including age, gender, body mass index, diabetes, hypertension, angina, previous myocardial infarction, previous CABG, previous PTCA, and venous disease. Correlation by univariate and multivariate analysis was determined for each of these characteristics with PWV. Results: Artificial stiffer from PWV measurements correlated strongly and independently with age and hypertension (p=0.0001 and p=0.0250, respectively). Coronary artery disease as defined by angiography as present or absent, as obstructive or non-obstructive, and as three vessel or none three vessel disease, did not show a statistically significant and independent correlation with PWV (p=0.0204 and p=0.0610, respectively). Conclusion: Artificial stiffer from PWV measurements correlates with age, hypertension, diabetes, and hematocrit levels, but does not independently predict the presence or severity of coronary artery disease.

1105-119 A Comparison of Noninvasive ad Invasive Aortic Pulse Wave Velocity


Background: Aortic stiffness, an independent risk factor for cardiovascular disease, can be assessed noninvasively by measuring aortic pulse wave velocity (PWV). The technique is easy and reproducible, and this is reflected in its widespread use in clinical studies. Noninvasive data are lacking on its comparison with invasively derived PWV.

Objectives: To compare noninvasive aortic PWV (Nix-PWV) with invasive aortic PWV (tx-PWV).

Methods: 15 patients undergoing elective coronary angioplasty underwent Nix-PWV assessment that morning with the Sphygmacor Pulse Wave Analysis System™. All aortic measurements were repeated 3 times. Noninvasive transit time (NIX-T) was obtained using electrocardiogram (ECG) gated pressure traces recorded from sequential carotid-femoral artery tonometry. Prior to intervention, an angioplasty guide wire with a pressure sensor (PA01 PressureWire™) was positioned in the aortic root and then in the femoral artery, to obtain ECG gated pressure tracings for calculation of the invasive transit times (tx-T). The aortic root-femoral pullback distance (tx-D) was marked on the wire. The transit and invasive measurements were repeated 3 times. Noninvasive blood pressure was calculated at the time of all measurements. PWV was calculated as: D/tx-T.

Results: Nix-PWV correlated with tx-PWV after correcting for mean arterial pressure (R: 0.73, p=0.01). However, there was a mean difference between the values of 1.3 ms (14% of absolute mean) with a considerable variation in this difference, the standard deviation (SD) of the difference being 1.8 ms (20%), there was also a difference between NIX-T and tx-T, the mean difference being 70 mm (12% of absolute mean) and the SD of the difference, 39 mm (7%).

Conclusion: Noninvasive PWV can be used as an index of aortic stiffness. However, it varies considerably with invasive PWV. This may partly be due to errors in estimating noninvasive transit distance. Thus, refining the technique may further increase the power of this tool to predict adverse cardiovascular outcomes.

1105-152 Brachial Artery Compliance in Hypertension: Effect of Losartan and Atenolol After One-Year of Treatment—A LIFE Substudy

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Introduction: Central arterial compliance is an independent risk factor for mortality whereas matters concerning peripheral arterial compliance and effect of different treatments are unsettled.

Methods: Fifty-six patients (24 females) from the LIFE study aged 69 years (55-80) with essential hypertension, diabetes, or a combination of these (N=27), were treated with either losartan or atenolol in equipotent dosages. Results: Central arterial compliance decreased after 1 year (p<0.05) but was still elevated compared to matched controls (p=0.002). Compliance at MAP was unchanged (ns). No difference was seen according to treatment after normalizing after 1 year of treatment, apparently irrespective of treatment with losartan or atenolol.

1105-154 Sildenafil Improves Left Ventricular Systolic Function in Patients With Congestive Heart Failure: The Role of Wave Reflections

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Background: Sildenafil (S) is an effective drug for erectile dysfunction affecting the nitric oxide mediated vascular pathway. Wave reflections, increasing left ventricular afterload and cardiac afterload have been inversely associated with exercise capacity.

Methods: To investigate the effect of S on cardiac function and wave reflection in congestive heart failure (CHF) we studied 20 pts (age 48-88 yrs) in NYHA class III or IV (EF<35%), in a randomized, double-blind, placebo-controlled, cross-over design (50 mg S and Placebo). Wave reflection was studied by measuring augmentation index (AIx) using a validated system (Sphygmacor®) that employs high-fidelity arterial tonometry and pulse wave analysis. Cardiac output was measured by echocardiography.

Results: S was well tolerated with no side effects in any patient. S led to an increase in cardiac index by 0.38 l/min/m² (p=0.0001, graph). This was associated with, and attributable to, a decrease in left ventricular load (aortic and left ventricular systolic pressure fell by 1.9 mmHg, p=0.0001). AIx was decreased by 3.3% (p=0.0001, graph) indicating reduced wave reflection from peripheral sites. Total systemic resistance fell by 47.3 dynes/cm²·s (p=0.0001; graph).

Conclusions: S leads to an improvement in cardiac function in CHF patients which is associated with a favorable effect on central and peripheral arterial properties. This has important implications for the therapeutic profile of the drug in patients with compromised cardiac performance.