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P107: OSCILLOMETRIC MEASUREMENT OF 24-HOUR PULSE WAVE VELOCITY PREDICTS ALL- CAUSE MORTALITY IN PATIENTS WITH END-STAGE RENAL DISEASE: THE ISAR-STUDY

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as preterm birth, than hypertension which develops later in life¹⁻⁴. Surprisingly, no trials have investigated whether lifestyle advice developed for blood pressure control in older adults is effective in these young populations⁵.

Methods: TEPHRA is a randomised control trial of a 16 week physical activity intervention including behaviour change and structured exercise in young adults with pre- and stage 1 hypertension. On-line recruitment is used with targeting to ensure inclusion of a proportion born preterm. Primary outcome is 24 hr ambulatory blood pressure at 4 months. Subjects undergo additional multimodal assessments including vascular stiffness, blood sampling, microvascular assessment, echocardiography, remote activity monitoring and multi-organ magnetic resonance imaging to identify potential predictors of blood pressure change.

Results: Recruitment started in April 2016 and currently (June 2017) 344 potential participants have been screened with 103 progressing to a baseline visit, of which 91 have been randomized. Two participants have completed their 12 month follow up. Recruitment is predicted to be completed by February 2018 with data reporting of four months outcomes in late 2018.

Conclusion: TEPHRA aims to deliver the most in-depth investigation to date on the effects of physical exercise on the cardiovascular system and health of young adults at risk of early hypertension and cardiovascular disease.

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Poster Session II – Kidney P106

AORTIC STIFFNESS AND CENTRAL SYSTOLIC PRESSURE ARE ASSOCIATED WITH ORTHOSTATIC HYPOTENSION IN PATIENTS WITH CHRONIC KIDNEY DISEASE

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Objective: Orthostatic hypotension (OH) is common cardiovascular problem affecting older adults, and is associated with falls, stroke and chronic kidney disease (CKD). This postural drop (PD) in blood pressure (BP) has been independently associated with increased aortic stiffness in older adults. Aortic stiffness is a modifiable cardiovascular risk factor, and measurable non-invasively. We investigated the association between OH, aortic stiffness and central aortic systolic pressure (CSP) in CKD patients (ACADEMIC cohort).

Design and method: Postural BP changes were measured in one-hundred and forty-six patients (mean age 68.6 SD ± 11.4, 75% male, 21% diabetic) using 24-hour-ambulatory blood pressure monitoring with postural sensing (Diasys Integra II®, Novacor, France). Patients were divided into those with systolic postural drop (SPD, n = 23, mean standing systolic BP < mean lying systolic BP) versus those without (n = 123).

Complior® (Artech Medical, France) measured aortic stiffness as carotid-femoral pulse wave velocity (cf-PWV) and peripheral arterial stiffness as carotid-radial PWV (cr-PWV). Sphygmocor® (Atcor, Australia) measured CSP and augmentation index (AI) from the radial artery.

Results: Cf-PWV and CSP were significantly higher in CKD patients with SPD versus those without (15.2m/s vs 12.7m/s, p < 0.001, 148 mmHg vs 136 mmHg, p = 0.012).

Multivariate logistic regression showed SBP remained significantly associated with aortic stiffness (p = 0.002, OR = 1.45 95%CI = 1.15–1.77) and CSP (p = 0.026, OR = 1.031, 95%CI = 1.00–1.06), independent of age, eGFR, diabetes, smoking pack-years, cholesterol, height and weight. RAI (32.1% vs 28.9%, p = 0.093) and cr-PWV (11.0m/s vs 11.2m/s, p = 0.62) were not significantly different between groups.

Conclusion: Increased aortic stiffness and CSP are independently associated with OH. Stiff central arteries, rather than peripheral, contribute more to OH.

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OSCILLOMETRIC MEASUREMENT OF 24-HOUR PULSE WAVE VELOCITY PREDICTS ALL- CAUSE MORTALITY IN PATIENTS WITH END-STAGE RENAL DISEASE: THE ISAR-STUDY

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Objectives: Mortality rate in end-stage renal disease (ESRD) are still at a high level. Sarafidis et al. showed the predictive value of 48h PWV in patients undergoing hemodialysis [1], although recent studies using office measurement showed controversial predictive results. Aim of the present study was to confirm the predictive value of a novel oscillometric measurement of pulse wave velocity on mortality in an elderly cohort of patients with ESRD.

Methods: The ISAR study is a prospective and longitudinal study targeting patients with ESRD undergoing hemodialysis. Oscillometric measurement of 24-hour PWV was performed at baseline. Survival analysis included Kaplan-Meier analysis, logrank test and Cox regression.

Results: A total of 350 patients had a median age of 69.3 [55.8; 77.3] years. Mean PWV was 9.6 (2.2) m/s and 120 patients died during the mean follow-up of 45 months. PWV was significantly higher in the deceased (10.6 +/- 1.9 m/s) than in surviving patients (9.0 +/- 2.2 m/s). Kaplan-Meier analysis showed differences in dichotomized PWV (cut-off 10 m/s [2]); Logrank test: p = 0.001). For results of univariate Cox regression, see Figure. Adjusted Cox regression analysis showed a significant risk prediction for all-cause mortality (HR 2.322; p = 0.011). Patients older than 50 years showed even higher predictive values (HR 2.442; p = 0.008) as well as patients with PWV values of at least 10 m/s (HR 3.300; p = 0.006).

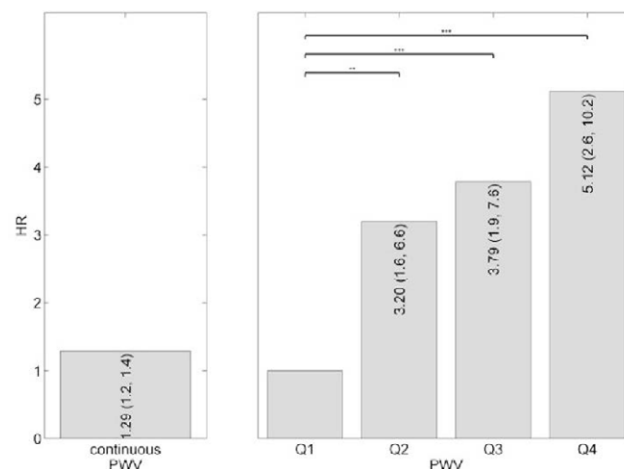


Figure. Univariate hazard-ratios and their 95% confidence intervals for continuous PWV and PWV quartiles (Q1 as reference; ** p = 0.002; *** p < 0.001). Q1: < = 7.92 m/s; Q2: 7.92–9.83 m/s; Q3: 9.83–11.23 m/s; Q4: > 11.23 m/s.

Conclusion: Oscillometric measurement of 24-hour pulse wave velocity is a simple and valid method and has an additional predictive value for all-cause mortality in elderly patients with end-stage renal disease.

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IMPACT OF KIDNEY TRANSPLANTATION ON AORTIC STIFFNESS INDEX β_0

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Purpose/ Background/ Objectives: We have shown that aortic stiffness improves as early as 3 months post-kidney transplantation (KTx). Aortic stiffness index β_0 , a blood pressure independent parameter, has been proposed to be a better indicator of vascular wall property. This study was designed to examine 1) the early versus late changes in aortic stiffness index β_0 and 2) to define the characteristics of patients with favourable and unfavourable trajectories of aortic stiffness index β_0 after KTx.

Methods: In 79 patients who underwent KTx, aortic stiffness was assessed before, 3, 6 and 24 months after KTx. Aortic stiffness was determined by carotid-femoral pulse wave velocity (cf-PWV), while aortic stiffness index β_0 was obtained using a formulae proposed by Spronck and colleagues. Cytokines profile was measured in plasma by ELISA.

Results: There was a reduction of β_0 3 months after KTx (29.0 ± 2.0 to 25.8 ± 1.2 , $P = 0.033$). Then, aortic stiffness index β_0 gradually increased at 6 (28.0 ± 1.4 , $P = 0.005$ vs 3 months) and 24 months (28.3 ± 1.3 , $P = 0.003$ vs 3 months). Unfavourable progression of β_0 was not related to renal function, age, comorbidities or kidney donor characteristics. However, the unfavourable progression of β_0 was associated with higher levels of interleukin-6 ($P = 0.029$).

Conclusions: The improvement of aortic stiffness index β_0 3 months after KTx suggests that KTx leads to an early improvement of the intrinsic mechanical properties of aorta.

However, this improvement is followed by a late progression of β_0 , which is associated with increased pro-inflammatory cytokine, suggesting that activation of immune system may be involved in arterial wall remodeling in kidney transplant recipients.

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PROGRESSION OF AORTIC ARCH CALCIFICATION AFTER KIDNEY TRANSPLANT AND ITS IMPORTANCE IN PREDICTING CARDIOVASCULAR RISK: SINGLE-CENTER 2-YEAR FOLLOW-UP STUDY

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