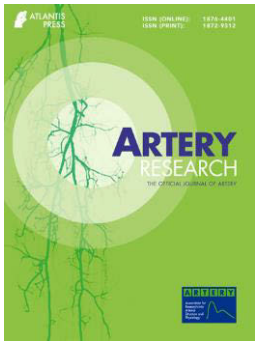

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P.083: COMPARISON OF LOCAL CAROTID AND AORTIC STIFFNESS PARAMETERS IN MILD ESSENTIAL HYPERTENSIVE PATIENTS

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the corresponding risk. Moreover, we sought to explore possible underlying mechanisms, notably inflammation, platelet activation, endothelial function and oxidative stress.
Methods: 18 healthy volunteers (age 28 ± 5 years) watched a 30 minutes long segment of a comic film. Measurements were made before, 0, 15 and 30 minutes after the movie. Carotid-femoral pulse wave velocity (cfPWV) was measured as an index of aortic stiffness. Wave reflections were studied using arterial tonometry; augmentation index (AIx) was measured as index of wave reflections. Blood samples were drawn before and 15 minutes after the movie. P selectin levels, soluble vascular cell adhesion molecule 1 (s VCAM-1), total antioxidant status (TAS) were measured by enzyme-linked immunosorbent assay.
Results: Laughter induced by the comedy led to a significant decrease in cfPWV by 0.30 m/sec and AIx by 3.83% (both at 15 minutes, $p< 0.05$). P selectin levels decreased by 18 ng/mL, sVCAM-1 decreased by 47.56 ng/mL, (all $p<0.05$). TAS did not change significantly, $p=0.47$.
Conclusions: This study shows that laughter has a beneficial effect on arterial elastic properties and wave reflections. Attenuation of endothelial injury, platelet activation and inflammatory response, as indicated by decreased levels of P selectin and sVCAM-1, is a possible underlying pathway, while oxidative status is not altered.

P.083
COMPARISON OF LOCAL CAROTID AND AORTIC STIFFNESS PARAMETERS IN MILD ESSENTIAL HYPERTENSIVE PATIENTS

C. Giannarelli [1], E. Bianchini [2], K. Raimo [1], L. Landini [1], F. Faita [2], V. Gemignani [2], M. Demi [2], L. Ghiadoni [1]. [1]*Department of Internal Medicine, University of Pisa, Pisa, Italy,* [2]*Institute of Clinical Physiology, National Research Council, Pisa, Pisa, Italy*

Arterial stiffness (AS) can be evaluated by local pulse pressure (PP) and arterial diameter changes. We aimed to compare local AS, by an automatic edge detection system, with pulse wave velocity (PWV), the ''gold standard'' for AS.

In 27 patients (males 16, age 40 ± 7 years) with mild hypertension (HT) and 15 age and gender matched controls (NT), we measured carotid pulse pressure PP and central PWV by applanation tonometry (SphygmoCor®). Diameter changes were measured by a contour tracking algorithm applied to B-mode longitudinal scans of common carotid artery. The algorithm is implemented on a stand-alone video processing system which acquires and analyzes video signal showing results in real-time. Distension (D) was calculated as systolic minus diastolic diameter. Stroke change in lumen area (δA) and lumen area (A) were evaluated from diameter and D values. The cross-sectional distensibility coefficient ($DC=\delta A/(A*PP)$) was converted (Bramwell-Hill equation) into a parameter ($CS=(DC*\rho)^{-1/2}$, $\rho=$ blood density) with same measurement units of PWV.

HT showed a significantly ($p<0.0001$) higher PWV (8.48 ±1.45 m/s) than NT (5.44 ± 0.45 m/s). PP was similar in HT (60 ± 14 mmHg) and NT (58 ± 11). Carotid diameter was higher in HT (7.67 ± 0.67 mm) than NT (6.76 ± 0.40 mm). Carotid stiffness was higher in HT (CS = 7,35 ± 0.93 m/s) than in NT (CS = 5,76 ± 0.74 m/s; $p<0.0001$). PWV correlated with CS ($r = 0.66$; $p<0.0001$).

In conclusion, CS discriminates between HT and NT and is related with PWV. Automatic detection of carotid stiffness from ultrasound provide similar and-or complementary information to central PWV.

P.084
VISCERAL ADIPOSITY AS THE MAIN DETERMINANT OF CAROTID STIFFNESS IN A HEALTHY POPULATION WITH A WIDE BMI AND AGE RANGE: EVIDENCE FROM AN ECHO-TRACKING APPROACH

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Introduction: Aging and blood pressure have been reported to be the main determinants of systemic arterial stiffening but few data exist on factors influencing local arterial stiffness.
Aim: Evaluation of metabolic, hemodynamic and anthropometric determinants of carotid artery stiffness.
Materials: 145 normotensive, non-diabetic, non-dyslipidemic subjects were studied; according to WHO criteria the population included 44 normal 30 overweight and 71 obese subjects [NL, OW, and OB (mean age 40 ± 11.4, 44.4 ± 10, and 39.2 ± 12 yrs, mean BMI 22.6 ± 1.9, BMI 28.2 ± 1.6, and 39.5 ± 6.2 kg/m^2, respectively)]. 106 subjects underwent oral glucose tolerance test; blood samples for glucose, insulin, c-peptide, total HDL- and LDL-cholesterol, and triglyceride levels collected. Carotid artery stiffness was evaluated by a cardiovascular ultrasound system (Aloka SSD-5500) implemented with an echo-tracking subsystem allowing real time evaluation of arterial diameter, and providing calibrated diameter-derived pressure curves. Indices of local arterial stiffness such as pressure-strain elastic modulus (EP), b stiffness index, and pulse wave velocity (PWV), and the augmentation index (AIx) were obtained.
Results: carotid PWV correlated ($p<0.05$) directly with: age ($r=0,407$); SBP, DBP and MBP ($r=0,343$, 0,285 and 0,330, respectively); mean carotid IMT ($r=0,219$), waist-hip ratio (WHR, $r=0,511$); AUC for C-peptide (60 subjects) ($r=0,359$), Framingham risk score ($r=0,319$) and inversely with HDL cholesterol ($r=-0,231$). In stepwise regression analysis WHR remained as main independent determinant of local carotid PWV ($r^2=0,396$, $p<0.001$).
Conclusions: Visceral adiposity is the main determinant of arterial stiffness in a healthy population with wide BMI and age range.

P.085
METABOLIC SYNDROME AND VASCULAR ALTERATIONS IN NORMOTENSIVE PATIENTS AT RISK OF DIABETES MELLITUS

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The aim of the study was to evaluate the possible early vascular abnormalities associated with the presence (MS+) or absence (MS-) of the metabolic syndrome (MS), according to ATP III criteria, in normotensive patients at risk of developing diabetes.

In 77 subjects (age: 50 years), with family history of diabetes, obesity or impaired fasting glucose and blood pressure (BP) < 140/90 mmHg and 50 age-matched healthy subjects, we measured brachial artery flow-mediated dilation (FMD) and response glyceryl trinitrate (GTN). Carotid-femoral pulse wave velocity (PWV) and radial augmentation index (AI) were assessed by applanation tonometry (Sphygmocor).

FMD was similarly reduced (*$p<0.05$) in both MS+ and MS- patients. PWV was higher (** $p<0.01$) in MS+ than in MS- patients and controls. Response to GTN and radial AI were similar.

	MS+ (27)	MS- (50)	Controls (50)
FMD (%)	6.1 ± 3.7%*	5.8 ± 2.7*	6.9 ± 2.5
PWV (m/s)	9.0 ± 1.9**	7.7 ± 1.2	7.2 ± 1.5

PWV significantly ($p<0.05$) increased with the increased number of MS components (from 0 to more than 3). Comparing patients with BP greater (BP+, $n=39$) or lower (BP-, $n=39$) than 130/85 mmHg, PWV was ($p<0.05$) higher in BP+ patients (8.5 ± 1.9 m/s) as compared to BP- patients (7.8 ± 1.9 m/s). FMD was ($p<0.05$) lower in BP+ (5.2 ± 2.6%) than in BP- patients (6.9 ± 1.9%). No differences were found for AI. The other single components did not influence vascular parameters.

In conclusion in normotensive patients at risk of developing diabetes mellitus MS is associated with increased central PWV and only blood pressure values negatively influence arterial stiffness and endothelial function.

P.088
ENDOTHELIAL DYSFUNCTION AND ITS CORRECTION IN SUBCLINICAL THYROTOXICOSIS

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The mechanisms by which thyroid hormones affect vascular physiology are mostly unknown. Nevertheless, few data are available regarding the effects of thyroid hormones on endothelial function. Experimental and clinical results give of conflicting information, but the influence of hyperthyroidism on endothelium-dependent relaxation is connected with the change of production of Nitric Oxide. The effects of subclinical thyrotoxicosis (ST) on endothelial function and possibilition its correction are unknown. ST characterized by low serum TSH and normal FT_4 and FT_3 levels.The present study includes 49 normotensive patients with ST without any CVD (the age of 20-60 years, 5 men and 44 women); mean serum TSH level − 0,09 ± 0,01 mU/l (normal range, 0.4—4.6 mU/l). The control group