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## P1.04

## IMPACT OF WEIGHT-REDUCTION ON ARTERIAL STIFFNESS IN OBESE CHILDREN AND ADOLESCENTS: A ONE YEAR FOLLOW-UP STUDY

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**Introduction:** Recently, in a cross-sectional study, we have found arterial stiffness assessed as carotid-femoral pulse wave velocity (cfPWV) to be reduced in obese children and adolescents. Therefore, we wanted to investigate whether weight-reduction influenced cfPWV independently of blood pressure (BP).

**Methods:** One hundred obese patients with age 10-18 years newly referred to the Children's Obesity Clinic were investigated before and after one year of lifestyle intervention. CfPWV and augmentation index at heart rate 75 (AIx@HR75) were measured non-invasively using the SphygmoCor device. Weight-reduction was defined as  $\Delta$ BMI z score  $<0$ . [ClinicalTrials.org](http://ClinicalTrials.org) NCT01310088.

**Results:** Seventy-three of initial 104 patients were followed up (period: median 364 days (IQR 364-371)).  $\Delta$ BMI z score was mean  $-0.26 \pm 0.41$  ( $P < 0.0001$ ) in the total group, whereas fifty-five (75.3%) patients responded to treatment. Patients were divided by  $\Delta$ BMI z score tertiles into high-, low- and non-responders. No difference was found in clinic BP in the total group at follow up or across responders ( $P = NS$ ).  $\Delta$ cfPWV was higher in the total group at follow up ( $0.26 \pm 0.47$  m/s,  $P < 0.0001$ ) with no difference across responders ( $P = 0.87$ ). Furthermore,  $\Delta$ cfPWV showed no relationship with  $\Delta$ BMI z score ( $P = 0.82$ ), neither when adjusting for gender, baseline age, heart rate and mean arterial pressure ( $P = 0.99$ ). Similar,  $\Delta$ AIx@HR75 was higher at follow up ( $2.77 \pm 9.91$ ,  $P = 0.020$ ) with no difference across responders ( $P = 0.42$ ).

**Conclusion:** No effect of weight-reduction was found on measures of arterial stiffness. In this respect, the higher arterial stiffness at follow up seems age-related.

## P1.05

## AORTIC PULSE WAVE VELOCITY BUT NOT AUGMENTATION INDEX IS ASSOCIATED WITH ASYMPTOMATIC CAROTID ATHEROSCLEROSIS

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**Objectives:** To study the association between aortic stiffness, assessed by a single arm cuff oscillometric method, and asymptomatic carotid atherosclerosis (ACA) in a healthy population.

**Methods:** We studied 234 normotensive subjects without known cardiovascular disease or diabetes ( $125 \pm 9 / 75 \pm 8$  mm Hg,  $51 \pm 11$  years, 58% women) attending voluntary health screening. Aortic pulse wave velocity (PWVao) and augmentation Index (Aix) were measured with an Arteriograph. ACA (by ultrasonography) was defined as a  $\geq 1.0$  mm echogenic plaque and/or a focal  $\geq 1.3$  mm increase of intima-media thickness.

**Results:** Asymptomatic ACA was present in 60 subjects (26%). There were differences between subjects with and without ACA (all  $P < 0.001$ ) in stiffness parameters (PWVao  $9.6 \pm 1.6$  vs  $8.2 \pm 1.3$  m/s, Aix  $34.8 \pm 12.9$  vs  $25.7 \pm 14.5\%$ ), and age ( $59 \pm 9$  vs  $48 \pm 10$  years, respectively), but not in systolic and diastolic blood pressure ( $126 \pm 8$  vs  $124 \pm 9$ , and  $76 \pm 7$  vs  $75 \pm 8$  mm Hg, respectively). In a logistic regression analysis performed to define factors related to ACA (including age, gender, smoking, body mass index, systolic blood pressure, heart rate, Aix, and PWVao), age, smoking, and PWVao remained independently related (all  $P < 0.05$ ) to ACA. The optimal threshold of PWVao to identify ACA was 8,7 m/s; details are shown below.

**Conclusions:** PWVao measured with the Arteriograph in an apparently healthy normotensive population is independently related to ACA, while Aix is not. We suggest that Aix might be related to an early stage of atherosclerosis, whereas PWVao is a more specific marker of macrovascular atherosclerosis.

	Value	95% Confidence Interval
Sensitivity	0.72	0.59–0.82
Specificity	0.71	0.64–0.77
Positive predictive value	0.45	0.36–0.56
Negative predictive value	0.88	0.81–0.92
Relative risk	3.77	2.29–6.19
Odds ratio	6.1	3.19–11.68

## P1.06

## CARDIO-ANKLE VASCULAR INDEX (CAVI) IS AN INDEPENDENT PREDICTOR OF DEATH IN MAINTENANCE HEMODIALYSIS PATIENTS

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**Objects:** The purpose of this study was to calculate robust quantitative estimates of the predictive value of cardio-ankle vascular index, (CAVI) for future all-cause mortality in hemodialysis patients.

**Subjects and methods:** A total of 163 hemodialysis patients (102 males and 61 females, mean age  $60 \pm 11$  years), who had the examination of CAVI between 2004 and 2005 at Mihama Narita Clinic, Chiba, Japan, were included and followed up for 80 months. Those had diabetes mellitus (27.0%), hypertension (77.3%) or/and dyslipidemia (36.8%). CAVI was measured using Vaseta1500 (Fukuda Denshi. Co.LTD).

**Results:** Among 163 hemodialysis patients, 51 deaths were observed in 6.5 years. Causes of death were heart disease (37.3%), brain stroke (19.6%), infection (17.6%), suffocation (3.9%) and others. In subjects with death, higher CAVI ( $9.3 \pm 1.8$  vs.  $8.3 \pm 1.2$ ), mean age ( $65 \pm 12$  vs.  $57 \pm 10$  years) and prevalence of diabetic nephropathy (43.1 vs. 19.6%) were observed.

COX proportional-hazards regression analysis of the association between death and clinical variables showed that high CAVI ( $\geq 10$ ) independently increased the risk of death with OR of 2.605 (95% CI 1.321-5.141,  $P = 0.006$ ). OR of Diabetic nephropathy was 2.027 (95% CI 1.102-3.727,  $P = 0.023$ ) and OR of elderly ( $\geq 65$  years) was 3,152, (95% CI 1.758-5.649,  $P < 0.0001$ ).

Kaplan-Meier curves for cumulative survival in hemodialysis patients stratified by severity of CAVI ( $8 >$ ,  $9 >$ ,  $10 >$ ,  $10 <$ ) showed that the survival rates on the patients with higher CAVI groups were significantly low ( $P = 0.002$ , Log-rank test).

**Conclusion:** CAVI is an independent predictor of death in hemodialysis patients.

## P1.07

## A LONGITUDINAL PILOT STUDY OF AORTIC STIFFNESS IN COPD

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**Background:** Increased arterial stiffness has been established in patients with COPD (1). However, the changes in aortic stiffness over time and contributing factors are still unknown. We hypothesise that there would be a significant change in aortic stiffness in COPD over one year.

**Methods:** Aortic pulse wave velocity (PWV) was measured using the SphygmoCor device at baseline and after one year in 30 (14 males) patients with stable COPD and 10 (6 males) controls, they free from cardiovascular diseases. Spirometry, peripheral and central blood pressure, body composition and serum creatinine were also determined as well as heart rate, smoking status and number of exacerbations per year.

**Results:** Of the patients, 16 (10 male) showed increased aortic PWV (progressor) from their baseline measurements, mean (SD) 1.70 (2.1) m/s, which related to serum creatinine  $r = 0.66$ ,  $p = 0.01$ . There was no change in PWV in the remaining (non-progressor). Both groups were similar in age, FEV<sub>1</sub>%, blood pressure or mean arterial pressure (MAP). The difference in aortic stiffness between progressor and non-progressor in COPD remained significant after adjustment for MAP, heart rate, smoking status and number of exacerbations,  $R^2 = 0.71$ ,  $p < 0.001$ . The changes over one were greater in patients than controls, 1.70 (0.92) vs 0.85 (0.77) m/s, respectively,  $p < 0.001$ .

**Conclusion:** The increase in aortic stiffness in subset COPD patients was independent of conventional risk factors. The relationship of aortic PWV with