P4.46: RELATIONSHIP BETWEEN ARTERIAL STIFFNESS, DIASTOLIC FUNCTION AND GLYCEMIC CONTROL IN HEALTHY SUBJECTS

O. Mac Ananey, P. Gaffney, G. Boran, V. Maher


To link to this article: https://doi.org/10.1016/j.artres.2012.09.193

Published online: 21 December 2019
Abstracts

320-row CT scanner, and compared them with 101 Caucasians matched for age, gender and coronary risk factors.

Results: CAC prevalence was similar in the two groups (56.4% SA, 47.5% CA; p = 0.25) but mean CAC score (CACS) (p = 0.0001) and mean number of affected segments (p = 0.0001) were significantly higher in S.Asians, in whom also 3 vessel disease (VSD) (25.7% SA, 9.2% CA; p = 0.0004) and obstructive CAD (stenosis >50% in any branch) were more common (19.8% SA, 7.6% CA; p = 0.001). In patients <50 years old (n = 37), no significant difference was found between the two groups in mean CAC score (p = 0.28), affected segments number (p = 0.12) or CAD severity (p = 0.684) and extent (p = 0.514). In individuals >50 years old, the CAC severity was higher in S.Asians. Table 1 was as the number of affected segments (p = 0.001).

Conclusions: Symptomatic S.Asians have more diffused coronary artery calcification, age plays an important role in this difference.

P4.43

ACUTE, INDUCED INFLAMMATION AFFECTS ARTERIAL LOAD

A. D. Lane 1, R. M. Kappus 1, K. Bunsawat 1, S. Phillips 1, R. Motl 2, J. A. Woods 1, T. Baynard 1, B. Fernhall 1

1University of Illinois at Chicago, Chicago, United States

Acute, systemic inflammation may contribute to a shift in ventricular-vascular coupling (VVC), quantified by the ratio of arterial load (Ea) to ventricular elastance (Evl). Fitness is associated with reduced systemic inflammation which may affect VVC. We determined the effect of acute systemic inflammation on VVC in young, healthy adults and evaluated the impact of this fitness on this outcome. We tested 21 adults (m = 15, mean age = 25 yr, mean body surface area = 2.05m²) before and at 24 and 48 hr post influenza vaccination (inflammatory stimulus). Ventricular volumes were measured by ultrasound from the 4-chamber apical view. Anaplotan tonometry was used to measure end-systolic pressure (ESP). Arterial load was calculated as ESP/ stroke volume (SV) and Evl was calculated as ESP/end-systolic volume (ESV). Treadmill VO2 max was used to quantify fitness. A repeated measures (1 x 3) ANOVA was used with VO2 max as a covariate, and Spearman’s correlation used to assess relationships between variables. Ea increased at 48 hr post-vaccination (from 1.19 to 1.13 to 1.32 mmHg/ml), p < 0.05, but Elv did not change at any time point (p > 0.05), resulting in an increase in VVC from 0.49 to 0.53 to 0.52, p < 0.05, at 24 and 48 hr post vaccination. At 48 hr post-vaccination, the change in Ea was (r = 0.45, p < 0.05) related to VO2 max. There were no significant changes in blood pressure. Thus, acute inflammation increased arterial load but not ventricular elastance, independent of changes in blood pressure. This increased VVC, and higher fitness was associated with greater inflammation induced changes in arterial load.

Figure 1 Ea (mmHg/ml) at baseline and at 24 and 48 hr post-inflamma-
tion. * indicates p < 0.05 from baseline value

P4.44

REGIONAL ARTERIAL STIFFNESS ASSESSED BY POPMÉTRE® IN PATIENTS WITH CAROTID PLAQUES

M. Hallab 1, C. Terrier-Barbeau 2, G. Berrut 1, M. Legrand 2, P. H. Ducluzeau 1, M. Collette 4, G. Letheriotis 2

1Department of gerontology, University hospital of Nantes, Nantes, France
2Laboratory of vascular Investigations, University Hospital of Angers, Angers, France
3Department of diabetology and nutrition, University Hospital of Angers, Angers, France

“Laboratory of Engineering and Automated Systems, University of Angers, Angers, France

Purpose: To date, regional arterial stiffness can be easily evaluated using pOpmetre® (Axelife SAS — France), a new device measuring the pulse wave transit time (TT) between the finger (TTf) and the toe (TTt). The aim was to evaluate the relationship between the pOpmetre® indices and the presence of carotid plaques.

Methods: In 66 consecutive patients with risk factors (40 men aged 54 ± 2 years; 26 women aged 49 ± 3 years), the difference between TTf and TTt (DT-f) and the pulse wave velocity (PWVf = Constant/Height x Patient / DT-f in m/s) were measured by pOpmetre®. Doppler ultrasound imaging assessed presence of carotid plaques. The local aortic stiffness (AoStiff) was evaluated by the Physioflow® system.

Results: No statistical difference was found between the group of patients with carotid plaques (n = 23) and the rest of the patients for Ankle-Brachial Index (ABI: 1.13 ± 0.02 vs 1.17 ± 0.01), systolic and diastolic blood pressure (83.8 ± 2.1 vs 86.2 ± 2.9; 131.2 ± 2.7 vs 137.3 ± 3.7). The first group was older than the second one (59 ± 2 yrs vs 49 ± 2 yrs, p < 0.002) with a larger intima media thickness (0.70 ± 0.02 vs 0.63 ± 0.01, p = 0.003), a higher AoStiff and PWVf (10 ± 1.0 vs 8 ± 1.0 m/s, p < 0.03; 10.97 ± 0.97 vs 8.84 ± 0.43 m/s, p < 0.02) and a shorter DT-f (57.9 ± 6.2 vs 70.4 ± 3.2 ms, p < 0.02). PWVf (r = 0.49, p < 0.0001) and DT-f (r = 0.54, p < 0.0001) were correlated with age.

Conclusion: Although we found no difference in ABI and arterial pressure, the data reveals an increase in local and peripheral arterial stiffness (pOpmetre®) for patients with carotid plaques.

P4.45

SUBTHERAPEUTIC, LOW-DOSE FLUVASTATIN IMPROVES FUNCTIONAL AND MORPHOLOGICAL ARTERIAL WALL PROPERTIES IN APPARENTLY HEALTHY, MIDDLE-AGED MALES

M. Lunder 1,2, M. Janic 1, M. Sabovic 1

1Department of Vascular Disease, University of Ljubljana Medical Centre, Zaloska 7, SI-1000 Ljubljana, Slovenia
2Institute of Pharmacology and Experimental Toxicology, Faculty of Medicine, University of Ljubljana, Korytova 2, SI-1000 Ljubljana, Slovenia

Objective: Early arterial wall changes are already present in the apparently healthy, middle-aged population and continuously progress with age. The aim of our study was to investigate whether 30 days low-dose fluvastatin treatment could improve and reverse these arterial changes that are primarily associated with ageing, in otherwise healthy middle-aged males.

Methods: In a double blind, randomized study, 50 middle-aged males received either placebo or fluvastatin (10mg for 30 days). Brachial artery flow-mediated dilation (FMD), pulse wave velocity (PWV) and β-stiffness of the common carotid artery were measured on the 1st, 14th and 30th day of the study using an Aloka instrument by integrated eTracking.

Results: In 77% of subjects, impaired endothelial function was revealed at inclusion in the study. All the parameters were improved already after 14 days, and at 30 days of treatment FMD improved by 91.5 ± 15.6%, while PWV and β-stiffness improved by 6.2 ± 1.1% and 10.7 ± 1.5%, respectively (all P < 0.001). After therapy discontinuation, the beneficial effects progressively decreased, but were still detectable after 5 months. During the study the lipid profile remained unchanged, thus the beneficial effects obtained were attributed to the pleiotropic effects of fluvastatin.

Conclusions: We found that subtherapeutic low-dose fluvastatin (10mg daily; 30 days) considerably improves and reverses early functional and morphological arterial wall impairments that are present in apparently healthy, middle-aged males. It might be supposed that such a new and original approach could be valuable in cardiovascular prevention.

P4.46

RELATIONSHIP BETWEEN ARTERIAL STIFFNESS, DIASTOLIC FUNCTION AND GLYCEMIC CONTROL IN HEALTHY SUBJECTS

O. Mac Ananey 1, P. Gaffney 2, G. Boran 2, V. Maher 1

1Dept Cardiology, Adelaide & Meath Hospital incorporating the National Children’s Hospital, Dublin, Ireland
2Dept Laboratory Medicine, Adelaide & Meath Hospital incorporating the National Children’s Hospital, Dublin, Ireland

Insulin resistance with its associated metabolic derangements is associated with cardiovascular disease. It is unknown if lesser degrees of this metabolic derangement are associated with early vascular functional or structural changes. Our aim is to examine the relationship between glycemc indices and early vascular dysfunction in healthy subjects.
Switching hypertensive Typ 2 diabetic patients with uncontrolled hypertension under Ramipril/HCT to Perindopril/Indapamide resulted mainly in superior systolic blood pressure control. This effect was persistent for central BP as well as for 24-h-ABPM.

P4.49
RELATION BETWEEN ARTERIAL STIFFNESS AND COMPONENTS OF AMBULATORY BLOOD PRESSURE IN CHILDREN WITH HYPERTENSION AND CHRONIC KIDNEY DISEASE

L. Milne, L. Watt, P. Chowienczyk, M. Sinha
King’s College London, British Heart Foundation Centre, London, United Kingdom

Arterial stiffening may be both the cause and consequence of an increase in blood pressure but the blood pressure components implicated in the inter-relationship may differ. The blood pressure component caused by stiffening is pulse pressure (PP). By contrast, passive stiffening resulting from distension of the arterial wall would be expected to relate most closely to mean arterial blood pressure (MAP) at the time of measurement and stiffening related to structural change to relate to longer term MAP and/or pulse pressure (PP). The objective of the present study was to examine the relation between arterial stiffness as measured by carotid-femoral pulse wave velocity (PWV) and components of blood pressure (MAP and PP) at the time of measurement of PWV (PWVBP and PP) and over a 24 hour period in children with hypertension and chronic kidney disease (CKD). Children (n=45, 12 female, 27 with CKD, 11 with hypertension, 7 controls) were aged 6-17 years with mean±SD blood pressure 113±17/62±15 mmHg. PWV was measured by ECG referenced carotid-femoral tonometry (Sphygmocor system, Atcor Medical, Australia). PWV was more closely correlated with MAP than with PP (R=0.38, P<0.01 and R=0.26, P=0.08 for 24h MAP and PP respectively) and more closely correlated with 24h MAP than with day-time, night-time or clinic MAP (R=0.26, 0.20 and 0.29 respectively). In children with CKD and hypertension, PWV is most closely associated with 24h MAP and likely to be secondary to increased MAP.

P4.50
EFFICACY OF THE COMBINATION OF β-BLOCKER BISOPROLOL AND IF INHIBITOR IVABRADINE IN PATIENTS WITH STABLE ANGINA AND CHRONIC OBSTRUCTIVE PULMONARY DISEASE

G. Makarova 1, I. A. Orlova 2, M. Vitseny 2, A. Kuzmina 2, F. Ageev 2
1Central polyklinik of FSB RF, Moscow, Russian Federation
2Russian Cardiology Research Center, Moscow, Russian Federation

The study was aimed to assess the efficacy and safety of treating coronary heart disease (CHD) patients complicated with Chronic Obstructive Pulmonary Disease (COPD) using the combination of tolerable doses of beta-blocker bisoprolol and inhibitor If-channel ivabradine, compared with

### Table 1: Change from Baseline of BP Measurements

<table>
<thead>
<tr>
<th>Measure</th>
<th>Baseline</th>
<th>Week 8</th>
<th>p</th>
<th>24h-SBP</th>
<th>24h-DPB</th>
<th>24h-cSBP</th>
<th>24h-cDBP</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSBP</td>
<td>144±12</td>
<td>84±8</td>
<td>0.0285</td>
<td>130±11</td>
<td>85±8</td>
<td>106±8</td>
<td>87±8</td>
</tr>
<tr>
<td>PDBP</td>
<td>138±15</td>
<td>83±7</td>
<td>0.0177</td>
<td>125±11</td>
<td>84±8</td>
<td>116±8</td>
<td>95±8</td>
</tr>
<tr>
<td>cSBP</td>
<td>0.231</td>
<td>0.013</td>
<td>0.0067</td>
<td>0.0152</td>
<td>0.025</td>
<td>0.077</td>
<td></td>
</tr>
<tr>
<td>cDBP</td>
<td>0.366</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

P= peripheral, S=systolic, D=diastolic, BP= blood pressure, c= central, 24-h= ambulatory 24-h mean