



Artery Research

ISSN (Online): 1876-4401

ISSN (Print): 1872-9312

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

P.006: MEASUREMENT OF ARTERIAL PULSE WAVE VELOCITY SUPPORT THE SUSPICION OF ASYMPTOMATIC LEFT VENTRICULAR DYSFUNCTION IN HYPERTENSIVE PATIENTS WITH METABOLIC SYNDROME OR DIABETES MELLITUS

J. Spac, J. Hanus, M. Soucek, H. Nemcova

To cite this article: J. Spac, J. Hanus, M. Soucek, H. Nemcova (2007) P.006: MEASUREMENT OF ARTERIAL PULSE WAVE VELOCITY SUPPORT THE SUSPICION OF ASYMPTOMATIC LEFT VENTRICULAR DYSFUNCTION IN HYPERTENSIVE PATIENTS WITH METABOLIC SYNDROME OR DIABETES MELLITUS, Artery Research 1:2, 54–54, DOI: <https://doi.org/10.1016/j.artres.2007.07.063>

To link to this article: <https://doi.org/10.1016/j.artres.2007.07.063>

Published online: 21 December 2019

Caucasians there were significant positive correlations between DBP and MAP and PWV ($r=0.37$; $r=0.35$). This was not observed in the African group. When the groups were divided in tertiles according to SBP, the PWV was significantly higher in the third tertile in the Caucasians, but not in the Africans.

Conclusions: In the Caucasians the PWV increased with increasing BP, but no such increase was observed in Africans. Increased PWV in the Africans point to vascular changes independent of BP.

[1] Safar ME. *Hypertension*. 1998;156-161.

P.005

INCREASED ARTERIAL WALL STIFFNESS IN RESISTANT HYPERTENSIVE PATIENTS IN COMPARISON WITH ESSENTIAL HYPERTENSION

J. Rosa¹, R. Holaj¹, B. Strauch¹, O. Petrak¹, T. Pikus¹, T. Zelinka¹, D. Wichterle², J. Widimsky jr.¹. ¹3rd Department of Internal Medicine, General Faculty Hospital, Prague, Czech Republic, ²2nd Department of Internal Medicine, General Faculty Hospital, Prague, Czech Republic

Background/Aims: Arterial wall stiffness is considered as independent cardiovascular risk factor. Aim of this study was to compare arterial stiffness assessed by use of Pulse Wave Analysis (PWA) and carotid - femoral Pulse Wave Velocity (PWV) in resistant hypertensive patients to essential hypertensive patients and to normotensive control subjects (NCS).

Methods: 29 patients with resistant hypertension (RH), 35 patients with moderate to severe essential hypertension (EH) and 29 NCS were investigated. PWA and PWV were obtained using SphygmoCor applanation tonometer.

Results: PWV was significantly higher in RH group when compared to EH group and to NCS group while clinical blood pressure was comparable between RH and EH groups. However, 24h ABPM values were significantly higher in RH group than in EH group. There were no significant differences in age, duration of hypertension, body mass index (BMI), lipid profile, fasting glucose levels and creatinine levels between RH and EH groups. Carotid ultrasound and echocardiographical findings were comparable between RH and EH groups. PWV correlated with the presence of the diagnosis of RH, age, clinical SBP, brachial pulse pressure, mean 24h SBP, mean day SBP and mean night SBP. After multiple regression analysis, PWV remains significantly correlated only with the presence of the diagnosis of RH, age and with brachial pulse pressure. **Conclusions:** Patients with RH have increased arterial wall stiffness, represented by carotid-femoral PWV, when compared to EH patients. The greatest determinants of PWV are the presence of RH, age and brachial pulse pressure.

P.006

MEASUREMENT OF ARTERIAL PULSE WAVE VELOCITY SUPPORT THE SUSPICION OF ASYMPTOMATIC LEFT VENTRICULAR DYSFUNCTION IN HYPERTENSIVE PATIENTS WITH METABOLIC SYNDROME OR DIABETES MELLITUS

J. Spac, J. Hanus, M. Soucek, H. Nemcova. 2nd Dept of Medicine, St. Ann Univ.Hospital, Brno, Czech Republic

Background: The aim of this study was to evaluate myocardial function and vascular wall elasticity using pulse wave velocity (PWV) between aorta and femoral artery in patients with hypertension and metabolic syndrome (MS) or type 2 diabetes mellitus (HT + DM).

Methods: Fifty – three patients (pts) with MS (age: 45,6 years body mass index (BMI): 31,75, blood pressure (BP) 150/94 mmHg and 57 pts with HT and DM type 2 (HT + DM) – (age: 62,9 years, BMI : 30,34, BP 156/101 mmHg and normal renal function were studied. LV function was assessed by brain natriuretic peptide plasma levels (BNP and NT pro BNP), echocardiographically detected ejection fraction (EF), pulsed doppler assessment of transmitral blood flow velocities (E, A, E/A ratio) and pulsed doppler tissue imaging (TDI) of velocities of mitral annular movements (Svm, Evm, Avm).

Results: Pts in both groups revealed normal systolic function of the LV (EF 65 % versus 61%) , pts with HT + DM had higher values of the LV mass than the group with MS (44,9 v.s. 54,0 g/height^{2.7}, $p=0.005$) Average values of PWV were lower in the group with MS than in HT + DM group (11,38m/s vs 12,79 m/s, $p=0.002$) as well as BNP (54,7 vs 141,12 pg/l, $p=0.005$) and NT pro BNP(66,5 vs 279,6 pg/l). In both groups of pts increased PWV was significantly correlated with TDI measurements indicating reduced diastolic function (PWV and E/Evm $r = 0,698$, $p<0,001$) and values of natriuretic peptides (PWV versus NT pro BNP $r = 0,776$, $p<0,001$).

Conclusions: Arterial stiffness in hypertensive pts revealed some relation to the LV dysfunction. The measurement of the PWV may contribute to the prediction of LV diastolic dysfunction in hypertensive pts with metabolic syndrome or diabetes mellitus.

P.007

REFERENCE VALUES FOR ARTERIAL STIFFNESS IN A SUB-SAHARAN AFRICAN POPULATION

M. Reimann, H.W. Huisman, R. Schutte, L. Malan, J.M. van Rooyen, A.E. Schutte. North-West University, Cardiovascular Physiology Research Group, Potchefstroom, North-West Province, South Africa

Objective: Unlike Caucasians, African subjects react with pronounced peripheral activation in response to stressors. To shed more light into the peripheral arterial characteristics of African people the current study was undertaken. Furthermore diagnostic thresholds for increased arterial stiffness were to be determined.

Methods and results: Pulse pressure (PP) and carotid-radial pulse wave velocity (PWV) was determined in normotensive men (N=383) and women (N=616) of African descent. PP and PWV was higher in men than women. Age had only a marginal effect on both parameters. Based on 95th prediction bands the following sex-specific thresholds for increased arterial stiffness at age 50 y were determined: men, 63 mmHg for PP and 16.5 m/s for PWV; women, 59 mmHg for PP and 14.9 m/s for PWV. These thresholds need adjustment by 0.7 mmHg and 0.2 m/s for men and 1.9 mmHg and 0.2 m/s for women for each decade that age differs from 50 years.

Conclusion: Normotensive men of African descent have stiffer arteries compared to their female counterparts. The determined thresholds can be used to diagnose increased arterial stiffness in middle-aged adults of African descent.

P.008

COMPARATIVE STUDY OF AUGMENTATION INDEX MEASURED BY TWO DIFFERENT DEVICES

M. Patraulea¹, O. Mayer Jr.¹, M. Dolejsova², J. Filipovsky². ¹Centre of Preventive Cardiology, Department of Internal Medicine II, Pilsen, Czech Republic, ²Charles University Medical Faculty and Teaching Hospital, Pilsen, Czech Republic

Background: Recent studies emphasize the significance of vessel wall properties estimations of large arteries not only for research purposes, but even in clinical practice already. The newly launched OMRON device measures the radial augmentation index (AIx) automatically. The aim of this study was to compare intra-individually this device to the long-term established Sphygmocor device in patients with manifest coronary heart disease and in addition to do an intra-device comparison of the OMRON device.

Methods: The investigated sample was one hundred randomly selected patients with manifest coronary heart disease, a random sub-sample of the Czech EuroAspire III study series. The measurements of the radial augmentation index were done in virtually similar conditions, in 60% twice using the HEM9000AI (OMRON) device and once the Sphygmocor (ATCor Systems) device, the rest of the sample was measured once by both devices.

Results: The OMRON device measured in average a higher AIx than the Sphygmocor device and this intraindividual difference is highly statistically significant. The median intraindividual difference between both devices was 17.4%. Both estimations significantly correlate, however, the correlation coefficient is for this kind of comparison rather low (about 0.44). In the OMRON intradevice comparison the median intraindividual difference was 1.9%.

Conclusion: The OMRON and Sphygmocor device estimations were in coronary patients not biologically equivalent. In conclusion, the OMRON device showed a very low variability and is applicable for estimation of the radial augmentation index in clinical use. However, the result from one device does not seem to be transferable to the other.

P.009

THE EFFECT OF SPIRONOLACTONE ON PULSE WAVE CHARACTERISTICS IN HYPERTENSION: INFLUENCE OF THE ALDOSTERONE TO RENIN RATIO (ARR)

K.M.S. AlHashmi¹, H.K. Parthasarathy², A.D. McMahon³, A.D. Struthers², T.M. MacDonald², I. Ford³, G.T. McInnes¹, J.M.C. Connell¹. ¹Division of Cardiovascular and Medical Sciences, University of Glasgow, Glasgow, United Kingdom, ²Division of Medicine and Therapeutics, Ninewells Hospital and Medical School, Dundee, United Kingdom, ³Robertson Centre for Biostatistics, University of Glasgow, Glasgow, United Kingdom

Background: Several lines of evidence suggest that aldosterone can have an adverse blood pressure independent effect on heart and blood vessels