P100: TRIAL OF EXERCISE TO PREVENT HYPERTENSION IN YOUNG ADULTS (TEPHRA): RATIONALE AND PROTOCOL

Afifah Mohamed, Odaro Huckstep, Wilby Williamson, Charlotte Herdman, Yvonne Kenworthy, Konstantina Spagou, Linda Arnold, Polly Whitworth, Ashley Verburg, Holger Burchert, Adam J. Lewandowski, Paul Leeson


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young. In the older adults, neither FMD (SALS: 3.5 ± 1.4 to 4.6 ± 1.2%; PLAC: 3.4 ± 1.2 to 2.5 ± 1.3%, ANOVA P = 0.98) nor CFPWV (SALS: 8.1 ± 0.5 to 8.4 ± 0.6 m/sec; PLAC: 7.6 ± 0.5 to 7.6 ± 0.4 m/sec, ANOVA P = 0.41) was altered after 4 weeks of salsalate vs. placebo.

These data fail to demonstrate that chronic salsalate tapers improves age-associated aortic stiffness or endothelial dysfunction in older adults. Future studies should test longer duration therapy or more selective inflammatory inhibitors on vascular aging in humans.

**P96**

**ACUTE EFFECT OF ELECTRONIC CIGARETTE SMOKING ON PULSE PRESSURE AMPLIFICATION IN YOUNG SMOKERS**

Nikolaos Ioakeimidis, Dimitris Terentes-Printzios, Christos Georgakopoulos, Charalambos Vlachopoulos, Mohammed Abdelrassoul, Ioanna Gourgouli, Nikolaos Magkas, Dimitrios Tousoulis

1st Department of Cardiology, Hippokration Hospital, Athens Medical School, Greece

**Purpose/Background/Objectives:** We investigated the acute effect of electronic cigarette (EC) smoking on the aortic pressure waveform amplification. We also sought to compare the effect of EC and combustible cigarette (TC) smoking on central haemodynamics.

**Methods:** We studied 24 smokers (age: 30 ± 8 years) on 3 separate occasions: a) tobacco cigarette (nicotine content, 1.2 mg) over 5 minutes, b) EC (18 mg E-liquid) for a period of 30 minutes, and c) nothing (sham procedure) for 60 minutes. Smoking EC for 30 min (15 puffs) was chosen to mimic the common pattern of EC smoking.

**Results:** Both TC and EC smoking caused a significant increase in brachial pressures and heart rate (HR), and the differences in blood pressure (BP) and HR responses between the two smoking forms were not significant. The aortic pressures also increased significantly after smoking both TC and EC, with the greatest changes seen in the first 5 minutes after TC smoking and 15 minutes EC smoking (figures 1A-C, all P < 0.05). Although AIx decreased in both two smoking forms, by applying a correction factor for changes in HR, the AIx increased significantly after TC (by 3.0% at 5 minutes, P < 0.05) and EC (by 2.9% at 15 minutes, P < 0.05) (figure 1D).

**Conclusions:** Electronic cigarette smoking exerts an unfavourable and comparable effect on aortic pressure waveform amplification. Given the prognostic role of central haemodynamics on cardiovascular disease risk, EC may still be considered a hazardous smoking method.

**P99**

**THE EFFECT OF L-ARGININE ON THE VASCULAR FUNCTION IN HEALTHY TRAINED AND SEDENTARY SUBJECTS**

Ksenija Cankar, Tina Virtič, Polona Zaletel, Ziva Melik
University of Ljubljana, Faculty of Medicine, Institute of Physiology, Slovenia

**Background:** The aim of our study was to determine whether the use of food supplement L-arginine improves vascular function, which could be beneficial in preventing the formation and development of cardiovascular diseases. We investigated differences between trained and sedentary subjects.

**Method:** Measurements were performed in healthy normotensive men, divided into four groups, according to age and physical activity: 12 young sedentary (YS) (mean age 23 ± 2.4) and age matched trained (YT) (N = 18); 11 elderly sedentary (ES) (mean age 45 ± 7.5) and age matched trained (ET) (N = 12) subjects. Parameters were measured at rest with the Task Force Monitor device (CNSystems Medizintechnik, Austria) before and after administration of 0.9 g L-arginine.

**Results:** After ingestion of L-arginine the heart rate in all groups statistically significantly decreased (YS 70.4 ± 4.2 vs. 66.3 ± 3.3; YT 62.1 ± 2.7 vs. 58.3 ± 2.0; ES 69.6 ± 3.2 vs. 62.7 ± 2.7; ET 58.0 ± 1.8 vs. 53.6 ± 1.2 beats/min (paired t-test, p < 0.05). The cardiac output decreased in three groups (YT 7.0 ± 0.4 vs. 6.32 ± 0.3; ES 6.95 ± 0.5 vs. 5.9 ± 0.4; ET 7.08 ± 0.6 vs. 6.58 ± 0.4 L/min) (paired t-test, p < 0.05). The systolic (126.3 ± 4.1 vs. 120.1 ± 3.2 mmHg) and diastolic pressure (77.6 ± 2.5 vs. 74.3 ± 1.9 mmHg) (paired t-test, p < 0.05) decreased in the ES group.

**Conclusions:** The systemic effect of L-arginine was observed. Improved cardiovascular function in response to L-arginine could justify the use of dietary L-arginine supplementation.

**P100**

**TRIAL OF EXERCISE TO PREVENT HYPERTENSION IN YOUNG ADULTS (TEPHRA): RATIONALE AND PROTOCOL**

Affifah Mohamed, Odaro Huckstep, Wilby Williamson, Charlotte Herdman, Yvonne Kenworthy, Konstantina Spagou, Linda Arnold, Polly Whithworth, Ashley Verburg, Holger Burchert, Adam J. Lewandowski, Paul Leeson
Division of Cardiovascular Medicine, Radcliffe Department of Medicine, University of Oxford, UK

**Background:** Hypertension or pre-hypertension in young adults is unusual and more often linked with an adverse family or pregnancy history, such
Aortic stiffness and central systolic pressure are associated with preterm birth, than hypertension which develops later in life. Surprisingly, no trials have investigated whether lifestyle advice developed for blood pressure control in older adults is effective in these young populations. 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. References


Poster Session II — Kidney P107

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

Phillip Rankin 1, Nikesh Parekh 2, Steve Holt 1,2, Chakravarthi Rajkumar 1
1Brighton and Sussex University Hospitals Trust, Brighton, UK
2Brighton and Sussex Medical School, Brighton, UK
The Royal Melbourne Hospital, Melbourne, Australia
University of Melbourne, Melbourne, Australia

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 measureable 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 (Diaysis 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® (Arttech 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, 148mmHg vs 136mmHg, 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% vs28.9%, 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.

Abstracts