**The relationship between birthweight and brachio-femoral pulse wave velocity in early infancy: findings from a British birth cohort (Baby VIP study)**

**BACKGROUND:**

In adults, pulse wave velocity (PWV) is regarded as a predictor of cardiovascular disease.(1) However, associations in infants are not well established. One study has linked neonatal aortic PWV, at 1-3 days, with birthweight and maternal blood pressure.(2)

**AIM:**

To examine the relationship between infant brachio-femoral PWV and size at birth.

**METHODS:**

Baby VIP study recruited 362 newborn babies from the Leeds Teaching Hospitals Trust, including 64 small for gestational age (SGA) (18%). PWV was measured non-invasively from each baby at a follow-up home visit 2-6 weeks after recruitment, using the Vicorder kit. Birthweight and other covariables were collected from the delivery and antenatal medical notes. Individualised birthweight centiles were calculated using the GROW-Centile calculator taking into account maternal weight, height, parity, ethnicity, gestational age and baby's sex.(3)

**RESULTS:**

Mean birthweight was 3329 g (standard deviation [sd] 632). Mean infant PWV was 6.7 m/s (sd 1.3). In univariable analysis, SGA babies had, on average, lower PWV by 0.4 m/s (95% confidence interval 0.0, 0.9, P=0.04). This association persisted after adjusting for pregnancy factors including maternal smoking, pre-eclampsia, gestational diabetes, blood pressure at booking and 36 weeks, and infant factors including type of feeding, baby's age, position and whether asleep or awake at the time of measurement (0.5 m/s lower, 0.1, 0.9, P=0.02).

**CONCLUSION:**

This study has demonstrated the feasibility and acceptability of measuring PWV in early infancy. SGA was associated with a lower PWV. These findings support the evidence linking SGA with cardiovascular indicators, even very early in life.

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2. Koudsi A, Oldroyd J, McElduff P, Banerjee M, Vyas A, Cruickshank JK. Maternal and Neonatal Influences on, and Reproducibility of, Neonatal Aortic Pulse Wave Velocity. *Hypertension* 2007;49(1):225-31.

3. Gardosi J, Francis A. Customised Weight Centile Calculator - GROW - centile v5.15/6.4. *Gestation Network* [www.gestation.net](http://www.gestation.net), 2009.