



## Artery Research

ISSN (Online): 1876-4401

ISSN (Print): 1872-9312

Journal Home Page: <https://www.atlantis-press.com/journals/artres>

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### **P.082: DIFFERENTIAL ASSOCIATIONS OF LEFT ATRIUM VOLUME WITH BNP AND AORTIC STIFFNESS IN THE EARLY STAGES OF ESSENTIAL HYPERTENSION: IMPORTANCE OF MECHANICAL AND HUMORAL COMPONENTS**

C. Katsaris\*, C. Tsioufis, E. Taxiarchou, P. Stougiannos, M. Selima, E. Vezali, C. Stefanadis, I. Kallikazaros

**To cite this article:** C. Katsaris\*, C. Tsioufis, E. Taxiarchou, P. Stougiannos, M. Selima, E. Vezali, C. Stefanadis, I. Kallikazaros (2006) P.082: DIFFERENTIAL ASSOCIATIONS OF LEFT ATRIUM VOLUME WITH BNP AND AORTIC STIFFNESS IN THE EARLY STAGES OF ESSENTIAL HYPERTENSION: IMPORTANCE OF MECHANICAL AND HUMORAL COMPONENTS, Artery Research 1:S1, S46–S46, DOI: [https://doi.org/10.1016/S1872-9312\(07\)70105-9](https://doi.org/10.1016/S1872-9312(07)70105-9)

**To link to this article:** [https://doi.org/10.1016/S1872-9312\(07\)70105-9](https://doi.org/10.1016/S1872-9312(07)70105-9)

Published online: 21 December 2019

**P.079**  
**PULSE WAVE VELOCITY IN SUBJECTS WITH MASKED HYPERTENSION AND WHITE COAT HYPERTENSION**

K. Stolarz<sup>1\*</sup>, W. Wojciechowska<sup>1</sup>, A. Olszanecka<sup>1</sup>, W. Lubaszewski<sup>1</sup>, M. Cwynar<sup>2</sup>, T. Grodzicki<sup>2</sup>, K. Kawecka-Jaszcz<sup>1</sup>. <sup>1</sup>First Cardiac Department, Jagiellonian University Medical College, Krakow, Poland, <sup>2</sup>Department of Internal Medicine and Gerontology, Jagiellonian University Medical College, Krakow, Poland

**Background:** The assessment of clinical implications of often observed differences between ambulatory (ABP) and office blood pressure (OBP) measurements might be of particular importance. The aim of the study was to assess the arterial stiffness in subjects with masked hypertension (normal OBP, elevated ABP) and in subjects with white coat hypertension (elevated OBP, normal ABP) as compared to hypertensives and normotensives.

**Methods:** The study group included 259 untreated subjects recruited from general population [age 32.8±12.9 years, 136 F/123 M, BMI = 24.7±4.5 kg/m<sup>2</sup>, n=70 (27.0%) current smokers, n=54 (20.9%) declared regular alcohol intake]. The 24-h ABP monitoring was performed using oscillometric SpaceLabs 90207 monitors. Aortic pulse wave velocity (PWV) was measured with the Complior<sup>®</sup> device.

**Results:** In subjects with masked hypertension (n=37) we observed higher PWV as compared to normotensives (10.15±1.62 vs 8.56±1.45 m/s; p<0.05). Also subjects with white coat hypertension (n=20) appeared to have higher PWV than normotensives (9.39±1.23 m/s; p<0.05). In the multifactorial analysis, with adjustment applied for age, gender, BMI, smoking and alcohol intake, the observed higher values of PWV in subjects with masked hypertension as compared to normotensives remained significant (p<0.05).

**Conclusions:** Subjects with masked hypertension and with white coat hypertension, as compared to normotensives, are characterized by higher values of pulse wave velocity, similar to values observed in hypertensives. Only masked hypertension is independent determinant of increased arterial stiffness. This observation might be related to stronger correlation of target organ damage with ambulatory than office blood pressure.

**P.080**  
**GRADED ASSOCIATION BETWEEN ARTERIAL STIFFNESS AND DIVERSE INFLAMMATORY MARKERS IN NEWLY DIAGNOSED ESSENTIAL HYPERTENSIVE SUBJECTS: LINKING PROINFLAMMATORY MECHANISMS WITH VASCULAR DYSFUNCTION**

K. Dimitriadis\*, C. Tsioufis, C. Vasiladiou, K. Giannakopoulos, A. Kakkavas, I. Skiadas, C. Stefanadis, I. Kallikazaros. *Department of Cardiology, Hippokraton Hospital, Athens, Greece*

**Purpose:** To examine the possible correlations between large artery stiffening and plasma inflammatory markers such as interleukin-6 (IL-6), tumor necrosis factor- $\alpha$  (TNF- $\alpha$ ) and E-selectin plasma levels in essential hypertensive patients.

**Methods:** Our population of 148 newly diagnosed non-diabetic hypertensive patients [98 men, aged 49 years, office blood pressure (BP) = 150/97 mmHg] was divided into three groups according to carotid to femoral pulse wave velocity (PWV) values: Group A (PWV  $\leq$  7.8 m/s, n=55), group B (PWV = 7.9-8.7 m/s, n=54) and group C (PWV > 8.7 m/s, n=39). Moreover, venous blood samples were drawn for estimation of lipid profile and inflammatory markers levels.

**Results:** In the total population, PWV was correlated with office systolic BP (r=0.221, p<0.05) and TNF- $\alpha$  (r=0.189, p<0.05), while IL-6 was associated with body mass index (r=0.175, p<0.05) and office systolic BP (r=0.226, p<0.005). Moreover, TNF- $\alpha$  and E-selectin were related to body mass index (r=0.314 and r=0.274, respectively; p<0.05 for both cases). Patients in group C exhibited higher levels of IL-6 compared to groups B and A (1.8±0.1 vs 1.3±0.5 vs 0.8±0.3 pg/ml, respectively; p<0.005 for all), TNF- $\alpha$  (3.5±0.07 vs 2.5±0.1 vs 1.2±0.3 pg/ml, respectively; p<0.0001 for all) and E-selectin (55.3±2.1 vs 48.7±2.4 vs 43.1±1.7 ng/ml, respectively; p<0.05 for all). Analysis of covariance revealed that inflammatory markers values remained significantly different between groups after adjustment for confounding factors (p<0.05).

**Conclusions:** In essential hypertension, there is an augmentation in IL-6, TNF- $\alpha$  and E-selectin values throughout increasing PWV tertiles. These findings suggest that arterial stiffening is closely related to subclinical inflammatory processes, in this setting.

**P.081**  
**HYPERTENSIVE SUBJECTS WITH AN EXAGGERATED BLOOD PRESSURE EXERCISE RESPONSE ARE CHARACTERIZED BY A STATE OF INFLAMMATORY ACTIVATION, IMPAIRED THROMBOSIS/FIBRINOLYSIS SYSTEM AND ARTERIAL STIFFENING**

C. Tsioufis\*, K. Dimitriadis, D. Tsiachris, P. Pavlidis, K. Thomopoulos, A. Michailidis, C. Stefanadis, I. Kallikazaros. *Department of Cardiology, Hippokraton Hospital, Athens, Greece*

**Purpose:** To examine the correlations between hypertensive response to exercise (HRE), high-sensitivity C-reactive protein (hs-CRP), plasminogen-activator inhibitor type 1 (PAI-1) and arterial stiffening, in essential hypertensives.

**Methods:** 84 newly diagnosed untreated non-diabetic hypertensive subjects [58 men, mean age 52 years, office BP = 145/93 mmHg] with a negative treadmill exercise test were divided into those with HRE (n=24) (peak systolic BP >210 mmHg in men and >190 in women) and to those without HRE (n=60). Moreover, in all subjects venous blood samples were drawn for estimation of hs-CRP and PAI-1 levels, whereas arterial stiffness was evaluated on the basis of carotid to femoral pulse wave velocity (PWV).

**Results:** Patients with HRE compared to those without HRE were older and had greater 24-h systolic BP. Although groups did not differ regarding metabolic profile patients with HRE as compared to those without HRE exhibited significantly higher levels of c-f PWV (8.7±1.6 vs 7.7±1.3 m/s), hs-CRP (5.1±1.2 vs 2.1±0.8 mg/l) and PAI-1 (38.6±8.5 vs 18.9±2.6 ng/ml). In the total population, peak systolic BP was related to 24-h systolic BP (r=0.238, p<0.05), PWV (r=0.288, p<0.005) and hs-CRP (r=0.439, p<0.0001), whereas there was no association with PAI-1 levels (p=NS). By analysis of covariance it was revealed that PWV, hs-CRP and PAI-1 values remained significantly different between groups after adjustment for confounders (p<0.05).

**Conclusions:** Hypertensives with an HRE exhibit augmented hs-CRP, PAI-1 and PWV values. These findings suggest that impaired thrombosis/fibrinolysis system, arterial stiffening and microinflammation may be mechanisms that contribute to exercise hypertension and associated increase risk.

**P.082**  
**DIFFERENTIAL ASSOCIATIONS OF LEFT ATRIUM VOLUME WITH BNP AND AORTIC STIFFNESS IN THE EARLY STAGES OF ESSENTIAL HYPERTENSION: IMPORTANCE OF MECHANICAL AND HUMORAL COMPONENTS**

C. Katsaris\*, C. Tsioufis, E. Taxiarchou, P. Stougiannos, M. Selima, E. Vezali, C. Stefanadis, I. Kallikazaros. *Department of Cardiology, Hippokraton Hospital, Athens, Greece*

**Purpose:** To investigate the possible interrelationship between Left atrial (LA) enlargement, BNP and aortic stiffness in essential hypertensive subjects.

**Methods:** 235 consecutive, newly diagnosed subjects (aged 52±10 years), with untreated essential hypertension [office BP = 151/97 mmHg] underwent echocardiography and 24-h ambulatory BP monitoring. LA volume was indexed for body surface area to estimate LA volume index (LAVI). Aortic stiffness was evaluated on the basis of the carotid-femoral pulse wave velocity (c-f PWV) measurement by an automatic device (Complior SP). The study population was divided into two groups: those with increased LAVI (>26 ml/m<sup>2</sup>, n=45) and those without increased LAVI ( $\leq$ 26 ml/m<sup>2</sup>, n=181).

**Results:** Subjects with increased LAVI compared to those without increased LAVI did not differ regarding age, body mass index, 24-h systolic and diastolic BP and metabolic profile. Subjects with increased LAVI compared to those without increased LAVI had significantly increased 24-h pulse pressure (54.6±9.0 vs 51.3±7.9 mmHg, p<0.05), left ventricular mass index (LVMI) (123±31 vs 99±23 g/m<sup>2</sup>, p<0.0001), LA diameter (4.3±0.38 vs 3.9±0.34 cm, p<0.0001) and BNP plasma levels (41.5±14 vs 19.7±10 pg/ml, p<0.05), while did not differ regarding c-f PWV (8.2±1.3 vs 8.1±1.3 m/s, p=NS). Multiple regression analysis model revealed that LVMI and BNP were independent predictors of LAVI (p<0.05).

**Conclusions:** Even in newly diagnosed essential hypertensive subjects LA enlargement is associated with increased plasma levels of BNP but not more impaired aortic stiffness. These findings support the notion that LA enlargement is closely related with humoral activation in this setting.