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P5.30: PHYSICAL ACTIVITY, ARTERIAL STIFFNESS AND OBESITY

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Results: With respect to bSBP, we observed a dipping phenomenon (decrease > 10%) in BH, but not in RH. In contrast, with respect to cSBP, no dipping was present in both groups, respectively. Heart rate was significantly lower at night-time in both groups. Daytime and night-time bPP did not differ in both groups, but cPP showed an increase at night-time in both groups. All measures of wave reflection increased at night-time in both groups.

Conclusions: Measuring 24h pulsatile central hemodynamic parameters using a cuff device is feasible and can lead to novel insights compared to brachial BP. Further studies should investigate the clinical value.

using the Rotterdam criteria. WI was assessed by simultaneous recording of diameter-derived pressure and flow velocity signals from the CCA. Local wave speed (by water-hammer equation) was used to separate forward and backward waves as previously described. Backward waves were indexed by the integral of the preceding forward wave to characterise reflections independently of energy originating in the LV. Other key measures included central pulse wave velocity (PWV) from radial applanation tonometry and LV systolic and diastolic function by echo.

Results: There were no between group differences in age, height, central PWV or echo measures of LV function.

	Control (n=44)	IR (n=41)	Control vs. IR p-value	PCOS+IR (n=58)	IR vs. PCOS+IR p-value
Waist (cm)	78.6	90.2	<.001	97.8	.012
HOMA-IR	1.2	3.5	<.001	4.0	.020
Testosterone (nmol/L)	1.0	1.1	.370	1.6	.002
Heart rate (bpm)	67.0	72.9	.012	75.8	.163
FCW (W/m ²)	11.4	14.7	<.001	13.1	.089
BCW/FCWint. (W/m ²)	40.9	46.1	.037	39.8	.005
FEW (W/m ²)	2.3	2.9	.002	2.5	.020
FEW duration (ms)	71.7	84.4	.031	76.8	.256
Time to FEW (ms)	333.1	305.3	.001	319.6	.073

P5.27

INDAPAMIDE SR EFFECTS ON AMBULATORY BRACHIAL AND AORTIC PRESSURE IN HYPERTENSIVE PATIENTS

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Aim: Ambulatory monitoring of central blood pressure (BP) is a new technique for evaluation of antihypertensive drugs efficacy. The aim of the study was to assess changes in ambulatory brachial and central BP after indapamide SR adjunction to treatment regimen in hypertensive patients.

Methods: Indapamide SR 1,5 mg was added to 21 hypertensive patients (9 male, age 62 years) with uncontrolled hypertension (clinic BP >140/90 mmHg, 24-h BP >130/80 mmHg and/or daytime BP>135/85 mmHg) after 8 weeks treatment with combination of an ACE inhibitor and a calcium channel blocker. ABPM was done before and after 4 weeks of indapamide SR adjunction with BPLab VASOTENS ("OOO Petr Telegin", Nizhny Novgorod, Russia) brachial oscillometric device which allows to derive aortic BP and augmentation index (Alx). Brachial and aortic BP changes were evaluated. p<0,05 was considered significant.

Results: Significant (p<0,05) decrease in 24-h, day- and nighttime BP after 4 weeks of indapamide SR adjunction was observed: for brachial systolic pressure, respectively, from 147±13 to 138±10, from 148±13 to 139±10, from 145±15 to 134±14 mmHg, for aortic systolic pressure, respectively, from 137±12 to 128±9, from 137±12 to 128±9, from 137±14 to 126±13 mmHg. Alx@HR75 bpm decreased significantly (p<0,05) also: 24-h Alx from 1,8±24,9 to -11,1±17,5%, daytime Alx from -2,3±25,6 to -15,7±18,1%, nighttime from 15,4±21,7 to 1,8±19,5%.

Conclusion: Indapamide SR adjunction to combination therapy with combination of an ACE inhibitor and a calcium channel blocker results in significant decrease in brachial and aortic systolic pressure as well as in decrease in aortic pulse pressure augmentation. Decrease in aortic pulse pressure augmentation is observed during both day- and night-time.

P5.28

THE EFFECT OF INSULIN RESISTANCE ON VENTRICULAR-ARTERIAL COUPLING; INSIGHTS FROM SEPARATED WAVE ANALYSIS IN YOUNG WOMEN WITH AND WITHOUT PCOS

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Objective: Polycystic ovary syndrome (PCOS) is characterised by obesity and a high prevalence of insulin resistance (IR) but this may not translate into increased cardiovascular events. The energy and timing of waves in large arteries may be quantified by separated wave analysis from wave intensity (WI) signals. This study characterised ventricular-arterial coupling (VAC) in three groups of young women (i) control (ii) IR (iii) PCOS+IR.

Method: 143 women (16-45y) free from cardiovascular disease and diabetes were studied. IR was diagnosed if HOMA-IR was ≥2. PCOS was diagnosed

Conclusion: In those without PCOS, IR was associated with increased amplitude forward compression (FCW) and expansion (FEW) waves actively generated by the LV and proportionally greater amplitude reflected waves (BCW/FCWint.). Proposed mechanisms include enhanced sympathetic nervous system activity by elevated endogenous insulin levels or obesity. PCOS+IR subjects had waves with amplitudes that more closely approximated control values, despite a worse risk profile.

P5.29

MUSIC TO MY EARS, HEART AND AORTA: THE EFFECT OF MUSIC LISTENING ON ARTERIAL STIFFNESS AND AORTIC HEMODYNAMICS OF YOUNG, HEALTHY VOLUNTEERS

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Objectives: Music has been correlated to cardiovascular health and used as additional therapy in patients with cardiovascular disease, however, few are known on the impact of music on arterial stiffness and central hemodynamics which are both predictors of cardiovascular risk. We investigated the effect of rock and classical music on arterial stiffness and wave reflections in young healthy people.

Methods: We studied 20 healthy individuals (22.5 ± 2.5 years, 10 males), free of cardiovascular risk factors except smoking (10%). Volunteers were studied on three different occasions and listened to a 30-minute music track (classical, rock or no music for the sham procedure). Carotid-femoral pulse-wave velocity (PWV) and pulse wave analysis were used to assess aortic stiffness and central hemodynamics. Measurements were made before, immediately after and 30 minutes after each track. Volunteers were classified as classical or rock music fans, according to their answers to a questionnaire. **Results:** Augmentation index (Alx) and augmented pressure (AP) were significantly decreased by both music genres compared to sham procedure with a maximum decrease noted immediately post music by 8.3% and 1,56 mmHg, respectively (all p<0.001). Music had no significant effect on PWV. Classical and rock music led to a more potent response in classical and rock fans, respectively (figure).

Conclusions: Both classical and rock music decrease wave reflection indices whereas they have no effect on aortic stiffness. Given the influence of wave reflections on cardiovascular performance and cardiovascular disease risk, our findings may have important implications for human health.

P5.30

PHYSICAL ACTIVITY, ARTERIAL STIFFNESS AND OBESITY

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Objectives: To examine the role of physical activity in vascular stiffness and markers of adiposity and inflammation in "healthy" subjects.

Methods: Seventy-nine (51 male & 28 female) healthy subjects were recruited. All were lifelong non-smokers, normotensive, normolipidaemic and normoglycaemic. Augmentation index (AIx) and pulse wave velocity (PWV) were measured using applanation tonometry (Sphygmocor & Vicorder). Daily physical activity patterns were measured using triaxial accelerometry and expressed as time spent being sedentary, lightly active and vigorously active. Body composition was estimated using bioimpedance. The adipose associated markers, leptin & adiponectin, and inflammatory markers, IL-6, TNF α & MCP-1 were also measured.

Results: Time spent being sedentary was significantly associated with AIx ($r=0.38$, $P<0.001$), PWV ($r=0.33$, $P<0.01$), body fat composition ($r=0.40$, $P<0.001$) and age ($r=0.30$, $P<0.01$). Vigorous activity was inversely correlated with AIx ($r=-0.28$, $P<0.05$) body fat composition ($r=-0.30$, $P<0.01$), post prandial insulin ($r=-0.35$, $P<0.01$) and leptin/adiponectin ratio ($r=-0.28$, $P<0.05$). The inflammatory cytokines, IL-6, TNF α and MCP-1, were not significantly correlated with any activity categories.

Conclusion: The main findings of the study are that people, who spend more time being sedentary, despite being clinically healthy, have stiffer arteries and more body fat compared to those who spend less time being sedentary. Conversely, people that spend more time being active have less arterial stiffness, lower body fat, post prandial insulin and leptin/adiponectin ratio. These results suggest that activity related changes in arterial stiffness in healthy people may be mediated by the hormonal/metabolic consequences of inactivity rather than pro-inflammatory mechanisms.

P5.31

CENTRAL PRESSURES ARE HIGHER IN PATIENTS WITH TRANSIENT ISCHAEMIC ATTACK (TIA) THAN HEALTHY ADULTS

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Introduction: The increased risk of stroke following a Transient Ischaemic Attack (TIA) is well established. Central aortic pressure, a marker of arterial stiffness, is emerging as a predictor of cardiovascular events including stroke. Additionally brachial Blood Pressure (BP) measurements may not accurately reflect the haemodynamic status of an individual, as systolic BP is amplified peripherally. The association and interplay of central aortic pressure and brachial BP parameters in TIA patients have not previously been explored.

Methods: Twenty-six participants with a mean age of 70 years ($SD\pm 10.1$) and a confirmed diagnosis of TIA were recruited from Brighton and Sussex University Hospitals Trust. Central aortic BP and brachial BP were measured using Arteriograph[®]. Carotid-femoral pulse wave velocity (C-F PWV) and carotid-radial pulse wave velocity (C-R PWV) were measured using Complior[®].

Results: Twenty participants had complete BP recordings. Central aortic BP was higher than peripheral BP (mean difference = 2 mmHg). Healthy patients are expected to have a central BP 10-15mmHg lower than peripheral BP.^[1,2] C-F PWV was found to be higher in TIA participants compared to published normal values (C-F 10.9 m/s).^[3]

Measurement	Mean \pm SD	Range	n
Peripheral BP (mmHg)	128 \pm 14.7	102-163	20
Central BP (mmHg)	130 \pm 19.3	97-171	20
C-F PWV (m/s)	11.5 \pm 3.18	7.2-20.6	22
C-R PWV (m/s)	10.8 \pm 1.26	8.3-13.7	22

Conclusions: In this TIA cohort, there was a tendency towards an increase in central BP and aortic stiffness in comparison to published normal values.

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P5.32

WAON-THERAPY (WARMING THERAPY) IMPROVED CARDIAC FUNCTION ASSOCIATING WITH DECREASING CARDIO-ANKLE VASCULAR INDEX (CAVI) IN HEART FAILURE PATIENTS

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Objects: Waon-Therapy was invented for the therapy of heart failure by Dr. Tei. The purpose of this study was to confirm the efficacy of Waon therapy and to clarify the role of Waon-therapy in the arterial stiffness monitoring with cardio-ankle vascular index (CAVI).

Subjects and methods: Study 1 Subjects were 7 patients with chronic heart failure. They were divided randomly into Waon-therapy group and conservative therapy group. Waon therapy was performed as follows; warming up at 60 for 15 min in a chamber, and then, laying down in supine position with covering warm blanket for 30 min. They took this therapy once a day for 14 days. Study 2. A person, 64 years old man with diabetes mellitus, who is taking hemodialysis therapy. He also was suffering from systemic arteriosclerosis and heart failure. He took Waon therapy for 3 months. CAVI was measured using Vasela1500 (Fukuda Denshi. Co.LTD).

Results: Study 1; Among 7 heart failure patients, Waon therapy group 4 patients showed improved BNP from 1220- 780 pg/ml, whereas conservative group 720- 920 pg/ml. CAVI improved in Waon group from 10.5 to 9.3, but in conservative group, CAVI did not change Study 2: 65 year old man taking maintenance hemodialysis were suffering from necrosis of penis because of arteriosclerosis. He took Waon therapy for 3 months. At every week, BNP decreased from 4200, 3400, 2600 to 1560 pg/ml after 3 months. CAVI also decreased 13.4, 13.2 12.3, 11.2, 10.8, 11.2. Penis necrosis was improved completely.

Conclusion: Waon therapy improved heart failure, associating with improvement of CAVI. Improved CAVI which means decreased arterial stiffness, and also decreased after-load, might be involved in improving left ventricular dysfunction.

P5.33

REVERSE DIPPING STATUS IS INVERSELY ASSOCIATED WITH HEALTH-RELATED QUALITY OF LIFE

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Objectives: We sought to investigate whether reverse dipping status is associated with self-reported health-related quality of life (HRQL).

Methods: BP was evaluated non-invasively under 24-hour ABPM with a brachial cuff-based automatic oscillometric device (Mobil-O-Graph, IEM); all subjects maintained a time-log indicating awake/asleep periods. Subjects were classified as Reverse Dippers (Group-A) if SBP-asleep > SBP-awake; the rest were included in Group-B. For HRQL assessment the EQ5D instrument was utilized prior to BP evaluation. EQ5D estimates the following dimensions: mobility (MO), self-care (SC), usual activities (UA), pain/discomfort (PD), anxiety/depression (AD); each is subdivided in three severity levels (1=no, 2=some/moderate and 3=extreme problems). Moreover, an index (MVH-York-A1-tariff) is calculated by the combination of these dimensions. Additionally, EQ5D involves a visual analogue scale (VAS) in which respondents self-rate their health state (0=worst, 100=best imaginable).

Results: Group-A consisted of 10 subjects and Group-B of 139. The two groups were comparable regarding demographic and clinical characteristics (males 50% vs. 53%, 63 vs. 55 years old, BMI 26.5 vs. 27.2, hypertension 60% vs. 48.2%, diabetes mellitus 10% vs. 10%, respectively; $p=ns$ for all). MO, SC, UA, AD and MVH-York-A1-tariff (A: 0.74 ± 0.23 vs. B: 0.86 ± 0.74) did not differ between the two groups. Yet, a higher percentage of Group-A stated some/moderate or severe problems in PD dimension compared to Group-B (Figures A, B; $p<0.001$). Moreover, lower levels of VAS were observed in Group-A compared to Group-B (72.5 ± 10.9 vs. 78.7 ± 13.7 , respectively; $p=0.037$).

