



## Artery Research

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### **P.003: FUNCTIONAL AND STRUCTURAL VASCULAR BED PROPERTIES IN YOUNG WOMEN WITH POLYCYSTIC OVARY SYNDROME AND NORMAL LIPIDEMIC, GLYCEMIC AND BLOOD PRESSURE PROFILE**

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and collagen have not only passive elastic or rigid properties, but also are implicated in the control of SMC function. In animal models of essential hypertension (SHR and SHR-SP), the structural modifications of the arterial wall include a higher number of elastin/SMC connections, and smaller fenestrations of the internal elastic lamina, which could redistribute the mechanical load towards elastic materials. Thus, the changes in arterial wall material which accompany wall hypertrophy in these animals are not associated with an increased stiffness. Taken together, these data afford strong arguments to consider that arterial stiffness is not only influenced by the amount and density of stiff wall material, but mainly by its spatial organization.

## Poster Presentations

### P.001

#### ASSOCIATION OF BETA-THALASSEMIA MAJOR WITH IMPAIRED ENDOTHELIAL FUNCTION AND INCREASED LEVELS INFLAMMATION MARKERS

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**Objective:** We examined endothelial function and serum levels of inflammatory mediators in transfusion-dependent patients with beta-thalassemia major (BTM).

**Methods:** The study population consisted of 85 patients with BTM (aged  $25 \pm 0.6$ ) with normal left ventricular function and 71 healthy age- and sex-matched controls. Forearm blood flow was measured with gauge-strain plethysmography. Forearm vasodilatory response to reactive hyperemia (RH%) or to nitrate (NTG%) were assessed. Serum levels of interleukin 6 (IL-6), soluble vascular cell adhesion molecule (sVCAM-1) and soluble intercellular adhesion molecule (sICAM-1) were determined with ELISA.

**Results:** Patients had significantly lower levels of total cholesterol ( $124 \pm 4.5$  vs.  $208 \pm 7$  mg/ml,  $p < 0.01$ ), ApoA1 ( $122 \pm 3$  vs.  $129 \pm 4$  mg/ml,  $p < 0.05$ ), ApoB ( $62 \pm 3$  vs.  $97 \pm 4$  mg/ml,  $p < 0.01$ ) and Lp(a) ( $8.1 \pm 1.4$  vs.  $15.5 \pm 4$  mg/ml,  $p < 0.01$ ) than controls. IL-6 levels were significantly higher in patients ( $3.1 \pm 0.31$  pg/ml) than controls ( $1.14 \pm 0.16$  pg/ml,  $p < 0.01$ ). Similarly, sVCAM-1 and sICAM-1 levels were significantly higher in patients ( $515 \pm 30$  and  $362 \pm 24$  ng/ml, respectively) than controls ( $331 \pm 12.6$  and  $268 \pm 13.05$  ng/ml, respectively,  $p < 0.01$  for both). Maximum hyperemic forearm blood flow and RH% were lower in patients ( $7 \pm 0.4$  ml/100 ml tissue/min and  $48 \pm 2.5\%$ , respectively) than controls ( $8.6 \pm 0.2$  ml/100 ml tissue/min and  $88.5 \pm 5.4\%$ , respectively,  $p < 0.01$  for both).

**Conclusions:** BTM is associated with impaired endothelial function and increased levels of IL-6, sVCAM-1 and sICAM-1, suggesting a potential role of inflammation and endothelial dysfunction in the cardiovascular complications of the disease. These observations concerned subjects with normal left ventricular ejection fraction, which implies an early implication of these mechanisms in the pathophysiology of heart insult in BTM.

### P.002

#### VASCULAR BED PROPERTIES IN MULTISYSTEMIC LANGERHANS-CELL HISTIOCYTOSIS

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**Introduction:** Langerhans-cell histiocytosis (LCH) is a rare disorder that combines features of carcinogenesis and chronic inflammation with specific predilection for the Hypothalamic-Pituitary system. Chronic inflammation, insulin resistance (IR) and hypopituitarism have been associated with increased risk for cardiovascular disease. The purpose of this study was to investigate structural and functional vascular properties in treated patients with multisystemic LCH and their associations with inflammation markers and insulin resistance indices.

**Methods:** We studied 8 patients with multisystem LCH (age:  $38.38 \pm 4.49$  yrs; BMI:  $25.99 \pm 1.26$  kg/m<sup>2</sup>) and 24 controls (age:  $37.92 \pm 2.50$  yrs; BMI:  $25.03 \pm 0.68$  kg/m<sup>2</sup>) matched for sex, age and BMI. Structural properties were assessed by intima media thickness estimation in common carotid artery

(mean value right and left, MCCA, mm) and functional by endothelial function, using flow-mediated dilatation (FMD, %) on the brachial artery. Nitrate-induced dilatation (NID) was applied to exclude smooth muscle cells injury. C-reactive protein (CRP), fasting glucose, insulin, total cholesterol, HDL, triglycerides were measured; Waist-to-hip ratio (WHR), LDL and IR indices (glucose-to-insulin ratio, HOMA, QUICKI) were calculated.

**Results:** No difference in IMT ( $p = 0.11$ ) and FMD ( $p = 0.74$ ) values was detected among LCH patients and controls. Higher CRP ( $p = 0.003$ ) and insulin levels ( $p = 0.035$ ), and higher WHR ( $p = 0.017$ ) and lower glucose-to-insulin ratio ( $p = 0.003$ ) values were observed in LCH patients.

**Conclusions:** Treated patients with multisystemic LCH do not present alteration in vascular bed properties. However, such patients should be followed with caution as higher values of chronic inflammatory markers and insulin resistance indices were detected. Further larger scale studies are required to clarify whether these findings are inherent to the disease process or secondary to treatment.

### P.003

#### FUNCTIONAL AND STRUCTURAL VASCULAR BED PROPERTIES IN YOUNG WOMEN WITH POLYCYSTIC OVARY SYNDROME AND NORMAL LIPIDEMIC, GLYCEMIC AND BLOOD PRESSURE PROFILE

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**Introduction:** Cardiovascular risk factors and endothelial dysfunction have been shown to be present early in life in women with Polycystic Ovary Syndrome (PCOS). The aim of the present study was a global assessment of abnormalities in the arterial bed of young women with PCOS and normal profile of glycemia, lipidemia and blood pressure by non-invasive, reproducible methods.

**Methods:** 27 women with PCOS (age:  $25.41 \pm 0.80$  years; BMI:  $27.42 \pm 1.12$  kg/m<sup>2</sup>) and 27 control women (age:  $27.33 \pm 0.83$  years; BMI:  $25.05 \pm 1.19$  kg/m<sup>2</sup>) of comparable age, body mass index and waist-to-hip ratio were studied. Macrovascular function was assessed by flow-mediated dilatation (FMD) on the brachial artery. Nitrate-induced dilatation (NID) was applied to exclude smooth muscle cells injury. Microvascular function was assessed by venous occlusion plethysmography studying forearm blood flow. Arterial structure was evaluated by ultrasonographic assessment of intima-media thickness (IMT) of the carotid artery.

**Results:** FMD values were lower in women with PCOS compared to controls (PCOS:  $3.84 \pm 0.74\%$  vs. controls:  $9.83 \pm 0.97\%$ ,  $p < 0.001$ ), but no difference was observed in NID (PCOS:  $16.59 \pm 1.84\%$  vs. controls:  $16.64 \pm 2.05\%$ ,  $p = 0.98$ ) values. The time required for reactive hyperemia to reach peak value, a plethysmography parameter, was longer in PCOS women (PCOS:  $20.63 \pm 4.67$  s vs. controls:  $10.38 \pm 5.11$  s,  $p = 0.02$ ). No difference was observed in the combined IMT among the studied groups (PCOS:  $0.49 \pm 0.01$  mm controls:  $0.51 \pm 0.02$  mm,  $p = 0.19$ ).

**Conclusions:** Using non invasive methodologies endothelial dysfunction in the macrocirculation and evidence of early impairment in the microcirculation were demonstrated in young women with PCOS who had normal profile of glycemia, lipidemia and blood pressure, without evidence of structural arterial impairment.

### P.004

#### HABITUAL CHOCOLATE CONSUMPTION IS ASSOCIATED WITH IMPROVED ARTERIAL ELASTIC PROPERTIES AND CENTRAL HEMODYNAMICS

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**Introduction:** Flavonoid-rich chocolate has been shown to improve endothelial performance, but its impact on blood pressure (BP) is inconsistent. The effect of habitual chocolate consumption on arterial elastic properties and central (aortic) hemodynamics, which are important predictors of cardiovascular risk, has not been investigated.