POSTER SESSION

POSTERS' SESSION PS16:
BLOOD PRESSURE MEASUREMENT AND VARIABILITY

HOME BLOOD PRESSURE VARIABILITY AND PRECLINICAL TARGET-ORGAN DAMAGE IN UNTREATED HYPERTENSION

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Objective: To assess the relationship between different indices of home blood pressure (HBP) variability with preclinical target-organ damage in untreated hypertensives.

Design and method: Untreated hypertensives were subjected to HBP monitoring (duplicate morning and evening measurements; 6–7 days; automated devices), as well as to assessment of echocardiographic left ventricular mass index (LVMI) and urine albumin excretion (UAE).

Results: A total of 276 subjects (mean age 51.8 ± 11 [SD] years, men 58%, body mass index [BMI] 29 ± 4.8 [SD] kg/m², HBP systolic/diastolic 139.9 ± 13.1/88.7 ± 8.6 mmHg) were analyzed. Average HBP was correlated to LVMI ($n = 263$; $r = 0.37/0.15$, systolic/diastolic, $p < 0.01/ < 0.05$ respectively) and UAE ($n = 230$; $r = 0.31/0.21$, $p < 0.01$ for both). Maximum systolic HBP was associated with LVMI ($r = 0.34$, $p < 0.01$) and UAE ($r = 0.31$, $p < 0.01$). Other indices of systolic or diastolic HBP variability (standard deviation, coefficient of variation, average real variability, variability independent of the mean) did not present significant associations with LVMI or UAE (r range from -0.04 to 0.13, all p = NS). In stepwise multivariate regression analyses (age, gender, BMI, systolic/diastolic HBP, maximum systolic HBP as independent variables), LVMI was determined ($R^2 = 0.40$) by systolic HBP and age, whereas UAE ($R^2 = 0.36$) by maximum systolic HBP and male gender.

Conclusions: These data suggest that average HBP and maximum systolic HBP, but no other HBP variability indices, appear to determine preclinical target-organ damage in untreated hypertensives.

CIRCADIAN RHYTHM OF BLOOD PRESSURE IS RELATED WITH HEART RATE BUT NOT GLUCOSE VARIABILITY IN LONG-STANDING TYPE 1 DIABETES

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Objective: Non-dipping pattern has been associated with cardiac autonomic neuropathy (CAN) in diabetic patients. However, in normotensive patients with type 1 diabetes (DM1) ambulatory blood pressure monitoring (ABPM) is not routinely performed. Surprisingly, none of the previous studies analyzed the relationship of autonomic regulation, glucose variability and non-dipping status (defined as less than 10% night-time blood pressure (BP) drop) in DM1.
The aim of the study was to investigate the possible association of circadian BP rhythm with glucose levels and its variability as well as with parameters of autonomic regulation.

Design and method: We examined 42 subjects with long-standing (>20 years) history of DM1 (without cardiovascular disease, including hypertension). In all patients, simultaneous 24-hour continuous glucose monitoring (iPro2), ABPM (Spacelabs 90217) and Holter electrocardiographic recording (Medilog Darwin, Schiller) were performed. Time- and frequency heart rate variability (HRV) parameters were used as indicators of cardiovascular autonomic regulation. Subjects were divided into two groups depending on presence of dipping pattern (dippers n = 20, non-dippers n = 22).

Results: Groups with dipping and non-dipping pattern did not differ with respect to age, BMI, mean heart rate, mean glucose levels, parameters of glucose variability and its long-term control (HbA1c).

As expected, the systolic and diastolic 24-hour BP variability (BPV, expressed as SD) were significantly lower in non-dippers. Time-domain HRV parameters, such as SDNN ($p = 0.03$), rMSSD ($p = 0.016$), pNN50 ($p = 0.01$) and SDNN-i ($p = 0.03$) were also significantly lower in non-dippers.
In spectral HRV analysis, non-dippers were characterized by lower LF and HF power in the whole recording ($p = 0.01$ and $p = 0.04$, respectively) and for daytime period ($p = 0.03$ and $p = 0.04$, respectively). For night-time period total power ($p = 0.03$) was lower in non-dippers. Unexpectedly, night-time LF spectrum power was also lower ($p < 0.01$) in the absence of differences in HF spectrum parameters. However, LF/HF was similar in both groups.

Conclusions: In patients with long-standing DM1, glucose variability was not related to BP dipping pattern. The abnormal circadian BP rhythm was associated with lower HRV. However, this relationship cannot be explained by night-time vagal withdrawal.

BLOOD PRESSURE VARIABILITY AMONG RHEUMATOID ARTHRITIS PATIENTS

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Objective: Rheumatoid arthritis (RA) is a systemic autoimmune inflammatory disorder that primarily affects peripheral joints with 0,5–1% prevalence in the population. The risk of developing cardiovascular disease in RA patients is twice compared to normal population. Some studies suggest that in RA patients, prevalence of hypertension is increased due to prednisolone use, clinical status, genetic factors and physical inactivity. Ambulatory blood pressure monitoring (ABPM) can be used to investigate diurnal variability of the blood pressure in patients. To our knowledge there is no data about prevelance of dipper and non-dipper status in RA patients compared to non-RA subjects. Purpose of the study is to investigate if non-dipper status is more common in RA patients.

Table 1 Comparison of the baseline characteristics and laboratory results of the study groups

Variables	Rheumtoid Arthritis Patients (n=65)	Control Group (n=61)	P
	Mean ± SD	Mean ± SD	
Men, %	23 (35.4%)	28 (45.9%)	0.229
Age, years	55.1 ± 10.2	52.2 ± 15.0	0.198
LVEF, %	57.3 ± 5.1	56.8 ± 2.7	0.520
FBG, mg/dL	104.5 ± 36.5	99.5 ± 26.8	0.389
BUN, mg/dL	12.6 ± 3.3	14.1 ± 4.3	0.118
Creatinine, mg/dL	0.7 ± 0.1	0.7 ± 0.1	0.379
HDL-C, mg/dL	48.6 ± 8.0	53.2 ± 13.1	0.183
LDL-C, mg/dL	112.7 ± 49.4	125.3 ± 33.8	0.357
Triglyceride, mg/dL	141.0 ± 63.4	137.9 ± 82.7	0.890
Hb, g/dL	13.5 ± 1.7	13.8 ± 1.2	0.565
Leukocyte, x10³/mm³	9.1 ± 2.5	7.8 ± 1.9	0.001
Neutrophils, x10³/mm³	5.8 ± 2.2	4.6 ± 1.6	0.001
Lymphocytes, x10³/mm³	2.5 ± 0.8	2.4 ± 0.7	0.343
Eosinophils, x10³/mm³	0.1 ± 0.1	0.2 ± 0.1	0.614
Platelets, x10³/mm³	289.7 ± 89.3	279.5 ± 63.6	0.463
RDW, fL	45.4 ± 5.9	40.6 ± 5.8	0.000
MPV, fL	10.5 ± 1.0	10.4 ± 0.9	0.804
PDW, fL	12.4 ± 2.4	12.3 ± 2.0	0.744

Abbreviations: BUN, blood urea nitrogen; FBG, fasting plasma glucose; Hb, hemoglobin; HDL-C, high density lipoprotein cholesterol; LDL-C, low density lipoprotein cholesterol; LVEF, left ventricule ejection fraction; MPV, mean platelet volume; PDW, platelet distribution width; RDW, red cell distribution width.

Table 2. 24-h ambulatory blood pressure monitorization results of the study groups

Variables	Rheumtoid Arthritis Patients (n=65)	Control Group (n=61)	p
	Mean ± SD	Mean ± SD	
Non-dipper patients, %	45 (69.2%)	38 (58.4%)	0.412
Day SBP, mmHg	131.3 ± 13.3	130.9 ± 14.9	0.882
Day DBP, mmHg	78.6 ± 8.1	77.3 ± 9.4	0.420
Night SBP, mmHg	122.6 ± 15.8	123.0 ± 19.2	0.903
Night DBP, mmHg	72.3 ± 9.5	70.5 ± 10.2	0.322
SBP, mmHg	129.7 ± 12.9	129.5 ± 14.9	0.955
DBP, mmHg	77.3 ± 8.0	76.0 ± 9.0	0.406
BP variability, %	6.3 ± 7.1	6.2 ± 9.1	0.980

Abbreviations: BP, blood pressure; DBP, diastolic blood pressure; SBP, systolic blood pressure.

Design and method: Sixty-five RA patient and 61 control patients are enrolled in this study. Patients with previous hypertension diagnosis, coronary artery disease, abnormal kidney function were excluded.

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