyond microalbuminuria.

**P6.12**
**CORRELATION OF PULSE WAVE VELOCITY AND ANGIOGRAPHICALLY PROVED CORONARY ARTERY STENOSIS**

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**Background:** Carotid-femoral pulse wave velocity (PWV), a direct measure of aortic stiffness, has become increasingly important for total cardiovascular risk estimation. The aim of our study was to evaluate the correlation of PWV among the other cardiovascular risk factors with significance of the angiographically proved coronary artery disease (CAD).
**Methods:** The group of 66 patients referred for scheduled coronary angiography at Paul Stradins Clinical University Hospital Latvian Centre of Cardiology was analyzed. The mean age of patients was 62.1±11.7 years, 47% of them were male. The data about case history, cardiovascular risk factors, previous and concomitant therapy were collected. The applanation tonometry with Sphygmocor device, including radial pulse wave analysis (PWA), carotid PWA, carotid-femoral PWV, was done. Coronary angiography was done for determination of presence and degree of coronary artery stenosis (CAS). The CAS of $\geq$ 50% was defined as significant.
**Results:** PWV was significantly higher in the patients with significant CAS (12.7±2.8 m/s vs. 11.0±2.2 m/s, $p=0.013$). In binary logistic regression model, including age, gender, smoking habit, presence of arterial hypertension, diabetes, hypercholesterolemia, PWV, aortal augmentation, central augmentation index, only PWV correlated significantly with presence of significant CAS with odds ratio 1.30 ($p=0.022$). After adjustment for statins, ß-blockers, angiotensin converting enzyme inhibitors, calcium channel blockers and nitrates PWV still correlated significantly with presence of significant CAS with odds ratio 1.33 ($p=0.024$).