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

Endorsed by

European Society of Hypertension

European Society of Cardiology

Società Italiana dell'ipertensione Arteriosa
Lega Italiana contro l'Ipertensione Arteriosa

Organised in collaboration with the Working Group on Peripheral Circulation of the
recordings distance 21 cm (PWV-thoracic) and 51 cm (PWV-aorta) apart.

Results: see Table (mean (stdev)); P: paired t-test.

<table>
<thead>
<tr>
<th></th>
<th>CTRL</th>
<th>CBA</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAP (mmHg)</td>
<td>85.5 (9.0)</td>
<td>61.4 (6.7)</td>
<td>0.0007</td>
</tr>
<tr>
<td>Pb/Pf</td>
<td>0.44 (0.02)</td>
<td>0.36 (0.06)</td>
<td>0.005</td>
</tr>
<tr>
<td>DC (%/10 mmHg)</td>
<td>4.29 (1.08)</td>
<td>4.12 (0.91)</td>
<td>0.765</td>
</tr>
<tr>
<td>PWV-thoracic (m/s)</td>
<td>4.85 (0.40)</td>
<td>4.42 (0.52)</td>
<td>0.007</td>
</tr>
<tr>
<td>PWV-aorta (m/s)</td>
<td>6.78 (0.47)</td>
<td>5.75 (0.39)</td>
<td>0.0001</td>
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</table>

Discussion and Conclusion: CBA lowered Pb/Pf and PWV, the latter effect mainly confined to the abdominal (muscular) aorta, given (i) the more substantial decrease in aortic (-1 m/s) versus thoracic (-0.4 m/s) PWV, and (ii) the absence of any change in DC measured directly at the upper thoracic aorta despite the reduction. Based on these and previous findings, we conclude that CBA modulates arterial tone in muscular arteries including the muscular parts of the aorta.

P6.05 ARTERIAL STIFFNESS AND CARDIAC DAMAGE PROGRESSION ARE ASSOCIATED IN ESSENTIAL HYPERTENSION PATIENTS

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Background: Arterial stiffness and cardiac hypertrophy are independent cardiovascular risk factors. Aim of this study was to describe the relationship between these organ damages in a large cohort of essential hypertensive (EH) treated patients.

Methods: We performed standard trans-thoracic echocardiography to measure anatomical (left ventricular mass indexed by body surface area [LVMII] and relative wall thickness [RWT]) and functional (ejection fraction, diastolic function [E/A] and deceleration time) cardiac parameters on 827 treated EH patients. Carotid-femoral pulse wave velocity (PWV) was used to estimate arterial stiffness. Data were analyzed by linear regressions or ANOVA and post-hoc Bonferroni test.

Results: Patients were 53±14 years old (Mean ± SD) and 50% were male. Their mean blood pressure values were 142.3±18.6/86.7±10.6 mmHg; cardiac structural and functional parameters were in the normal range, PWV was 10.7 m/sec. Geometry of left ventricle, as defined by LVMII and RWT (ESC guidelines), was normal in 336 (43%) patients, while in 163 (21%) we found concentric remodelling, concentric hypertrophy in 173 (22%) and eccentric hypertrophy in 109 (14%) patients. PWV was significantly different between the 4 subgroups (p = 0.001), with concentric and eccentric hypertrophy patients having significantly higher PWV values (11.5±2.7 and 11.4±3 m/sec respectively) than patients with normal heart geometry (10.2±2.6 m/sec) (p ≤ 0.001 for both).

Conclusions: In EH patients arterial stiffness is associated with the degree of cardiac damage. This may reflect a common pathway leading to these alterations caused by hypertension in different but tightly related organs such as heart and arteries.

P6.06 SYSTEMIC ARTERIAL PROPERTIES DURING NORMAL PREGNANCY IN HEALTHY WOMEN

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Purpose: During normal pregnancy (NP), the cardiovascular system adapts to the metabolic needs of mother and foetus with increased cardiac output (CO) and reduced vascular resistance. In NP blood pressure is not increased despite an increase of CO due to vasodilation of the resistance vessels. It is unknown whether this is also modulated by changes in the properties of the large arteries.

Methods: (33±1 years) with NP were investigated at gestational weeks 14-16, 22-24, 36 and 6 months postpartum (PP). Aortic root pressure and flow were obtained by calibrated right subclavian artery pulse trace, and aortic annular Doppler flow recordings. Systemic arterial properties were described by total arterial compliance (C), arterial elastance (Ea), characteristic impedance (Zc), and peripheral arterial resistance (R). Wave reflection was assessed as the ratio of the magnitude of the backward (Pb) to forward (Pf) pressure wave. Parameters were estimated by Fourier analysis of central aortic pressure and flow data and methods based on the 2-element windkessel model.

Results: During NP, CO increased due to increased heart rate and stroke volume, whereas, blood pressures were lower as compared to 6 months PP. R was significantly reduced accompanied by a marginally lowered Ea and Zc, whereas C was unchanged. The forward and backward pressure wave-amplitudes were significantly reduced, and reflection magnitude trended lower in mid to late pregnancy.

Conclusions: During NP profound alterations of systemic hemodynamics occur, with increased cardiac output and reduced blood pressures, where the latter is related mainly to reduction in peripheral arterial resistance.