**ESCAPE_TRIAL Report Summary**

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**Normative values for intima-media-thickness and distensibility of large arteries in healthy adolescents**

Sonographic evaluation of arterial wall morphology and elasticity is increasingly accepted as a non-invasive tool in cardiovascular assessment. Several studies suggest that intima-media thickness (IMT) and arterial elasticity indices may sensitively reflect different vasculopathic processes in children. However, normative values and the impact of adolescent growth are largely unknown. METHODS: We assessed the IMT of the common carotid (cIMT) and femoral arteries (fIMT), carotid elasticity indices and interacting anthropometric factors in 247 healthy subjects aged 10-20 years.

cIMT, fIMT, incremental elastic modulus (Einc) and circumferential wall stress (CWS) were positively, and distensibility coefficient (DC) inversely, correlated with age, height, body mass index (BMI), systolic blood pressure (BP) and brachial pulse pressure. DC and stiffness index beta, but not Einc, were significantly associated with cIMT independently of age. All vascular parameters showed non-Gaussian distributions. Excessively high IMT was associated with BMI and pulse pressure above the 90th percentile, and elevated Einc with high-normal BMI. Multivariate analysis identified independent positive effects of standardized BMI and brachial pulse pressure on normalized cIMT, negative effects of systolic BP and cIMT on DC, a positive effect of cIMT on stiffness, and positive effects of systolic BP and BMI on Einc and CWS.

In conclusion, morphological and functional measures of large arteries should be normalized to take account of changes during adolescence and skewed distributions. Relative body mass, systolic blood pressure and/or pulse pressure are determinants of IMT and elasticity.

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