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CAN BRACHIAL OSCILLOMETRY IDENTIFY PREHYPERTENSION AMONG NORMOTENSIVE SUBJECTS?

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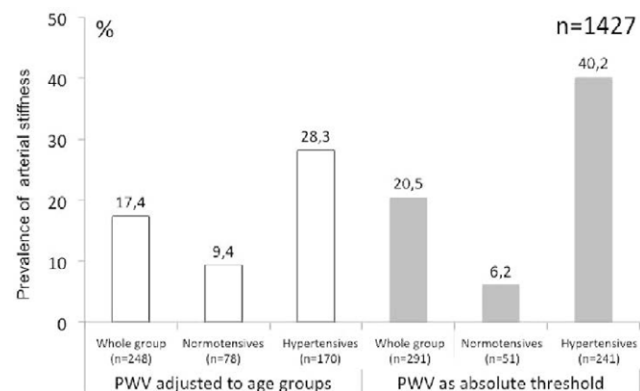
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Background and objective: Arterial stiffness (AS) reflects vascular damage. Our objective was to determine 1) the frequency of AS in community pharmacies, 2) if subjects with AS identified by brachial oscillometry have more CV risk factors than normal subjects, and 3) if the prevalence of AS varies upon using either age-adjusted values or a fixed threshold.

Patients and method: Observational, cross-sectional study in 32 community pharmacies of the Valencia Community, between 11/2015 and 4/2016. AS was measured as pulse wave velocity (PWV) with a semi-automatic, validated device (MOBIL-O-GRAPH®, IEM), followed by a 10-item questionnaire.

Results: Mean age of the 1427 consecutive recruited subjects was 56.6 years. Overall prevalence of patients with AS was 17.4% with age-adjusted PWV (9.4% in normotensives, 28.3% in hypertensives). AS showed independent association in normotensives with male gender, obesity, higher pulse pressure and heart rate, in hypertensives, with higher pulse pressure and lower age in multivariate logistic regression. Defining stiffness by $PWV > 10$ m/s, AS was globally found in 20.5% of subjects, (6.2% in normotensives, 40.2% in hypertensives). It was associated with higher age and pulse pressure in both groups. Concordance in classifying stiffness was 74.6%.



Conclusions: Almost 10% of normotensives showed AS – measured by brachial oscillometry – when adjusting for age-groups. It was associated with male gender, pulse pressure, obesity and heart rate. In hypertensives, AS related to pulse pressure and inversely to age. Stiffness defined by 10 m/s is determined by higher pulse pressure and higher age. Both definitions of PWV are not interchangeable.

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ARTERIAL STIFFNESS AND PULSE PRESSURE AMPLIFICATION IN ADULTS WITH ISOLATED SYSTOLIC HYPERTENSION

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Background/aim: ISH is usually considered more prevalent in aged individuals and associated to increased large artery stiffness. This study is aimed at identifying determinants of ISH in adult individuals.

Methods: 20 individuals <60 years, referred to the Outpatient Hypertension Unit for high blood pressure (BP) and treatment-naïve, were classified as normotensive (NT), true hypertensives (HT) or isolated systolic hypertensives (ISH) based on office BP. In all individuals the following measurements were obtained: carotid pulse wave velocity (PWV) and aortic BP by applanation tonometry (Sphygmocor CVP, Atcor), 24-h brachial and central BP (Oscar2, SunTech Medical), daily steps by 7-day actigraphy (Fitbit Flex).

Results: the three groups had similar clinical characteristics, including height and physical activity; only waist circumference was higher in ISH. PWV was normal in ISH and increased in HT. Office brachial and aortic pulse pressure (PP) were greater in ISH than in NT and HT, as well as 24-h brachial and central PP. PP amplification was similar in the three groups either when calculated by tonometry or in 24h.

	ISH (n = 7)	NT (n = 7)	HT (n = 6)
Men	5	5	4
Age (years)	43 ± 15	47 ± 10	41 ± 10
Height (cm)	174 ± 10	171 ± 11	174 ± 11
BMI (kg/mq)	26 ± 2	25 ± 2	24 ± 3
Waist circumference (cm)	93 ± 13*	81 ± 11	81 ± 9
Physical activity (daily steps)	13021 ± 4958	11569 ± 6789	13836 ± 4572
Mean BP (mmHg)	101 ± 9°	90 ± 8	102 ± 13°
Heart rate (bpm)	60 ± 6	61 ± 13	53 ± 10
Office PP (mmHg)	62 ± 9*	48 ± 7	50 ± 7
Aortic PP (mmHg)	45 ± 8*	38 ± 4	40 ± 6
24h-brachial PP (mmHg)	55 ± 9*	46 ± 9	51 ± 6
24h-central PP (mmHg)	43 ± 4*	37 ± 4	40 ± 4
24h- PP amplification (mmHg)	12 ± 5	9 ± 2	11 ± 3
Time to reflection (ms)	142 ± 15°	143 ± 13*	161 ± 21*
PWV (m/s)	6.3 ± 1.4°	7.2 ± 2.5°	8.0 ± 2.2*

*: $p < 0.05$ vs NT; ° $p < 0.05$ vs HT.

Conclusions: These preliminary data suggest that adults <60 years, newly diagnosed with ISH, present normal PWV and PP amplification from centre to periphery.

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GENDER DIFFERENCES OF AORTIC WAVE REFLECTION AND INFLUENCE OF MENOPAUSE ON CENTRAL BLOOD PRESSURE IN PATIENTS WITH ARTERIAL HYPERTENSION

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Background: Evidences suggest that central hemodynamics indexes are independent predictors of future cardiovascular events and all-cause mortality. Multiple factors have been pointed to have potential influence on central aortic function: height, heart rate, left ventricular ejection duration and blood pressure level. Data related to the influence of gender and postmenopausal status on aortic wave form reflection is scarce.

Methods: In a cross sectional study 122 hypertensive patients (52 men and 70 women) were studied. Hypertension was defined as blood pressure (BP) levels $\geq 140/90$ mmHg or use of antihypertensive drugs. Central arterial pressure, augmentation index (Alx) and augmentation index normalized to 75bpm (Alx75) were obtained using applanation tonometry. Menopause and postmenopause history were accessed by a direct questionnaire. Postmenopause was defined as at least one year since last menstruation. Patients were paired by age, gender and menopausal status and 4 groups were compared: group 1 (young men, $\leq 48y$), group 2 (young women, $\leq 48y$), group 3 (older men, $>48y$) and group 4 (older women, $>48y$).

Results: Height and weight were significantly lower in women than in men at the same age. Conversely, Alx ($32.7 \pm 9.8\%$ vs. $20.1 \pm 11.7\%$, $p < 0.01$), Alx75 ($29.6 \pm 6.7\%$ vs. $18.3 \pm 9.4\%$, $p < 0.01$) and central systolic blood pressure (136 ± 30 vs. 125 ± 23 mmHg, $p = 0.03$) were higher in women than men. The menopausal women had the worst indexes of aortic wave reflection.

Conclusion: Women patients had both higher reflected aortic pressure wave form and central blood pressure indexes and these findings were worsened by the menopausal status.