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8.5: CAROTID TO FEMORAL PULSE WAVE VELOCITY: WHICH DISTANCE, OBTAINED BY TAPE MEASURE, CORRESPONDS BEST WITH THE REAL TRAVELLED AORTIC PATH LENGTH?

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(PWV, m/s -expression of AS) and blood pressure (BP-reported as continuous variable), measured at the beginning and at the end of study, carried out in adult populations after a run-in period. We found one placebo-controlled

(the arterial segment travelled in carotid-femoral PWV measurement) was compared to 7 tape measures commonly used in PWV measurement.

Results:

Comparison of aortic path lengths (APL) determined by MRI and tape measure.(cm)N = 98				
MRI travelled APL	TAPE estimated APL	MRI Mean (SD)	Tape-MRI Mean (SD)	MRI/Tape
(AA-FA)–(AA-CA)	(CA-FA)–(SSN-CA)	50.7(4.2)	2.32(3.8)*	0.957
	(CA-FA)–(SN-CA)		–2.35(3.8)*	1.050
	(SSN-Umb)+(Umb-FA)–(SSN-CA)		–3.51(4.1)*	1.074
	(SSN-FA)–(SSN-CA)		–5.11(3.5)*	1.114
	(CA-FA)		12.99(4.2)*	0.797
	(SN-FA)–(SN-CA)		–14.77(3.9)*	1.412
	(CA-FA) × 0.8. <i>The Reference Values for Arterial Stiffness' Collaboration, Eur Heart J. 2010.</i>		0.26(3.8)	0.996

* p < 0.001; AA = Ascending Aorta, CA = Carotid Artery, SSN = Suprasternal Notch, SN = Sternal Notch, Umb = Umbilicus, FA = Femoral Artery.

study (Mitchell, 2007) and 18 reporting a treatment effect in comparison with baseline. For each study, mean difference and 95%CI. were extracted and pooled using a random effect model.

Results: We identified 19 studies(37cohorts), which included 1,291 participants. The mean observation time was 17 weeks. In the pooled analysis, there was a significant decrease of PWV after treatment (–1.17; 95% C.I. = –1.51,–0.83). In separate analyses the significant PWV reduction was evident with ACE-I (n = 12, –1.39; –1.97,–0.82), ARBs (n = 7, –1.56; –3.00,–0.12) and Beta-blockers (n = 7, –1.03; –1.23,–0.82). While PWV changes with Ca-channel-blockers (n = 7, –0.88; –1.84,0.08) and Diuretics (n = 3, 0.13; –0.26,0.52) were not significant. There was no publication bias but significant heterogeneity between studies. Meta-regression analysis showed that significant sources of heterogeneity were basal age and BP and BP changes after therapy.

Conclusions: This systematic review suggests that anti-hypertensive treatment improves AS probably with a drug related effect. However the lack of placebo controlled as well as comparative treatment trials do not allows us to reach definite conclusions.

8.5

CAROTID TO FEMORAL PULSE WAVE VELOCITY: WHICH DISTANCE, OBTAINED BY TAPE MEASURE, CORRESPONDS BEST WITH THE REAL TRAVELLED AORTIC PATH LENGTH?

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Objective: Carotid-femoral pulse wave velocity (PWV) is the gold standard method for determination of arterial stiffness. Path lengths are commonly determined by tape measure, which may not correspond to anatomical path lengths. This study investigates the correspondence between the travelled arterial length obtained from magnetic resonance imaging (MRI) images with commonly used body-surface distances obtained by tape measure.

Design and method: 98 healthy males/females were included (50% men, age 21–76). Exclusion criteria: heart disease, pacemaker, implant or clip, large tattoo, pregnant or breastfeeding, claustrophobia, significant obesity.

MRI path lengths were obtained through centrelines reconstructed from the centerpoints determined manually in each slice. The MRI-measured length

Conclusions: In the present population sample the distance (CA-FA) × 0.8, which is the distance from the carotid artery to the femoral artery multiplied by 0.8, provides the best approximation of the real travelled aortic path length.

8.6

PLASMA OSTEOPROTEGERIN AND PROTEINURIA ARE INDEPENDENTLY ASSOCIATED WITH HIGHLY SENSITIVE TROPONIN T IN CHRONIC KIDNEY DISEASE (CKD) STAGES 3 & 4

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Background: Highly sensitive cardiac troponin-T (hs-cTropT) is a predictor of mortality in dialysis dependent renal failure patients. Vascular calcification is also associated with adverse outcome in CKD. Osteoprotegerin (OPG) is a mediator of the bone-vascular axis and has been associated with adverse cardiovascular outcomes.

Aims: We investigated the relationship of hs-cTrop T with OPG and other clinical and biochemical parameters in a cohort of patients with CKD stages 3 & 4.

Method: ELISA kits were used to measure hs-cTropT (Roche, UK) and OPG (Biovendor, CZ).

Results: 122 patients were studied, 95 M:27F. Age 69 ± 11 years (mean ± SD). Diabetic:Non-Diabetic 28:94. Systolic BP 154 ± 21mmHg, DBP 154 ± 21mmHg, eGFR 32 ± 11 ml/min/1.73 m², PO₄ 1.08 ± 0.20 mmol/l. uPCR* 35.8 (14.9–75.2 mg/mmol) (*Geometric Mean (25th–75th centile), *iPTH 79.1 (49–127ng/l),* OPG 9.41(7.4–12.1pmol/l), *hs-cTropT 0.174 (0.010–0.283 µg/l).

Significant univariate correlation was found between hs-cTropT, Age, eGFR, uPCR, iPTH, OPG.

After stepwise multivariate analysis age (β = 0.420, p < 0.001), loguPCR (β = 0.290, p < 0.001), eGFR (β = –0.281, p < 0.001) and logOPG (β = 0.184, p = 0.011) were independently associated with loghs-cTropT. Model adjusted R² = 0.491. The other variables were excluded from the model.

Conclusion: In addition to the recognised cardiovascular risk factors age and eGFR, proteinuria and plasma osteoprotegerin are independently associated with hs-cTropT in CKD stages 3 & 4. This suggests involvement in the pathogenesis of cardiovascular disease in pre-dialysis CKD.