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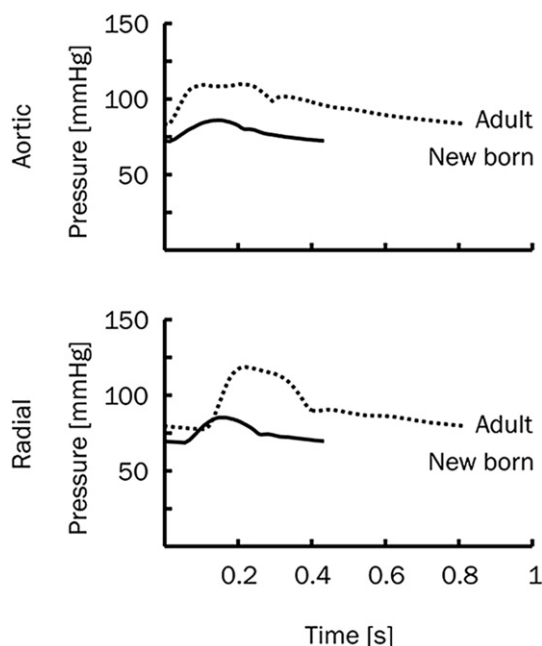
P5.07: ASSOCIATION OF WAVE REFLECTIONS AND AORTIC STIFFNESS WITH UTERINE ARTERY DOPPLER PULSATILITY INDEX AND RISK OF PREECLAMPSIA

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P5.07

ASSOCIATION OF WAVE REFLECTIONS AND AORTIC STIFFNESS WITH UTERINE ARTERY DOPPLER PULSATILITY INDEX AND RISK OF PREECLAMPSIA

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Objectives: Arterial stiffness is increased in women with preeclampsia. Assessment of spiral artery transformation and successful placentation by uterine artery Doppler pulsatility index (UtAD PI) is a widely used screening tool for early-onset preeclampsia. We sought to determine whether there was a relationship between uterine artery Doppler impedance and aortic stiffness and arterial wave reflection.

Methods: 92 women were recruited from the high risk obstetric clinic in the second trimester. Median age: 32.8years (Range 19-45years), median gestation: 23⁺⁶weeks (Range: 19⁺⁶-26⁺¹weeks). Smokers were excluded. Transabdominal uterine artery Doppler measurements were performed bilaterally using Siemens Acuson S2000 ultrasound machine and mean pulsatility index calculated. cfPWV and pulse wave analysis were performed using Vicorder and SphygmoCor respectively. Prior to cardiovascular measurements, women were rested supine for 10 minutes in 30° left lateral position. Three consistent readings were performed and a mean value calculated. cfPWV was adjusted for mean arterial pressure and augmentation index (AIx) adjusted for heart rate and height using SPSS v18.0.

Results: There was a significant positive association between uterine artery Doppler pulsatility index and increasing cfPWV ($r=0.23$, $P=0.03$) (Fig.1) and AIx ($r=0.36$, $P=0.0005$) (Fig.2).

Conclusions: Increasing UtAD PI reflects impaired placentation and increasing risk of preeclampsia. We show that women at increasing risk of preeclampsia have higher aortic stiffness and arterial wave reflection, even in the absence of preeclampsia. Further studies are required to determine whether this is a reflection of abnormal pregnancy on arterial stiffness, or whether the increased arterial stiffness precedes pregnancy.

Association of carotid-femoral PWV and uterine artery Doppler PI in the late second trimester

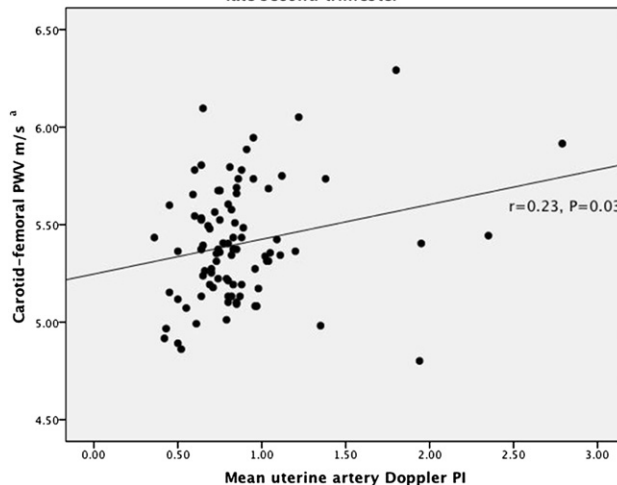


Figure 1

adjusted for mean arterial pressure

Association of augmentation index and uterine artery Doppler PI in the late second trimester

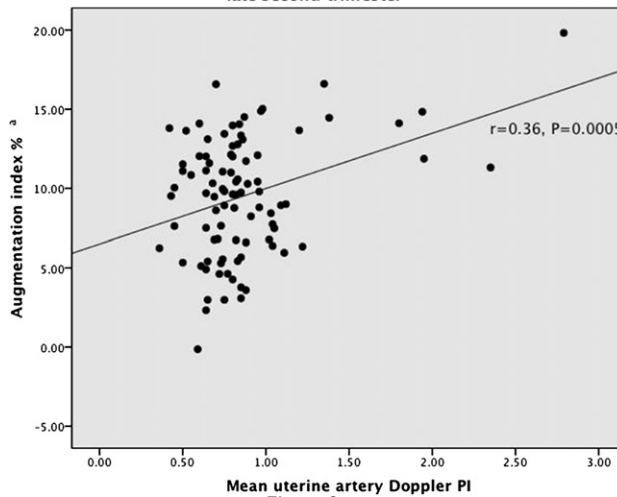


Figure 2

adjusted for height and heart rate

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NORMALISATION FOR WALL SHEAR STRESS STIMULUS IMPROVES ACCURACY IN THE ASSESSMENT OF GLUCOSE-INDUCED CHANGES IN FLOW-MEDIATED DILATION

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Background: In healthy arteries, acute changes in wall shear stress (WSS) elicit a vessel dilation response, through endothelial NO-release and smooth muscle relaxation (flow-mediated dilation, FMD). Metabolic or pharmacologic agents might modulate FMD, but may also interfere with the transient WSS stimulus utilised to assess FMD. We hypothesized that glucose-induced changes in FMD can be detected with greater sensitivity by normalising FMD for the WSS stimulus.

Methods & Results: Twenty-two healthy volunteers (24 ± 6 yrs, BMI 24 ± 7 kg/m²) underwent a standard oral glucose tolerance test during which brachial FMD was assessed by simultaneous B-mode/PW-Doppler ultrasound at baseline