to report the clinical and echocardiographic features in a population with documented SCD recruited from the Rio de Janeiro SCD center, which follows a cohort of more than 1200 patients. Over a 2 years period we studied 112 patients (mean age, 34 years; 64 females; 48 males; 30%). They were examined according to their clinical findings and were studied by chest x-ray, electrocardiography and two-dimensional and Doppler echocardiography. The most frequently clinical abnormalities were palpitations (70%), acute and atypical chest pain (65%), dyspnea (28%), atrial fibrillation (28%), systolic murmurs (14%), and others. The most common echocardiographic features were found in the left heart, as manifested primarily by a left ventricular mass, with preservation of systolic function (15%), localized left ventricular dilatation (60%) and associated with left ventricular dilatation (20%) and systolic left ventricular dysfunction (4%). Recent studies report that pulmonary hypertension (PH) is thought to occur in 30% of clinical patients with SCD and 40% mortality at 22 months after detection of elevated pulmonary artery pressures in SCD patients. We considered this finding the most important one in our group because mortality rates of patients with PH are significantly increased as compared to patients without PH and we detected up to 75% of PH in our group of patients with maximal systolic pulmonary arterial pressure range from 30 to 90 mmHg. We concluded that echocardiography could be the most important and relevant feature to determine the prevalence and prognosis of secondary pulmonary hypertension in patients with SCD.

Key Words: ECHOCARDIOGRAPHY, Pulmonary Hypertension, Sickle Cell Disease

P-415
THEORETICAL CONSIDERATION FOR THE ASSESSMENT OF THE LEFT VENTRICULAR SYSTOLIC FUNCTION ON THE BASES OF THE END-SYSTOLIC STRESS-VOLUME RELATION
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The most objective index for the assessment of systolic function can be derived from the left ventricular end-systolic pressure-volume relation (ESPVR). But the main issue is to construct this function by means of non-invasive method and in the steady-state condition. The parameters which can be used for the construction of the contractility’s curve are: the non-invasive method and in the steady-state condition. The parameters derived from the left ventricular end-systolic pressure-volume relation (ESPVR). The equation allows to find two necessary points - C and H, to construct the linear function of the contractility.

Key Words: End-Systolic Elastance, Stress-Volume Relation, Systolic Function

P-416
THE RELATIONSHIP BETWEEN VENTRICULAR-VASCULAR COUPLING AND GLOBAL LEFT VENTRICULAR PERFORMANCE IN HYPERTENSIVE PATIENTS
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Ventricular-vascular coupling index (VVC; representing ratio between effective afterload to contractility) is related to mechano-energetic properties of the heart. As arterial hypertension (AH) changes these properties by increasing aortic stiffness and causing left ventricular hypertrophy (LVH) we designed our study to determine the influence of various stages of AH on this index and to correlate it with another parameter of left ventricular function - global performance index (GPI).

78 patients (41 males; 60±11 years; no significant age difference between groups) were classified into 3 groups: 1. 29 patients with AH (blood pressure >140/90; normal left ventricular mass index -LVMi- and normal diastolic function -DF; group A); 2. 23 patients with AH and LVH (BP >140/90; LVMi >100 g/m² for women and >130 g/m² for men; with normal DF; group B); 3. 26 patients with AH, LVH and abnormal DF (BP >140/90; LVMi >100 g/m² for women and >130 g/m² for men; abnormal DF defined as isovolumic relaxation time >105 ms and color M mode propagation flow velocity <45 ms; group C). VVC was determined by echocardiography as ratio of end-systolic volume index and stroke volume index and GPI was defined as the sum of isovolumic contraction time and isovolumic relaxation time divided by ejection time.

VVC significantly increased in hypertensive patients with left ventricular morphological and functional changes while GPI was only moderately changed (Table 1). In patients with LVH, even before occurrence of diastolic dysfunction, VVC could point to disrupted complex interplay between aorta and left ventricle.
In conclusion, VVCI showed earlier and more profound changes than GPI and represents more sensitive measure of left ventricular dysfunction in the course of hypertensive heart disease. No significant correlation between two parameters indicates that they measure different aspects of left ventricular function.

<table>
<thead>
<tr>
<th>Group</th>
<th>VVCI</th>
<th>GPI</th>
<th>corrrelVVCI-GPI</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0.44 ± 0.16</td>
<td>0.31 ± 0.08</td>
<td>r = 0.15 p = NS</td>
</tr>
<tr>
<td>B</td>
<td>0.57 ± 0.13*</td>
<td>0.36 ± 0.08</td>
<td>r = 0.11 p = NS</td>
</tr>
<tr>
<td>C</td>
<td>0.77 ± 0.16*+</td>
<td>0.39 ± 0.09*</td>
<td>r = 0.12 p = NS</td>
</tr>
</tbody>
</table>

* p < 0.05 B,C vs. A; † p < 0.05 C vs. B

Key Words: Global Performance index, Hypertensive Heart Disease, Ventricular-Vascular Coupling

P-417
CHRONIC COFFEE CONSUMPTION HAS AN UNFAVORABLE EFFECT ON AORTIC STIFFNESS AND WAVE REFLECTIONS
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The effect of coffee consumption on the cardiovascular system is still an unresolved issue. Aortic stiffness and wave reflections are involved in the pathogenesis of hypertension and are important prognosticators of cardiovascular risk by determining performance of the cardiovascular system and arterial integrity. We have previously shown that caffeine increases acutely aortic stiffness and wave reflections. The purpose of the present study was to investigate the effect of chronic coffee consumption on aortic stiffness and wave reflections.

A total of 228 randomly selected clinically healthy subjects consisted the study population. Of those, 141 were males (41±8 years old) and 87 females (41±9 years old). Aortic stiffness was evaluated with carotid-femoral pulse wave velocity (PWV) and wave reflections with augmentation index (AIx) and augmented pressure (AP) of the aortic pressure waveform using high-fidelity pulse wave analysis.

Compared to non-coffee drinkers, participants who reported high consumption of coffee had on average 13% higher PWV levels (6.63±1.16 vs 5.85±1.20 m/sec, P<0.01), 2-fold higher AIx levels (22.3±9.6 vs 10.9±11.8% P<0.01) and 2.4-fold higher AP levels (8.0±4.50 vs 3.4±4.1 mmHg P<0.001). The findings were significant even after controlling for various confounders such as age, sex, smoking habits, height, body mass index, mean pressure and heart rate indicating an increase in aortic stiffness and wave reflections with increasing coffee intake. Furthermore, subjects with high consumption of coffee had increased central and peripheral pressures, however these effects were largely explained when the covariates were entered in the model.

The present study shows, for the first time, that chronic caffeine consumption exerts an unfavorable effect on aortic stiffness and wave reflections. This finding may indicate an increased risk of high coffee consumption on the cardiovascular system.

Key Words: Coffee, Pulse Wave Velocity, Wave Reflections

P-418
DIETARY SODIUM INTAKE MODULATES MYOCARDIAL RELAXATION VELOCITY IN HEALTHY INDIVIDUALS
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Introduction: Dietary sodium intake affects the function of several target organs involved with volume homeostasis. We hypothesized that dietary sodium similarly affects the heart as a target organ, specifically myocardial relaxation.

Methods: Thirty healthy volunteers (age 38.6 ±4y) entered a two-week crossover design study (week 1, high sodium diet [HS] >200mmol Na/day; week 2, low sodium diet [LS], <10mmol Na/day). At the end of each study week, tissue Doppler imaging of mitral annular velocities (mean early diastolic myocardial relaxation velocity), renal blood flow and aldosterone secretion were measured at baseline and after infusion of angiotensin II (Ang II) (3ng/kg/min x 45 min).

Results: On HS diet myocardial relaxation velocity (E’) was greater than on LS diet (14.0±1.2 vs.12.6±1.0 cm/s, P = 0.02), despite an increase in systolic blood pressure of 7 mm Hg. In response to Ang II infusion, E’ was significantly reduced on the HS diet when compared to the LS diet (HSΔ -1.4±0.4 vs. LSΔ -0.1±0.3 cm/s, P = 0.02). E’ significantly correlated with endogenous Ang II only on the HS diet. There were no significant changes in estimates of left ventricular filling pressures (E/E’) with either maneuver. Response characteristics paralleled those measured simultaneously in renal blood flow and adrenal secretion of aldosterone.

Conclusions: Dietary sodium intake modulates myocardial relaxation velocity and its responsiveness to Ang II. The relationship between Ang II and myocardial relaxation is dependent on dietary sodium intake and is identical to relationships in other sodium-sensitive target organs. Abnormalities in these mechanisms may play a role in clinical abnormalities of diastolic dysfunction.

Figure:

Key Words: Angiotensin II, Diastolic Function, Dietary Sodium

P-419
STRESS TEST CHARACTERISTICS IN NORMOTENSIVES WITH HYPERTENSIVE RESPONSE TO EXERCISE
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Exaggerated BP response to exercise is believed to predict future hypertension and probably cardiovascular and all-cause mortality. We studied specific stress-test parameters related to autonomic nervous activity in the heart.

Figure:

Key Words: Coffee, Pulse Wave Velocity, Wave Reflections