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P7.4: MORNING CENTRAL BLOOD PRESSURE SURGE DOES NOT DIFFER BETWEEN MEN AND WOMEN

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Objective: The aim of this study was to evaluate the thrombin generation (TG) in patients with uncontrolled arterial hypertension (AHT).

Patients and methods: We prospectively examined 27 patients with uncontrolled AHT at the emergency department of the medical center of Mainz, and 26 age match controls. TG was measured by calibrated automated thrombography (CAT) in platelet rich and platelet poor plasma (PRP/PPP).

Results: AHT patients had an increased systolic blood pressure, compared to control patients (182 ± 10.7 versus 134 ± 9.6 mmHg); age, BMI and weight were not different. Unexpectedly, CAT assay performed in PPP showed a decreased of TG in uncontrolled AHT patients (1269 ± 55 versus 1444 ± 51 nM.min) as well as a decrease in the peak of generation. The TG performed in PRP was identical between uncontrolled AHT and control patients (1550 ± 65 versus 1513 ± 58 nM.min), but the peak of generation, as well as the velocity, were increased in uncontrolled AHT patients. In both groups, TG was reduced by blocking the apple 3 domain of FXI, indicating an involvement of the FXI thrombin loop in thrombin generation in PRP of uncontrolled AHT patients.

Conclusion: These results point out the important role of platelet overreactivity in hypertension. Monitoring the prothrombotic state of platelets might add to risk stratification of patients with AHT.

P7.2

VERY EARLY CLINICAL VASCULAR AND HEART MARKERS OF NEWLY RECOGNIZED HYPERTENSION IN MIDDLE AGE ADULTS

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The aim of this study was to evaluate vascular and echocardiographic markers of hypertension (HT) in subjects with newly diagnosed HT before treatment started.

We studied 32 patients with newly diagnosed HT without pharmacological therapy (HT group) and 31 healthy ones (control group). ABPM were performed to exclude or confirm HT. Cardiovascular risk factors and pulse wave velocity (PWV) were assessed. Measurements of left ventricle, size of left atrium and parameters of diastolic function of left ventricle were measured using echocardiography. The student's T-test, U Mann-Whitney and Chi2 tests were used to compare differences between groups.

There were no significant differences in cardiovascular risk factors (sex, age, total cholesterol level, HbA1c) between groups with exception of BMI ($p < 0.05$). We observed significant differences between HT group and control group in PWV, LVMI, LAVI, IVSd, LVIDD, LVPWd, E/A, E/E', although there were no such differences in IVRT, DcT and E'.

Control group

N=31

HT group

N=32

Men, n[%]

12[39]

19[59]

Age[year]

45±10

44±12,5

BMI[kg/m2]*

24±3,5

28,5±4,0

SBP[mmHg]*

119,4±9,5

142,3±15,0

DBP[mmHg]*

81,1±8,8

97,6±11,1

Total cholesterol[mmol/l]

5,1±1,0

5,5±0,9

HbA1c[%]

5,4±0,4

5,5±0,4

PWV[m/s]*

8,7±2,0

10,2±2,6

LVMI[g/m2]*

83,1±18,4

96,3±24,7

IVSd[mm]*

9,4±1,8

10,7±2,0

LVIDD[mm]*

46,4±4,4

49,4±4,7

LVPWd[mm]*

9,2±1,7

10,7±1,7

LAVI[ml/m²]*

16,9±6,2

22,2±6,5

IVRT[s]

0,097±0,024

0,094±0,017

DcT[s]

0,293±0,078

0,266±0,083

E/A*

1,3±0,3

1,1±0,3

E'[m/s]

10,7±2,1

9,2±3,3

E/E**

8,3±2,3

9,7±2,7

*-p<0,05

In the study group, increase in pulse wave velocity concomitant with changes in diastolic function characterize middle age patients with newly diagnosed hypertension. It is difficult to separate the effect of high blood pressure from the importance of overweight.

P7.3

RISK FACTORS CONTROL IN ELDERLY PATIENTS WITH PERIPHERAL ARTERY DISEASE

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Objective: The assessment of control of modifiable risk factors among elderly patients with peripheral artery disease (PAD) admitted to the hospital angiology ward.

Methods: The results of treatment of dyslipidemia (DL), hypertension (HT), diabetes mellitus (DM) and prevalence of cigarette smoking were assessed among older (>65 years old, group I) and younger patients (group II) with PAD in a admission day to hospital. Statistical analysis was performed with U Mann-Whitney and Chi² tests.

Results: The study population included 154 patients (I – 92 and II – 65 subjects) aged $67,4 \pm 9,4$ years, 69,5% men. The study groups presented similar grades of PAD classification by Rutherford. Group II was older ($73,5 \pm 6,4$ vs $58,3 \pm 4,7$ yrs), had lower frequency of current smokers (21,7 vs 48,4%) than groups II. Diagnosis of DL, HT and DM were equally frequent in both groups. However, coronary heart disease was diagnosed more frequently in group I than II (52,2 vs 29,0%). Both groups were similar according to systolic blood pressure (BP) values and levels of glucose and HDL cholesterol. Group I had lower diastolic BP than group II ($69,5 \pm 11,1$ vs $74,0 \pm 9,9$ mmHg), but control of HT was similar in both groups (71,7 vs 67,7%). LDL cholesterol were lower in a group I than II ($2,2 \pm 1,0$ vs $2,5 \pm 1,1$ mmol/l), but LDL cholesterol values < 1,8 mmol/l were observed with similar frequency in both groups (40,2 vs 27,4%).

Conclusions: Elderly patients with PAD presented slightly better control of modifiable risk factors than younger patients.

P7.4

MORNING CENTRAL BLOOD PRESSURE SURGE DOES NOT DIFFER BETWEEN MEN AND WOMEN

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Objective: Morning blood pressure (BP) surge is considered to be an independent risk factor for cardiovascular diseases. On the other hand, there is increasing evidence that central systolic pressure (CSP) is stronger correlated with target organ damage and cardiovascular events than peripheral systolic pressure. Therefore, the aim of study was to evaluate the difference in morning central BP surge between men and women.

Methods: Fifty patients with never treated hypertension (age 40.4 ± 11.5 years, 35 men) and 50 normotensive subjects (age 38.3 ± 12.0 years, 35 men) were included into the study. Applanation tonometry of the radial artery and "n-point forward moving average" method have been used to derive 24-h CSP (BPro, HealtStats). The sleep-through morning surge (MS) was the difference between the morning pressure and the lowest nighttime BP. The preawakening MS was the difference between the morning BP and the preawakening BP (the average BP during the 2 hours before awakening).

Results: The 24-hour CSP was 129.5 ± 10.6 mmHg in hypertensives and 110.5 ± 12.4 mmHg in normotensives ($p < 0.05$). The average daytime and nighttime CSP was 133.8 ± 11.1 mmHg and 123.1 ± 11.1 mmHg ($p < 0.05$) in hypertensives whereas 114.3 ± 13.7 mmHg and 104.8 ± 11.7 ($p < 0.05$) in normotensives, respectively. The values of morning BP surge are presented in the table.

Conclusion: Central sleep-through MS and preawakening MS are similar in men and women.

Men (n=35) Women (n=15) p

HYPERTENSIVES

Central sleep-through MS (mmHg) 19.38 ± 7.59 16.74 ± 5.99 0.24

Peripheral sleep-through MS (mmHg) 13.21 ± 7.76 10.02 ± 4.58 0.15

NORMOTENSIVES

Central sleep-through MS (mmHg) 16.21 ± 7.90 20.56 ± 20.30 0.28

Peripheral sleep-through MS (mmHg) 9.76 ± 7.0 17.37 ± 21.4 0.07

P7.5

RELATIONSHIPS BETWEEN 24 HOUR URINARY CORTISOL METABOLITES AND STRUCTURAL CARDIAC AND ARTERIAL INDICES IN PEOPLE WITH OR AT RISK OF TYPE 2 DIABETES

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Objective: To assess if 24h urinary cortisol metabolite (UCM) profiles are related to structural cardiac and arterial parameters in those with or at risk of Type 2 diabetes mellitus (T2DM).

Design and method: 32 participants, 25-77 years, eGFR > 45 mL/min and no serious illness. Urine was collected over 24 hours. 2D echocardiography and arterial stiffness measures [aortic pulse wave velocity (aPWV) by Arterio-graph and cardio-ankle vascular index (CAVI) by VaSera] were performed on the collection day. Steroids were extracted from urine and hydrolysed; derivatives were analysed by GC-MS.

Results: Seven UCMs were quantified [tetrahydrocortisol (THF), α -tetrahydrocortisol (α -THF), tetrahydrocortisone (THE), α -cortol (α -col), β -cortol (β -col), α -cortolone (α -cone), β -cortolone (β -cone)].

Left ventricular mass index (LVMI) correlated positively with 24h cortisol:cortisone metabolites (THF+ α THF+ α col+ β col/THE+ α cortolone+ β cortolone) and negatively with α : β metabolites (α col+ α cortol/ β col+ β cortol), when indexed for body surface area (BSA) and height ($r = 0.37$, 0.48 and $r = -0.34$, -0.49 respectively). Further, there was a positive relationship between LVMI_{BSA} and THF:THE ($r = 0.35$). aPWV but not CAVI was also related to 24h cortisol:cortisone metabolites ($r = 0.45$). All $p < 0.05$.

Regression analysis including age, gender, systolic blood pressure (SBP), arterial stiffness (aPWV or CAVI) and body mass index (BMI; only for RWT), showed an independent association between THF:THE and LVMI_{BSA} and LVMI_{height} and cortisol:cortisone metabolites with LVMI_{height}, $p < 0.02$.

SBP, but not arterial stiffness, was also independently related to LVMI_{BSA} and LVMI_{height} in all models.

Conclusion: Specific 24h UCMs and UCM ratios (from glucocorticoid/mineralocorticoid, 11 β HSD and 20 α HSD/20 β HSD actions) may be structural cardiac biomarkers in those with or at risk of T2DM.

P7.7

TESTOSTERONE LEVELS IN HYPERTENSIVE PATIENTS WITH VASCULAR ORGAN DAMAGE

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Purpose: Testosterone levels are decreased in hypertensive patients compared to normotensive subjects with similar age. Measurements of carotid IMT or aortic stiffness are reasonable for detecting vascular organ damage (OD) in patients with arterial hypertension. We investigated whether low testosterone concentration is associated with vascular OD in hypertensive patients.

Methods: 178 consecutive asymptomatic hypertensive males (40-60 y/o) were evaluated using exercise treadmill test and stress echocardiography. Men with positive one or both of the two tests were referred for coronary angiography in order to document coronary artery disease (CAD). All patients underwent carotid-femoral pulse wave velocity (PWV) and carotid IMT evaluation. Vascular OD was detected when IMT > 0.9 mm (or plaque) and/or PWV > 10 m/s. Total testosterone (TT) levels were measured in all participants. Testosterone deficiency (TD) was defined when TT levels were below 3.4 ng/mL.

Results: Coronary angiography revealed significant stenosis in 31 (17%) patients. The prevalence of Grade II/III hypertension was not different between CAD patients and subjects without CAD. Subjects without CAD were further divided according to presence/absence of vascular OD. Patients with vascular OD had lower TT level ($p < 0.001$) and a greater prevalence of TD ($p < 0.01$) compared to hypertensive subjects without OD after adjustment for age and blood pressure. Interestingly, CAD patients and non CAD subjects with vascular OD had comparable TT concentration and prevalence of TD.

Conclusion: TT concentration is decreased in hypertensive patients with vascular OD compared to subjects without OD. These findings underscore the predictive value of TD in hypertensive males with OD.

P7.8

THE RELATIONSHIP BETWEEN RENAL AND CEREBRAL BLOOD FLOW PULSATILITY

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Introduction: Increased pulsatile flow has been implicated in the progression of microvascular damage. The pulsatile blood flow transmitted into both the brain and kidney are often assumed to be similar, however specific studies confirming these associations are lacking. Therefore, the aim of this study was to investigate the relationship of pulsatility index (PI) and resistive index (RI) [both measures of pulsatile flow] between the renal artery (RA) and middle cerebral artery (MCA).

Methods: Thirty-one participants (aged 36 ± 11 years) were recruited from Cardiff Metropolitan University's Staff Health and Wellbeing study. Peak systolic velocity, end diastolic velocity and mean velocity were all measured and used to calculate PI (Gosling's) and RI (Pourcelot's) of the RA (renal ultrasound, Vivid Q, GE) and MCA (Transcranial Doppler, DWL). Correlation and level of agreement (LOA) between RA PI and MCA PI were analysed using Pearson correlation coefficient and Bland-Altman plots.

Results: Although, a linear relationship was observed between RA PI and MCA PI ($r = 0.477$, adjusted $R^2 = 0.201$, $P = 0.007$) and between RA RI and MCA RI ($r = 0.513$, adjusted $R^2 = 0.238$, $P = 0.003$), further Bland-Altman analysis demonstrated a PI bias of 0.37 ± 0.26 and LOA of -0.15 to 0.89 .

Conclusion: These data suggest that the agreement between flow pulsatility within the renal and middle cerebral arteries are not similar. Our data indicate that the measurement of PI in the renal artery only explains 20% of the variance in PI observed in the MCA. Therefore, caution should be taken when assuming similarity in PI and RI between different organs.