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INCREASED AORTIC STIFFNESS IS ACCOMPANIED BY LEFT VENTRICULAR DIASTOLIC DYSFUNCTION IN NEWLY DIAGNOSED HYPERTENSIVES WITHOUT LEFT VENTRICULAR HYPERTROPHY
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Since both augmented arterial stiffness and left ventricular (LV) diastolic dysfunction are associated with adverse cardiovascular prognosis, the aim of this study was to investigate the relationship between these two parameters in the early stages of essential hypertension.

Towards this end, we studied 53 newly diagnosed patients with stage I-II essential hypertension (aged 51.5 years, office blood pressure (BP) = 148/97 mmHg) and 29 age and sex-matched normotensive controls. LV diastolic function was assessed by measuring mitral annular velocities (peak early [Em], and peak late diastolic velocity [Am], Em/Am ratio) with pulsed Tissue Doppler Imaging (TDI). Measurements were performed on four separate sites (basal septal, lateral, anterior and inferior LV wall) and the average values were used. Aortic stiffness was evaluated by means of a computerized method (Complior SP), on the basis of pulse wave velocity (PWV) measurements.

Hypertensives compared to normotensives did not differ significantly regarding their metabolic status, while they had greater LV mass index (110 ± 24 g/m² vs 95 ± 20 g/m², p< 0.01) and greater RWT (0.46 ± 0.08 vs 0.4 ± 0.04, p<0.001). Furthermore, hypertensives compared to normotensives exhibited greater PWV values (8.47 ± 1.5 vs 7.48 ± 1.2 cm/sec, p<0.003) and lower Em and Em/Am ratio values (8.4 ± 1.4 vs 10 ± 1.6 cm/sec and 0.82 ± 0.09 vs 1.15 ± 0.16 respectively, p<0.001 for both cases). In the total population, aortic PWV was positively correlated with age (r=0.353, p<0.001), office systolic BP (r=0.358, p<0.001), office diastolic BP (r=0.28, p<0.05) and RWT (r=0.424, p<0.001), while it was negatively associated with Em (r=-0.305, p<0.005) and Em/Am ratio (r=-0.437, p<0.001).

In conclusion, despite the absence of LV hypertrophy, increased aortic stiffness is associated with LV diastolic dysfunction in the early stages of essential hypertension, suggesting that there may be a common pathophysiologic pathway linking these two entities.

Key Words: Aortic Stiffness, Diastolic Dysfunction, Hypertension

P-407
LEFT VENTRICULAR STRUCTURE AND FUNCTION AND DEVELOPMENT OF PREGNANCY-RELATED HYPERTENSIVE DISORDERS IN PREGNANT WOMEN WITH ALTERED UTERO-PLACENTAL FLOW
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Pregnancy related hypertensive disorders are an important cause of maternal and foetal mortality and morbidity. The real therapeutic option is their precocious identification and optimal delivery timing, this last representing the only efficacious treatment for preeclampsia in particular. Altered utero-placental flow identifies women at higher risk of hypertensive complications. It has been observed that pregnant women who develop hypertensive disorders, and preeclampsia in particular, can present precocious hemodynamic modifications, long before clinical aspects become evident.

Aim of the present study was to evaluate if some echocardiographic aspects can precociously identify higher risk pregnant women.

Thirty-one consecutive pregnant women with altered utero-placental flow at 21-24th week of gestation underwent complete colour-Doppler-echocardiography, and left ventricular (LV) structure and function were evaluated, with assessment of LV mass, relative wall thickness (RWT) and E/A rate. Clinical follow-up of pregnancy was therefore assessed to distinguish pregnant women in those with and without hypertensive complications. Among hypertensive complications we considered pre-eclampsia, chronic or gestational hypertension, and intratuenterine growth retard.

The results are presented in the table: no significant differences between two groups as regard as evaluated parameters were observed.

In conclusion, none of the examined echocardiographic parameters seems to identify pregnant women at higher risk of developing hypertensive disorders, suggesting that structural and functional LV modifications observed in other clinical settings, for instance, preeclampsia, need hemodynamic overload typical of those conditions to become evident.

Echocardiographic parameters in not complicated (NC) and complicated (C) pregnant patients

<table>
<thead>
<tr>
<th></th>
<th>LVDD (mm)</th>
<th>LVSDF (mm)</th>
<th>EF (%)</th>
<th>CO (l/min)</th>
<th>MI (g/m²)</th>
<th>RWT</th>
<th>E/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>NC (15 pts, age 31.4 years)</td>
<td>43.6</td>
<td>27.8</td>
<td>70</td>
<td>7.1</td>
<td>39.2</td>
<td>0.39</td>
<td>1.53</td>
</tr>
<tr>
<td>C (17 pts, age 32.9 years)</td>
<td>45.9</td>
<td>28</td>
<td>69</td>
<td>6.9</td>
<td>39.5</td>
<td>0.40</td>
<td>1.35</td>
</tr>
</tbody>
</table>

Key Words: Echocardiography, Left Ventricular Structure and Function, Pregnancy-Related Hypertension

P-408
EPLERENONE REVERSES SYSTOLIC DYSFUNCTION INDUCED BY PRESSURE OVERLOAD IN ATRIAL Natriuretic Peptide NULL MICE
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Background: We have shown that atrial natriuretic peptide (ANP) null mice exhibit exaggerated left ventricular (LV) dysfunction, heart failure and reduced survival compared to wild type Nppa+/+ mice in response to transverse aortic constriction (TAC)-induced pressure overload stress. Further, we recently demonstrated that the selective mineralocorticoid receptor blocker eplerenone, administrated orally since weaning (3 wks of age), prevents LV dilation and cardiac failure induced by pressure overload in ANP deficient states, mainly due to an anti-fibrotic effect. This study tested the hypothesis that eplerenone treatment can reverse the exaggerated LV dilation and dysfunction after TAC in ANP null mice.

Methods: Male Nppa-/- and Nppa+/+ mice, 20 gms average weight, were subjected to TAC at 8-9 wks of age. A baseline echocardiogram was done 1 wk after TAC to evaluate LV size and function and subsequently they were fed eplerenone supplemented chow (~200 mg/kg/d) for 3 wks. Vehicle-treated mice were controls. Echocardiograms were repeated at 1 and 3 wks after TAC. Blood was collected for aldosterone measurement at sacrifice.

Results: Eplerenone completely reversed the TAC-induced LV dilation and systolic dysfunction observed in Nppa-/- mice, while they did differ in the Nppa+/+ groups. Serum aldosterone levels were significantly higher in the eplerenone treated mice compared to the vehicle groups, and lower in the Nppa-/- than Nppa+/+ mice.

Conclusions: Eplerenone completely reverses adverse cardiac dilation and systolic dysfunction related to systolic overload in ANP deficient states. We speculate that these observations may be relevant to the human
P-409
WEIGHT LOSS AND MILD PHYSICAL ACTIVITY IMPROVE SMALL AND LARGE ARTERIAL ELASTICITY AND LOWER BLOOD PRESSURE IN OBESE PATIENTS
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Background: Decreased arterial elasticity is an early marker of vascular damage, it estimates its severity and is of predictive value for cardiovascular events.

Obesity is a major component of the metabolic syndrome and weight loss has been shown to lower cardiovascular event rate. The mechanisms for this effect are complex and multifactorial.

The purpose of our study was to evaluate arterial elasticity and hemodynamic parameters during weight loss in obese patients.

Methods: 66 obese patients participated in the study which included a course of 12 weeks, guided by a physician. The patients received explanation about healthy diet and The study group included 48 females (73%) and 18 males (27%). The average age was 54 y (range 31-69 years). The participants were obese and had cardiovascular risk factors with no evidence of end organ damage (previous MI or stroke were exclusion criteria). The levels of BMI, small and large arterial elasticity and blood pressure (BP) were measured at baseline and after 3 months.

Results: With increased clinical or ambulatory pulse pressure plasma NO significantly decreased and ET and ENO increased, there were significant correlations between them (between NO and 24hAPP, dPP, nPP and cPP: r=-0.269, p<0.001;r=-0.259, p<0.001;r=-0.167, p<0.01;r=-0.141, p<0.05;r=0.314, p<0.001;between ET and 24hAPP, dPP, nPP and cPP: r=0.299, p<0.001;r=0.234, p<0.001;r=0.171, p<0.01;and r=0.377, p<0.001;r=0.366, p<0.001;between ENO and 24hAPP, dPP, nPP and cPP: r=-0.284, p<0.001;r=0.208, p<0.001).

There were no correlation between DBP or ABP with NO or ET. SBP and PP were significantly higher in LVH group than in non-LVH group (p all less than 0.05). There were no significant difference in DBP between two groups. Multiple step analysis was showed that SBP was the only independent factor which influenced LVH. PP was the only independent factor which influenced endothelium function [clinical blood pressure data: ET=0.497xAPP+44.613 (P<0.01; R²=0.292),NO=-0.398xPP+100.454; 24h blood pressure data:ET=1.269x24hPP+12.536 (P<0.001, R²=0.208), NO=-0.15x24hPP+130.266 (P<0.001, R²=0.072)].

Conclusion: Vascular endothelium dysfunction was associated with increased PP. AP may be a better way than CPP in evaluating endothelium function. SBP was one of the most important factors in influencing LVH, PP was one of the most important factors in influencing endothelium function. Neither DBP nor MAP could influence vascular endothelium function and LVH.

Key Words: Blood Pressure, Endothelium, Hypertrophy

P-410
EFFECTS OF PULSE, SYSTOLIC, DIASTOLIC AND AVERAGE BLOOD PRESSURE ON ENDOTHELIUM FUNCTION DAMAGE, LEFT VENTRICULAR HYPERTROPHY IN PATIENTS WITH ESSENTIAL HYPERTENSION
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Objective: To investigate the relationship between pulse pressure (PP), systolic blood pressure(SBP), diastolic blood pressure (DBP), mean blood pressure (MBP) and endothelium dysfunction, left ventricular hypertrophy in patients with essential hypertension.

Methods: Clinical blood pressure, 24h ambulatory blood pressure monitoring, two-dimensional echocardiography, plasma endothelins (ET) and nitric oxide (NO) were examined in 555 initially untreated patients (275 men and 280 women, aged 47.1±12.7 years). The patients were divided into four groups according to clinical pulse pressure (CPP) or ambulatory pulse pressure (APP) respectively: They were also divided into age matched 2 groups according to their left ventricular mass index (LVMI), left ventricular hypertrophy (LVH) group.

Results: With increased clinical or ambulatory pulse pressure plasma NO significantly decreased and ET and ENO increased, there were significant correlations between them (between NO and 24hAPP, dPP, nPP and cPP: r=-0.269, p<0.001;r=-0.259, p<0.001;r=-0.167, p<0.01;r=-0.141, p<0.05;r=0.314, p<0.001;between ET and 24hAPP, dPP, nPP and cPP: r=0.299, p<0.001;r=0.234, p<0.001;r=0.171, p<0.01;and r=0.377, p<0.001;r=0.366, p<0.001;between ENO and 24hAPP, dPP, nPP and cPP: r=-0.284, p<0.001;r=0.208, p<0.001).

There were no correlation between DBP or ABP with NO or ET. SBP and PP were significantly higher in LVH group than in non-LVH group (p all less than 0.05). There were no significant difference in DBP between two groups. Multiple step analysis was showed that SBP was the only independent factor which influenced LVH. PP was the only independent factor which influenced endothelium function [clinical blood pressure data: ET=0.497xAPP+44.613 (P<0.01; R²=0.292),NO=-0.398xPP+100.454; 24h blood pressure data:ET=1.269x24hPP+12.536 (P<0.001, R²=0.208), NO=-0.15x24hPP+130.266 (P<0.001, R²=0.072)].

Conclusion: Vascular endothelium dysfunction was associated with increased PP. AP may be a better way than CPP in evaluating endothelium function. SBP was one of the most important factors in influencing LVH, PP was one of the most important factors in influencing endothelium function. Neither DBP nor MAP could influence vascular endothelium function and LVH.

Key Words: Blood Pressure, Endothelium, Hypertrophy

P-411
AMBULATORY BLOOD PRESSURE, PROCOAGULANT AMINO-Terminal POLYPEPTIDE (P-III-P) AND HEMORREOLOGY PARAMETERS
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The aim of this work is to study the relationships between blood pressure profile, cardiac manifestations of high blood pressure and P-III-P as an index of fibrosis.

We studied hypertensives without other diseases using echocardiography (M and B mode, and Doppler), ABPM using a Spacelabs 9000, and plasma levels of P-III-P. The model ANOVA, one way, was used for the statistical analysis. The level of significance was accepted for p<0.01 (two-tailed probabilities).