P11.07: DIFFERENCE BETWEEN SYSTOLIC AND DIASTOLIC CAROTID ARTERY STIFFNESS IS INDEPENDENTLY ASSOCIATED WITH LEFT VENTRICULAR MASS INDEX IN HEALTHY MIDDLE-AGED SUBJECTS


To link to this article: https://doi.org/10.1016/j.artres.2010.10.120

Published online: 21 December 2019
Results: As expected, clinic blood pressure values and media to lumen ratio were higher in essential hypertensive patients than in normotensive controls. Fibronectin media content was significantly greater in essential hypertensive patients (7.41±2.28 %), compared with normotensive controls (5.62±0.40, P<0.05). A significant correlation was observed between fibronectin media content and media to lumen ratio (r=0.49, P<0.05). No significant difference in laminin media content was observed between groups (3.7±1.71 % in essential hypertensive patients, 5.63±1.79 % in normotensive controls).

Conclusions: Our results indicate that, in small resistance arteries of patients with essential hypertension, fibronectin, but not laminin media content is increased. Fibronectin might be therefore involved in the development of small resistance artery remodeling in humans.

P11.07
DIFFERENCE BETWEEN SYSTOLIC AND DIASTOLIC CAROTID ARTERY STIFFNESS IS INDEPENDENTLY ASSOCIATED WITH LEFT VENTRICULAR MASS INDEX IN HEALTHY MIDDLE-AGED SUBJECTS
K. D. Reesink 1, E. Hermeling 1, S. J. Vermeersch 2, E. R. Pietzschel 2, M. L. De Buyzere 2, T. Gillebert 2, R. J. van de Laar 1, L. Ferreira 1, A. P. G. Hoeks 1, L. M. van Bortel 2, R. S. Reneman 1, P. Segers 2
1Maastricht University, Maastricht, Netherlands
2Ghent University, Ghent, Belgium

Background: Arterial stiffening potentially plays a role in cardiac hypertrophy. We recently demonstrated in patients that arterial stiffness can be substantially pressure dependent and, here, introduce a non-invasive measure to quantify the pressure dependence in the carotid artery, defined as the difference between systolic and diastolic pulse wave velocity (PWVdiff). Both PWVdiff and peripheral wave reflections (quantified by augmentation index, Alx) are biomechanically related to (late) systolic pressure increase. Therefore, we investigated the associations of PWVdiff and Alx with left ventricular mass index (LVMi).

Methods and Results: In 1722 subjects of the Asklepios cohort (age 35-55 yrs, healthy) PWVdiff was calculated from segmental distensibility coefficients, as obtained by carotid artery ultrasound and tonometry (Figure). PWVdiff ranged from 0.7 to 4.4 m/s. Linear regression analysis showed a significant association between PWVdiff and LVMi (μ=1.26 g/m² per m/s, 95% CI: 0.91-1.62), which remained significant after adjusting for covariates (P=0.03). Alx showed no consistent association with LVMi.

Conclusions: Carotid PWVdiff is independently associated with left ventricular mass index in presumed healthy middle-aged subjects. Non-invasive carotid artery ultrasound and tonometry enable assessment of the contribution of pressure-dependent stiffness to LV pressure load, independently of wave reflections.

P11.08
EVALUATION OF ARTERIAL STIFFNESS IN CHRONIC KIDNEY DISEASE (CKD) STAGE 2-5 BY PULSE WAVE MEASUREMENTS AND AMBULATORY ARTERIAL STIFFNESS INDEX (AASI)
L. Boesby 1, T. Elung-Jensen 2, S. Strandgaard 1, A. L. Kamper 2
1Department of Nephrology, Rigshospitalet, Copenhagen, Denmark
2Department of Cardiology, Oslo University Hospital, Rikshospitalet, Oslo, Norway

Purpose: To study arterial stiffness in CKD by AASI compared to Augmentation Index (Alx) and aortic pulse wave velocity (apPWV). To study the intra-patient reproducibility of AASI in CKD.

Methods: Patients were studied 2 days within 2 weeks. Double applanation tonometry recordings of the radial pressure wave form and apPWV and 24-h ambulatory blood pressure measurements were done. AASI was calculated as 1 minus the regression slope of diastolic over systolic blood pressure. CKD stage was determined by estimated glomerular filtration rate. Spearman’s correlation coefficient (SCC) was used for evaluating correlations. Day-to-day reproducibility was evaluated by the intra-class correlation coefficient (ICC).

Results: 68 patients (M50:F18), median age 63 years (range 30-79), with CKD stage 2 (n=17), stage 3 (n=22), stage 4 (n=20) and stage 5 (n=9) were studied. Mean±SD AASI was 0.44±0.15, mean Alx was 28.2±10.4% and mean apPWV was 9.4±1.0 m/s with no significant differences among the stages. The SCC between AASI and Alx was 0.320 (P<0.01), between AASI and apPWV it was 0.643 (P<0.0001) and between Alx and apPWV it was 0.346 (P=0.006). ICCAASI was 0.755 (95% CI: 0.630-0.841) with even greater reproducibility in CKD stages 4-5 (ICC=0.860).

Conclusions: The observed values of AASI in CKD patients were similar to those reported for the background population, while Alx and apPWV were higher. Despite good correlations between these parameters, the normal values of AASI found in the present study preclude its use as an index of vascular stiffness in CKD. Intra-patient reproducibility of AASI in CKD stage 2-5 was high.