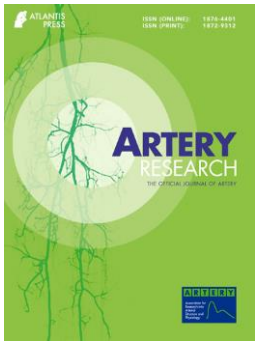

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P3.08: CENTRAL BLOOD PRESSURE AND VASCULAR STIFFNESS IN OBESE CHILDREN. RELATIONS TO THE METABOLIC SYNDROME AND SUBCLINICAL CARDIOVASCULAR DAMAGE: EFFECT OF WEIGHT REDUCTION. A PHD STUDY, BEGINNING MEDIO 2010

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kinetics supra AT, in previous triangular test identified, which describes two superimposed components, one rapid and one appreciably slower, allowing one to calculate **area** between them. After training, NO availability increasing, this **area** decreases in inverse ratio to treatment efficacy. Then the training is to seen as effective physiological means that allow one to reach the obtained enhanced functional capacity, by longer exercise owing to O_2 saving, so delaying the critical moment when effort is no longer sustainable from cardiovascular and pulmonary systems. In 10 untrained subjects, giving the NO donor isosorbide 5 mononitrate before second constant load test, the **area** is diminished on average of 46%. Therefore, all cardiopath subjects are to treat with organic nitrates in order to improve effort tolerance.

P3.08
CENTRAL BLOOD PRESSURE AND VASCULAR STIFFNESS IN OBESE CHILDREN. RELATIONS TO THE METABOLIC SYNDROME AND SUBCLINICAL CARDIOVASCULAR DAMAGE: EFFECT OF WEIGHT REDUCTION. A PHD STUDY, BEGINNING MEDIO 2010

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Background: Increasing prevalence of childhood obesity threatens future health with higher cardiovascular morbidity and thereby reduction of life expectancy. Obesity in childhood is significant related to the metabolic syndrome. Stiffness in the wall of the central arteries increases systolic blood pressure and is an independent risk factor for cardiovascular complications. Measurements of central vascular stiffness and central blood pressure profiles may contribute to define the best principles for treatment of hypertension. Another variable "ambulatory arterial stiffness index" (AASI) is also shown to be a predictor on its own for cardiovascular complications.
Hypothesis: Central heamodynamic variables in obese children are related to the extent of obesity, the metabolic syndrome and insulin resistance, and will predict those obese children who are at risk for developing hypertension and signs of subclinical cardiovascular damage.
Objectives: This study aims to predict those obese children with the highest risk of developing cardiovascular complications / subclinical cardiovascular damage.
Methods: The study group consists of 100 obese children in the age of 12-16 years with a BMI over the 99th percentile referred to a standardized weight loss programme. The design will be a cross-sectional study including 50 healthy controls and a prospective study of the obese children followed for one year of weight loss intervention. The following haemodynamic variables will be determined; central pulse wave velocity, central aortic blood pressure profiles, heart rate viability (Sphymocor), 24-hour blood pressure measurements including AASI, clinic blood pressure measurements, echocardiography, electrocardiography, urine albumin/creatinine ratio, and blood samples including metabolic and inflammatory parameters.

P3.09
ULTRASTRUCTURAL EVIDENCE OF APOPTOSIS IN ACUTE MYOCARDIAL INFARCTION AND CHRONIC ANEURISM WALL

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Acute myocardial infarction (AMI) is characterized by myocardial cell necrosis,inflammatory response and scar formation. The aim was to reveal whether cardiomyocyte (CMC) apoptosis is present in the infarction zone of the left ventricle compared with postinfarction chronic aneurizm wall.
Subject and methods: Myocardial express necropsies from 24 patients (age range 39-71) who suffered mainly from hypertension (HT) and died from STEMI complicated with Heart Failure (HF) or Cardiogenic Shock were examined. Biopsies from postinfarction aneurism wall from five patients (38-61 y.o), suffering from HT and HF were obtained and their ultrastructure was compared with changes in necropcies from infarction zone.
Results: According to electron microscopic investigation in infarction zones of the left ventricle exept necrotic, hibernated and apoptotic myocytes, as well as apoptotic endothelial and plasmatic cells,macrophages and fibroblasts, with features of pycnosis, nuclear chromatin condensation and cytoplasma vacualization where detected. As the result of prominent interstitial fibrosis, very poor vascularization and moderate matrix edema,CMC usually were dissociated and myocardium loses its synthityal organization. Separately located CMC were hibernated finally resulting in apoptosis. Numerous hibernated and apoptotic CMC were destroyed via secondary necrosis predominantly during short time (three months) after AMI. In aneurism wall 14 years after AMI onset, hibernating and some viable CMC were still present as the result of myocardium neovascularization.
Conclusions: CMC necrosis is the main mechanism of cell death in acute aneurism wall, while apoptosis develops predominantly in subacute periods of AMI. In chronic aneurism wall viable CMC are present, but hibernating and apoptotic CMC prevalent.

Pathophysiology 2
P4.01
ROLE OF PULSE WAVE VELOCITY IN DETECTING ORGAN DAMAGE AND IMPROVING CARDIOVASCULAR RISK STRATIFICATION IN HYPERTENSIVE PATIENTS

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Objective: Arterial stiffness as carotid-femoral Pulse Wave Velocity (PWV) has been included in the European guidelines for the management of arterial hypertension as target organ damage (TOD). This study is aimed at determining the usefulness of PWV beyond other measures of TOD in risk stratification of hypertensive patients.
Design and Methods: 234 patients (56.6 $\pm$ 12.0 years; 135 men; 85% already under antihypertensive therapy) were enrolled among those referring to the Hypertension unit for a program including medical history, physical examination, blood pressure (BP) measurement, blood and urine samples with lipid profile, glucose, creatinine, and microalbuminuria, EKG, echocardiography, carotid ultrasound and PWV. A threshold of 8.3 m/s was used as marker of increased PWV.
Results: With history, examination, BP, and blood and urinary exams, patients were classified at low (33%), moderate (33%), high (29%), or very high (5%) added risk. Median PWV was 7.88 (25th-75th percentile 7.05—8.95) m/s. Patients reclassified to an higher risk class were 21% by adding PWV, 14% by echocardiography, and 50% by carotid ultrasound. When all TOD markers except PWV were used, patients were classified as low (6%), moderate (23%), high (66%), or very high (5%) risk. Adding PWV detected TOD in 10 further patients, but only 3 of them were reclassified into higher category.
Conclusions: PWV is useful to classify low and moderate risk patients, but it adds little in patients already studied with cardiac and carotid ultrasound. Its advantage over other measures could be represented by the low cost and expertise required.

P4.02
LIPIDS AND APOLIPOPROTEINS ARE ASSOCIATED WITH PULSE WAVE VELOCITY IN NEVER-TREATED HYPERTENSIVES

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Introduction: Hypertension is associated with increased arterial stiffness, which is a predictor of cardiovascular risk and has been shown to correlate with lipid profile. However, the effect of alternative measures of lipid profile other than LDL remains unknown.
Methods: We enrolled 1225 consecutive essential hypertensives (mean age 52.9$\pm$11.7 years, 728 males). Arterial stiffness was determined with carotid-femoral pulse wave velocity (PWV) using the Complior® device. Total cholesterol, LDL cholesterol, non-HDL cholesterol, and apolipoprotein B, as well as ratios of total/HDL cholesterol, LDL/HDL cholesterol, and apolipoprotein B/A-I were measured or calculated, accordingly.
Results: In multivariable regression analysis, apolipoprotein B/A-I ratio, LDL and total/HDL cholesterol ratio exhibited significant positive association with PWV, which was independent of age, gender, mean blood pressure, smoking, BMI, diabetes, triglycerides, CRP and all the aforementioned measures of lipid profile ($p<0.001$, $p<0.001$ and $p<0.05$, adjusted R2 of model$=0.402$). In further analyses we employed dichotomous outcome variable (PWV $\geq$75th percentile [9.1 m/s]). Receiver operating characteristic (ROC) curves were generated to evaluate the ability of apolipoprotein B/A-I ratio, LDL and total/HDL cholesterol ratio to discriminate subjects with and without significant arterial stiffness. The area under the curve (AUC) and 95% CIs of the ROC curves for apolipoprotein B/A-I ratio, LDL and total/HDL cholesterol ratio for prediction of significant arterial stiffness (PWV $\geq$75th percentile [9.1 m/s]) were AUC$=0.64$ ($p<0.001$), AUC$=0.53$ ($P=0.07$) and AUC$=0.58$ ($p<0.001$).