Artery 10

The tenth conference in a series of meetings to provide a forum for discussion on arterial structure and function

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FINAL PROGRAMME AND ABSTRACTS

Sunday 17th - Tuesday 19th October 2010

Palazzo della Gran Guardia - VERONA, ITALY
Conclusion: In hypertensive patients the brachial artery endothelial function significantly increased under the
influence of vasoactive antihypertensive drugs carvedilol, nebivolol and amlopidine. The greatest effect on brachial
artery flow mediated dilation was observed in carvedilol group.

P10.09 HETEROGENEOUS REACTIONS OF FOREARM
LARGE ARTERIES AND RESISTANCE VESSELS TO
VERAPAMIL TREATMENT

D Matsione, A Vitolis, V Dzerve, I Kukulis
Research Institute of Cardiology, University of Latvia,
Riga, Latvia

Objective: Calcium channel blockers possesses
vasodilating action but there is no evidence to our
knowledge about vasodilating effect on different arterial
vesels. The aim of this investigation was to ascertain the
reactions of large arteries and precapillary resistance
vesels during treatment with sustained-released
Verapamil (Flamon-240 SR, Mepha Ltd).

Design and methods: 30 essential hypertensives (WHO II)
aged between 40-65 yrs received 2 months' treatment with
Flamon-240 SR 1-2 tablets daily. Blood pressure was
determined auscultatory. Cardiac output (CO) and
systemic vascular resistance (SVR) were derived from
echocardiographic findings. Distensibility (D) of forearm
large arteries was calculated as a ratio between volume
pulse amplitude and pulse pressure. Forearm vascular
resistance (FVR) was calculated from data on mean
arterial pressure and forearm blood flow measured by
venous occlusion plethysmography.

Results: It was stated that Verapamil significantly
reduces systolic (-18,8±1,9 mmHg), diastolic (-8,7±1,2
mmHg), mean (-13,7±1,6 mmHg) and pulse (-12,5±1,5
mmHg) pressure. D of forearm large arteries in all
investigated patients increases by 53±4%, whereas FVR
did not change uniformly. In the case when hypotensive
effect was caused by a decrease in CO, FVR did not
change, but in the case when hypotensive effect was
ensured by a decrease in SVR, the inverse relationship
existed between changes in SVR and FVR (r = -0,6).

Conclusions: During effective treatment of essential
hypertensives with Verapamil contractile activity of
forearm large arteries always decreases, whereas
precapillary vesels obviously are involved in
counterregulation and this masks direct vasodilator effect
of Verapamil on arterial smooth muscles.

P10.10 EFFECT OF THE TREATMENT OF RHEUMATOID
ARTHRITIS WITH ANTI-TNF-α INFliximab ON ARTERIAL
WALL STIFFNESS PARAMETERS

A Cypliene¹,², A Laucevicius¹,², J Dadoniene², A Venalis², Z
Petrunioniene¹, L Rytiskyte¹, M Kovaita³

¹Centre of Cardiology and Angiology Vilnius University
Hospital Santariskiu Klinikos, Vilnius, Lithuania, ²State
Research Institute Centre for Innovative Medicine,
Vilnius, Lithuania

Background: Rheumatoid arthritis (RA) is a chronic
inflammatory, autoimmune disease, which may lead to
arterial dysfunction. Treatment with anti-TNF-α
infliximab can influence the outcome of inflammation, disease
activity, but can also greatly affect arterial wall function.

Aim of the study was to assess whether aortic
augmentation index (Alx) and regional carotid-radial
pulse wave velocity (PWV) were altered in RA patients
reated with infliximab.

Methods: We examined 75 RA patients (age 42.03±10.69
years) with high disease activity (DAS28 5.40±0.93), 16 of
them were treated with infliximab. Alx and PWV were
assessed non-invasively by applanation tonometry
(Sphygmocor v.7.01, AtCor Medical).

Results: By multiple regression analysis we have found that
carotid-radial PWV depends only on mean blood
pressure (MBP) and infliximab therapy. To test the
influence of infliximab on arterial wall parameters,
binary variable indicating the intake of infliximab was
added to the list of independent predictors. The same
forward analysis was applied after that. It has been
established that infliximab reduced the values of PWV as
compare with patients not treated with infliximab
(7.69±0.69 vs. 8.61±1.02; p=0.001). However, no similar
trend was observed for Alx (18.38±12.48 vs. 24.56±11.44;
p=0.094). The estimated regression coefficient have
implied that given fixed MBP, the mean PWV can be
reduced approximately to 0.886 m/s in patients treated
with infliximab.

Conclusions: The treatment with anti-TNF-α infliximab
can influence the conduit arteries. Carotid-radial PWV
may serve as a good marker to decide upon infliximab.

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P11.01 AMBULATORY ARTERIAL STIFFNESS INDEX
(AASI) IS CORRELATED TO EA/EMAX, NOT PULSE WAVE
VELOCITY IN PATIENTS WITH RESISTANT HYPERTENSION
(RH) AND TYPE-II-DIABETES MELLITUS

TK Sønder¹, BB Løgstrup², J Lambrechtsen³, LM Van
Bortel⁴, P Segers⁵, K Egstrup⁶

¹Department of Medical Research, University hospital of
Odense, Svendborg hospital, Svendborg, Denmark,
²Department of Cardiology, University hospital of Aarhus,
Skejby hospital, Skejby, Denmark, ³Department of
Cardiology, University hospital of Odense, Svendborg
hospital, Svendborg, Denmark, ⁴Heymans Institute of
Pharmacology, Ghent University, Ghent, Belgium,
⁵Institute for Biomedical Technology (IBITECH), Ghent
University, Ghent, Belgium
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Controlled hypertension</th>
<th>Resistant hypertension</th>
<th>P</th>
<th>Adjusted P</th>
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<tbody>
<tr>
<td>Sex (male/female)</td>
<td>15/9</td>
<td>27/7</td>
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<tr>
<td>Age (years)</td>
<td>62±10</td>
<td>64±9</td>
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<td>Body mass index (kg/m²)</td>
<td>34±7</td>
<td>35±5</td>
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<td>Length of disease (years)</td>
<td>10.4±6.3</td>
<td>14±7</td>
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<td>Pulse pressure (mmHg)</td>
<td>50±8</td>
<td>66±9</td>
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<tr>
<td>Mean arterial pressure (mmHg)</td>
<td>88±4</td>
<td>96±7</td>
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<td>Ambulatory arterial stiffness index</td>
<td>0.55±0.14</td>
<td>0.57±0.13</td>
<td>0.564</td>
<td>0.56</td>
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<td>Heart rate (bpm)</td>
<td>74±11</td>
<td>71±13</td>
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<td>Pulse wave velocity (m/s)</td>
<td>9.7±3</td>
<td>12.1±5</td>
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<td>Characteristic impedance</td>
<td>0.07±0.03</td>
<td>0.1±0.1</td>
<td>0.031</td>
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<td>EA (mmHg/ml)</td>
<td>1.63±0.5</td>
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<td>EMAX (mmHg/ml)</td>
<td>2.7±1</td>
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<td>EA/EMAX</td>
<td>0.7±0.3</td>
<td>1.1±0.5</td>
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<td>Ejection fraction (%)</td>
<td>55±10</td>
<td>45±11</td>
<td>&lt;0.0001</td>
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</table>

Objective: To examine if AASI is correlated to arterial stiffness in patients with RH and type-II-diabetes mellitus.

Methods: We included 87 patients. RH was defined according to guidelines from the American Heart Association.

Echocardiography was performed using GE Vivid 7 and pulse wave analysis using Sphygmocor. All examinations were performed under standardized conditions. All analyses were done blinded offline using Echopac and customized software.

Ambulatory blood pressure (BP) measurement was done using Kivex TM 2430 and Spacelab 90217. All parameters were adjusted for sex, age, length of disease and heart rate using multiple linear regression. Spearman’s rank correlation was used to estimate correlation between groups.

Results: 34 patients had RH and 24 had controlled hypertension (CH) leaving 29 with uncontrolled hypertension. See table 1 for patient characteristics. Patients were comparable with regards to age and body mass index. AASI did not differ significantly between groups. Pulse pressure, mean arterial pressure and length of disease varied significantly between groups. AASI and PWV was not correlated (Spearman’s rho = 0.08 , P = 0.57). Neither was AASI and characteristic impedance (Spearman’s rho = 0.1, P = 0.44) However when comparing AASI and Emax/Eemax we found positive correlation (Spearman’s rho 0.36, P =0.006) and when comparing AASI and ejection fraction (Spearman’s rho = -0.29, P = 0.02) negative correlation.

Conclusion: AASI is not correlated to PWV or characteristic impedance, which are measures of arterial stiffness, but to Emax/Eemax and ejection fraction, which might suggest that AASI does not reflect arterial stiffness, but ventriculo-vascular coupling.

P 11.02 BRAIN WHITE MATTER LESIONS AND ARTERIAL WALL PARAMETERS IN MIGRAINE PATIENTS

K. Ryliskiene1,2, D. Jatuzis1,2, J. Usinskiene2, M. Mataciunas2,3, L. Ryliskyte2,4, A. Laucevičius2,4

1 Vilnius University, Faculty of Medicine, Clinic of Neurology and Neurosurgery, Vilnius, Lithuania, 2 Vilnius University Hospital Santariskiu klinikos, Vilnius, Lithuania, 3 Vilnius University, Faculty of Medicine, Clinic of Thoraxal diseases, Alergology and Radiology, Vilnius, Lithuania, 4 Vilnius University, Faculty of Medicine, Clinic of Heart and Vascular Medicine, Vilnius, Lithuania

Background: Migraine is a benign neurological disease, however, some migraineurs develop asymptomatic lesions in the deep white matter (DWMLs) whose origins still need to be clarified.

Objective: To evaluate relationship between DWMLs and traditional cardiovascular risk factors, arterial wall parameters (carotid intima-media thickness, distensibility and stiffness (CS), augmentation index (Alx) and aortic pulse wave velocity) and right-to-left shunts (RLS) in migraine patients.

Methods: 114 active migraineurs (mean age 35.9±9.6 years, 22 (19.3%) males, 50 (43.9%) with aura) participated in the study. Magnetic resonance imaging was performed with a 1.5-T scanner. DWMLs load was assessed with Scheltens' visual rating scale. Arterial wall parameters were measured by echo-tracking and planation tonometry. RLS was assessed by contrast transcranial Doppler sonography with agitated saline. In order to explore the relationship between presence and load of DWMLs and possible risk factors logistic and linear regressions were applied.

Results: 29 (25.4%) migraineurs had DWMLs. They were significantly older (p<0.001), had more cardiovascular risk factors, thicker carotid intima-media (p=0.006), higher CS (p=0.004) and Alx (0.001) compared to migraineurs without DWMLs. The prevalence of large RLS was higher in patients with DWMLs, but not significant. The predictors of DWMLs were age (OR 1.11, p<0.001) and hypertension (OR 6.57, p=0.001). Higher DWMLs load was predicted by age, obesity, hypertension, and decreased HDL cholesterol. We established no relationship between presence and load of DWMLs and arterial wall parameters or RLS.

Conclusions: Age and traditional cardiovascular risk factors, but not arterial wall parameters, are predictors of DWMLs in patients with migraine.

P 11.03 PULSE PRESSURE PARTIALLY EXPLAINS THE INCREASED INCIDENT CARDIOVASCULAR DISEASE ASSOCIATED WITH INFLAMMATION IN TYPE 1 DIABETES: A 12-YR FOLLOW-UP STUDY

JWM Nin1, A Jorsal2, I Ferreira1, CG Schalkwijk1, MH Prins1, H-H Parving1,4, L Tarnow2, P Rossing2, CDA Stenhouver1

1 Maastricht University Medical Centre, Maastricht, Netherlands, 2 Steno Diabetes Center, Gentofte, Denmark, 3 Rigshospitalet, Copenhagen, Denmark, 4 Aarhus University, Aarhus, Denmark