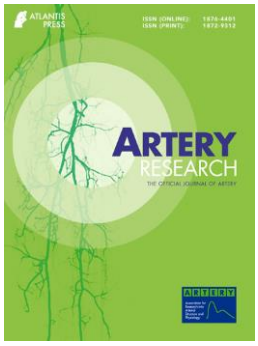

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6.4: LONGITUDINAL FOLLOW-UP OF ARTERIAL DISTENSIBILITY IN EARLY CHILDHOOD: ROLES OF BIRTH WEIGHT, GROWTH, BLOOD PRESSURE AND EARLIER (AORTIC) 'STIFFNESS'

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Conclusions: Early cardiovascular risk profiles vary in paediatric rheumatic diseases. Disease-specific inflammatory factors likely modify these cardiovascular risk profiles and warrant further investigation.

6.4
LONGITUDINAL FOLLOW-UP OF ARTERIAL DISTENSIBILITY IN EARLY CHILDHOOD: ROLES OF BIRTH WEIGHT, GROWTH, BLOOD PRESSURE AND EARLIER (AORTIC) 'STIFFNESS'

A. Vyas [1], J. Kips [2], I. Gemell [1], N. Howard [1], F. Khan [1], P. Clayton [1], J.K. Cruickshank [1].
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Background: Although blood pressure (BP) 'tracks' from early life in humans, little is known of how arterial stiffness develops over time in early childhood.
Methods: UK born European (n = 208) and South Asian (SA, n = 99) origin infants had standardised measures of anthropometry, BP (Dynamap Critikon) and pulse wave velocity (aPWV — Doppler method, aortic arch to bifurcation) taken within 72 h of birth and at any of 3-6 months, 1,2,3 and 4 years later. Data were analysed using mixed cross-sectional/longitudinal (MXLS) and fully longitudinal (FL) regression models in STATA.
Results: SA neonates averaged 330 g lighter and 1.2 cm shorter at birth than Europeans. After increasing between 0-3 months, neither mean (95%CI) aPWV (6.1 (5.7-6.5) m/sec) nor systolic or diastolic BPs (±86/ 45 mmHg) changed greatly from 1-4 years. However, in MXLS, aPWV was related to weight ($\beta = 0.85$ $p < 0.001$), subscapular skinfold ($\beta = 0.21$, $p < 0.001$), systolic ($\beta = 0.02$, $p = 0.04$) or diastolic ($\beta = -0.26$, $p = 0.03$) BP, weakly to height ($p = 0.07$) but not to age, gender, ethnicity, pulse pressure nor heart rate.
In FL models, aPWV at 3 years (n = 77) and 4 years (n = 59), was not determined by BPs, birth weight, weight change, skinfold, length nor prior aPWV readings.
Conclusion: These first longitudinal data in early childhood suggest that previous data, even on BP, ignoring genuine within-person change or *lack of* change, may be confounded. While weight and central fat (skinfold) affect overall MXLS results, early arterial distensibility & BPs appear not to alter much from 3 months to 4 years.

6.5
THE EPICURE STUDY: BLOOD PRESSURE AND ARTERIAL STIFFNESS IN RELATION TO BIRTH BEFORE 26 WEEKS OF GESTATION

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Background: Antenatal and postnatal growth are associated with increased arterial stiffness and cardiovascular risk (e.g. myocardial infarction and stroke) in adults born at term.
Aim: We investigated cuff blood pressure (BP) and arterial waveforms in 70 extremely preterm (EP) children and in 91 age and sex matched term-born classmates.
Methods: Arterial waveforms were evaluated by carotid and femoral applanation tonometry using the SphygmoCor device (Atcor™) by trained researchers blind to EP status. BP was measured using an automated Omron BP monitor. Data quality was assessed according to preset criteria and questions of pulse waveform quality jointly resolved by JF and an independent assessor (CM).
Results: There were no differences in cuff systolic or diastolic BP, mean BP or derived central BP in EP children compared to controls. However, EP children had lower systolic and higher diastolic BP after correcting for height differences. In contrast EP children had higher augmentation indices (AIx) than classmates; this remained significant after correcting for heart rate, height and mean BP.

	EP children Mean (sd)	Controls Mean (sd)	Difference of means (95%CI)
Augmentation index %	7.5(9.6)	2.1(8.5)	5.3 (2.5;8.1)***
Pulse Wave Velocity m/s	4.5(0.5)	4.7(0.9)	0.2 (0.1-0.4)
Systolic BP mmHg	108.6(10.3)	109.3(9.8)	0.98(0.52;1.42)***†
Diastolic BP mmHg	65.3(7.5)	62.5(7.2)	0.12(0.46;0.19)**†

† Difference after correcting for height; **p = .001; ***p<.001

Conclusion: This first report of increased augmentation index in EP children raises the possibility of future increased cardiovascular risk, not indicated from examination of peripheral blood pressure.

6.6
WAIST CIRCUMFERENCE IS A BETTER PREDICTOR OF SUBCLINICAL ATHEROSCLEROSIS THAN ADIPONECTIN LEVEL

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Objective: Waist circumference is clinical marker of obesity and a well-established risk factor for cardiovascular disease. Adiponectin, an adipocyte-derived hormone and new biomarker of obesity, has recently been proposed to be the missing link between obesity and increased cardiovascular risk. We evaluated waist circumference and adiponectin level in a middle-aged population-based cohort to determine which marker of obesity was the best predictor of subclinical atherosclerosis.
Methods and Results: Seven non-invasive measurements of atherosclerosis(-NIMA), as surrogate markers of subclinical atherosclerosis, were determined in 1517 participants of the Nijmegen Biomedical Study, aged 50-70 years who were drawn from the Dutch community.
Both men and women with a high waist(M > 104 cm;F > 95 cm) showed deteriorated outcomes of NIMA as reflected by increased pulse wave velocity(PWV)(M:+12.6%;F:+13.1%) and thicker intima-media thickness (IMT)(M:+9.0%;F:+6.6%) and in women an increased plaque thickness(+22.1%). However, participants with a low adiponectin level(M < 2.2 mg/L;F< 3.5 mg/L) showed no changes in the outcomes of NIMA; in both sexes only after adjustment for age a decreased ankle-brachial index after exercise(M:-9%;F:-3.5%) and an increased IMT(M:3.7%;F:3.6%) and in women an increased PWV(+6.8%) was observed. Interaction between the effect of waist and adiponectin on NIMA was found only in women.
Conclusions: Waist circumference was a better predictor of subclinical atherosclerosis than adiponectin level in our large population-based cohort. Measurement of waist circumference in clinical practice is a valuable tool in cardiovascular risk profiling, but our data does not support the measurement of adiponectin level.