Evaluation of Pulse Contour Markers using an A-Mode Ultrasound: Association with Carotid Stiffness Markers and Ageing

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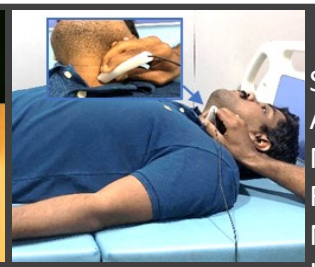
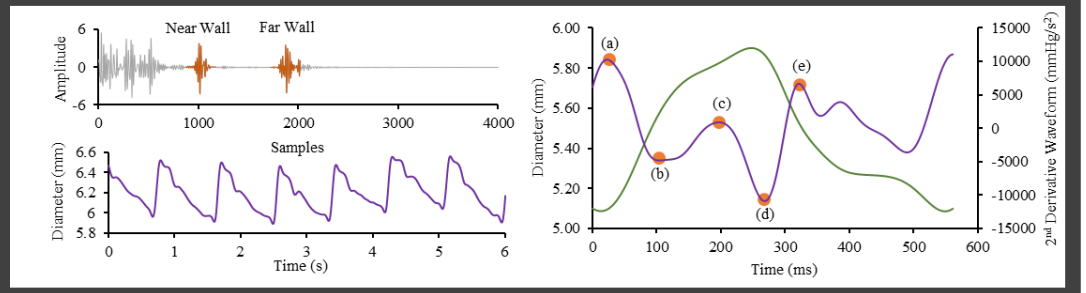
- To evaluate pulse contour (PC) markers derived from the carotid diameter waveform using an image-free A mode ultrasound device
- To investigate the association of the PC markers with clinically relevant central stiffness markers and ageing



Study Demography
Subjects: 106
Age : 18-71 years
Male : 51
Female : 55
Normotensive: 64
Hypertensive : 42

A-Model ultrasound device is used to acquire carotid artery diameter waveforms

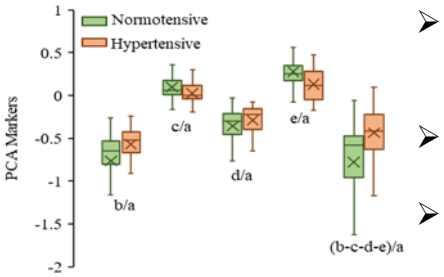


Pulse Counter Markers
- b/a
- c/a
- d/a
- e/a
- (b-c-d-e)/a

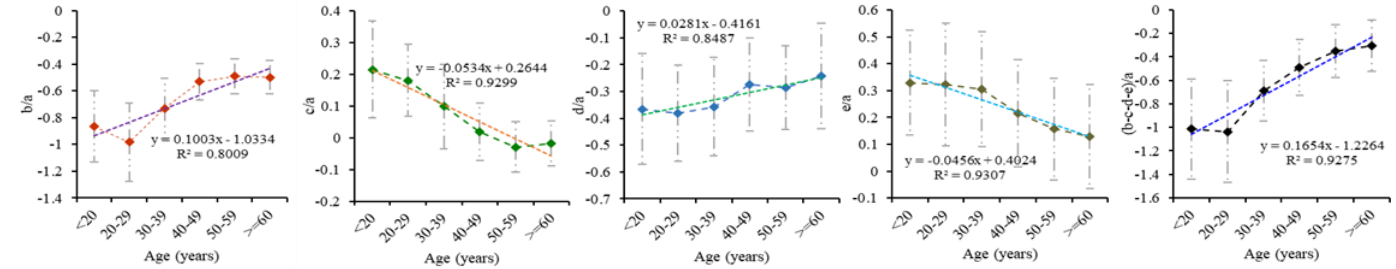
Stiffness Markers
- BH PWV
- Stiffness Index (β)
- Peterson Elastic Modulus (Ep)
- Arterial Compliance (AC)

Pair-Wise regression Analysis (r-value)

	b/a	c/a	d/a	e/a	(b-c-d-e)/a
β	0.32	-0.42	0.21	-0.26	0.36
Ep (kPa)	0.34	-0.46	0.23	-0.29	0.39
AC (mm²/kPa)	-0.27	0.38	-0.15	0.16	-0.30
PWV (m/s)	0.38	-0.50	0.24	-0.31	0.44



- The highest correlation was observed between c/a and PWV (r = -0.50, p < 0.001)
- The least correlation was between e/a and AC (r = 0.16, p < 0.001)
- A change > 19% was observed between the group average values of PC markers of the normotensive and hypertensive population



Demonstrated the applicability of the second derivative-based PC markers on a central pulse waveform such as carotid artery diameter and the relationship with clinically relevant stiffness markers