P17 Comparisons of Carotid-femoral Pulse Wave Velocity Obtained from the Surface-distance Measurement and from the Population-derived Distance Formula: Associations with Macro- and Microvascular Alterations in Older Adults

Kunihiko Aizawa*, Francesco Casanova, Dave Mawson, Kim Gooding, Salim Elyas, Damilola Adingupu, David Strain, Phillip Gates, Angela Shore

University of Exeter College of Medicine and Health, NIHR Exeter Clinical Research Facility, Exeter, UK

ABSTRACT

Introduction: Inaccurate determination of arterial path-length by surface-distance (SD) measurement is an inherent source of error in calculating carotid-femoral pulse wave velocity (CFPWV). A recent development in calculating arterial path-length by a simple distance formula (DF) for CFPWV has been shown to not only remove intercentre measurement variability but also strengthen the association between CFPWV and traditional cardiovascular risk factors [1]. We determined whether the association of macro- and microvascular alterations with CFPWV derived from the distance formula (CFPWV-DF) would be stronger than that with CFPWV derived from the surface-distance measurement (CFPWV-SD).

Methods: CFPWV-DF and CFPWV-SD were obtained from 489 older adults (67.2 ± 8.8 yrs, 154 F, 244 CVD). Macrovascular [carotid lumen diameter (LD), carotid inter-adventitial diameter (IAD), carotid intima-media thickness (IMT), carotid total plaque area, and ankle-brachial pressure index] and microvascular [reactive hyperaemia index and urinary albumin-creatinine ratio (UACR)] parameters were also obtained.

Results: CFPWV-DF was significantly lower than CFPWV-SD (9.27 ± 2.38 vs 9.88 ± 2.55 m/s, p < 0.001), which resulted from a longer arterial path-length estimated by SD than DF (495.4 ± 44.8 vs 465.3 ± 20.6 mm, p < 0.001). The significant associations observed between CFPWV-SD and LD (r = 0.264), IAD (r = 0.303), and IMT (r = 0.165) were similarly observed between CFPWV-DF and LD (r = 0.253), IAD (r = 0.303), and IMT (r = 0.183, all p < 0.001). This was also the case with UACR (r = 0.163 and r = 0.141, both p = 0.001). Other parameters did not show any association in either CFPWV.

Conclusion: The association of macro- and microvascular alterations with CFPWV-DF was not stronger than that with CFPWV-SD, suggesting that arterial path-length determination methods may not influence interactions between vascular biomarkers and CFPWV.

REFERENCE


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*Corresponding author. Email: k.aizawa@exeter.ac.uk