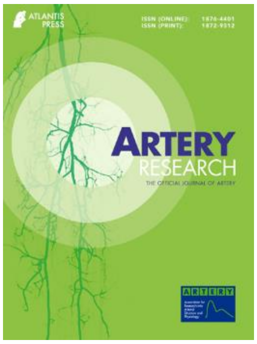

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Sphygmocor and PulsePen. There was no difference following path length correction of the Vicorder measurement, (6.14(0.75), 5.94(0.91) and 6.12(1.00)m/s, respectively). Bland-Altman analysis revealed excellent concordance between devices. However, there was a small but significant proportional error in the Vicorder measurements showing a trend towards lower PWV by Vicorder at higher PWV values.
This study was the first to provide LMS reference tables for PWV in healthy children permitting the calculation of percentiles. Our comparative study showed that following path length correction of the Vicorder, all three devices provided comparable results. The small proportional error of Vicorder needs additional technical development to improve the accuracy of the measurements in paediatrics.
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ASSESSMENT OF MECHANICAL PROPERTIES OF CAROTID PLAQUES IN PATIENTS WITH ACUTE ISCHEMIC STROKE (AIS) USING VELOCITY VECTOR IMAGING (VVI)

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VVI allows to assess multi-dimensional regional mechanics of carotid wall.
Objective: to investigate the mechanical properties of carotid plaques.
Methods: Study population consisted of 7 patients (aged 60-78, median-63) with AIS. Circumferential and longitudinal strain (Sc, Sl) and strain rate (SRc, SRl) were calculated for plaques (separately in three points for cap, core and base) and for plaque-free area for each patient. Plaque characteristics (echogenicity, length, degree of stenosis) were assessed.
Results: Both Sc and SRc were higher in all parts of carotid plaque in comparison with plaque-free area and the difference was significant for cap and core. (SRc values were 0,71±0,32, 0,92±0,35 and 0,66±0,36 for plaque cap, core and base respectively and 0,49±0,24 for plaque-free area). We observed a significant difference in SRc and SRl between plaque core and values for base and cap (SRl was 0,86±0,45 for core vs 0,45±0,27 and 0,49±0,27 for base and cap respectively, $p<0,05$). This difference was more marked in low-echogenic plaques and no difference was detected in hyper-echogenic, calcified plaques. Correlation analysis revealed moderate negative correlations between plaque length and SRc for cap ($r=-0,37$) and base ($r=-0,44$) (but not for core). No significant correlations were found between plaque mechanical properties and degree of stenosis.
Conclusions: Plaque formation leads to the alteration of the elastic properties of the carotid arterial wall. The inner part of plaque is more mobile in comparison with the plaque cap and base, especially in low-echogenic plaques. The increased mobility of the plaque core may be linked with plaque vulnerability.

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TIME DOMAIN ANALYSIS OF THE ARTERIAL PULSE IN CLINICAL MEDICINE

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Analysis of the arterial pulse in clinical medicine is based on palpation and interpretation of the radial pulse over millennia, on invasive measurement of pressure and flow waves in experimental animals over the past century, and on analysis of waveforms in the frequency domain, together with computerized modelling over the past 50 years. Interpretation of the arterial pulse in the radial and other arteries now approaches the same acceptance as the electrocardiogram, and has the potential for similar clinical value.
Left ventricular properties can be interpreted from the rate and extent of the initial pressure rise, and from the duration of ejection. Magnitude and timing of wave reflection, created in the arterial tree can be inferred from secondary rise of the pressure wave in late systole or during the period of diastole. Ill effects of arterial stiffening on the left ventricle and on microvessels of the brain and kidneys can be interpreted from the pulse waveform, and effects of therapy monitored.
Clinicians are now in a position to achieve the aims of Frederick Mahomed, who in 1872 wrote about the radial artery pulse "... surely it must be to our advantage to appreciate fully all it tells us, and to draw from it all that is capable of imparting."