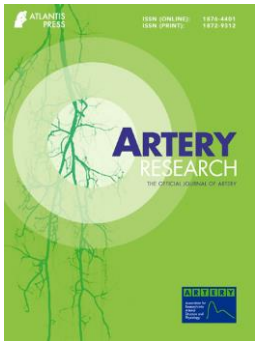

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1.4: ASSOCIATION OF 24 HOUR AORTIC AMBULATORY BLOOD PRESSURE MONITORING WITH LEFT VENTRICULAR MASS

A.A. Argyris, G. Kollias, T.G. Papaioannou, E. Nasothimiou, J. Blacher, M.E. Safar, A. Achimastos, P.P. Sfikakis, A.D. Protogerou

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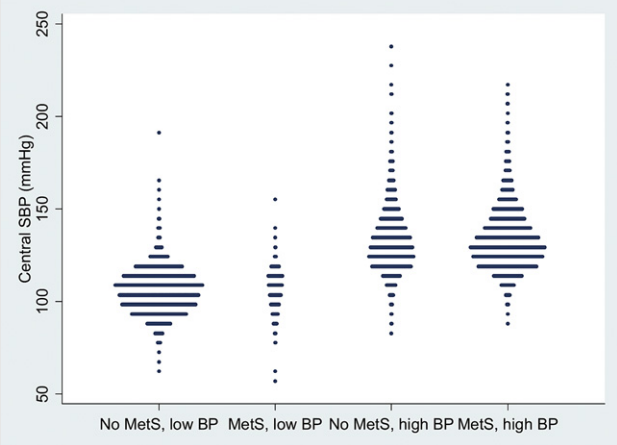
Table 1 cSBP values stratified by metabolic syndrome and brachial BP status



Conclusions: In these subjects, when adjusting for high normal BP, cSBP is still strongly influenced by the cumulative number of CVRFs. The association between MetS and cSBP is mainly driven by the inclusion of high normal BP in its definition.

1.4
ASSOCIATION OF 24 HOUR AORTIC AMBULATORY BLOOD PRESSURE MONITORING WITH LEFT VENTRICULAR MASS

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Introduction: There is evidence suggesting the superiority of office aortic blood pressure (BP) over office brachial in the management of arterial hypertension. The 24 hour ambulatory blood pressure monitoring (ABPM) is regarded as the optimal method for assessing BP profile; the non-invasive 24 hour aortic ABPM is now feasible.
Objective: To investigate the association and possible superiority of 24h aortic BP over 24h brachial and office BP (aortic or brachial) in the assessment of target organ damage. Non-invasive 24h aortic and brachial ABPM was performed using Mobilo-O-Graph, IEM, a validated brachial cuff based oscillometric device which calibrates the obtained brachial pressure waveform either using SBP and DBP (calib 1) or MBP and DBP (calib 2).
Design and methods: 184 subjects (mean age 55±14 years, 54% male, 48% hypertensives) underwent office brachial (b) and aortic (a) (SphygmoCor) BP assessment, 24h brachial and aortic ABPM and cardiac ultrasound.
Results: The correlation of BP indices with left ventricular mass indexed for body surface area as well as the R square values from multivariate analysis are provided in the table. Using Fisher's z-transformation it was shown that among all SBP parameters only aSBP 24 calib2 had significantly higher correlation coefficient with LVMass compared to office brachial SBP; aSBP calib2 tended to have marginally significantly closer correlation with LVMass than aSBP calib1 ($p=0.055$).
Conclusion: In the present study 24h aortic SBP calibrated with MBP and DBP seems to be the best alternative to office brachial SBP to assess the association between BP and LVMass.

	Univariate models: Pearson correlation coefficients	Multivariate models (age & gender): R square values
bSBP office (mmHg)	0.293**	0.204
aSBP office (mmHg)	0.286**	0.221
bSBP 24h (mmHg)	0.394**	0.292
aSBP 24h calib 1 (mmHg)	0.338**	0.266
aSBP 24h calib 2 (mmHg)	0.503**	0.347

(**$p<0.001$ for the provided correlation coefficients)

1.5
BLOOD PRESSURE-INDEPENDENT ASSOCIATION BETWEEN AORTIC CHARACTERISTIC IMPEDANCE AND LEFT VENTRICULAR MASS IN HYPERTENSION

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Background: It is uncertain whether pressure/flow ratio in the proximal aorta, namely aortic characteristic impedance (Z_c), is related to left ventricular (LV) mass independently of blood pressure (BP) level.
Methods: 435 never-treated subjects with uncomplicated essential hypertension free from overt cardiovascular disease (men 62%, age 48±11 years, BP 148/92±16/10 mmHg) underwent M-mode echocardiography and 24-hour BP monitoring. Aortic waveform was obtained from tonometric radial waveform with a validated generalized transfer function (SphygmoCor). Aortic Z_c and forward (P_f) and backward (P_b) wave amplitudes were calculated from central waveform using an aortic blood flow model based on higher-order Windkessel theory (ArcSolver), [Weber T et al, Hypertension EPub May 14, 2012].
Results: Patients with LV hypertrophy (LV mass >51 $g/m^{2.7}$) had a higher brachial systolic BP (SBP 153±18 vs 146±15 mmHg, $p<0.001$), central systolic BP (142±18 vs 133±16 mmHg, $p<0.001$), aortic Z_c (0.235±0.08 vs 0.211±0.06 AU, $p<0.001$), P_f (31.7±9 vs 28.6±7 mmHg, $p<0.001$), and P_b (19.8±7 vs 18.1±5 mmHg, $p=0.02$), while reflection magnitude (P_b/P_f) did not differ (0.62±0.10 vs 0.63±0.10, $p>0.3$). After controlling for age, sex, and mean arterial pressure as a measure of distending pressure, LV mass index maintained an independent association with Z_c (partial $r=0.14$, $p=0.002$), while the association of either P_b or P_f with LV mass became no longer significant. In a multiple linear regression model, Z_c independently predicted LV mass index ($\beta=0.116$, $p=0.005$) along with age, mean arterial pressure, and body mass index.
Conclusion: Aortic characteristic impedance has a significant, pressure-independent relationship with LV mass in human hypertension.

1.6
SPIRONOLACTONE REDUCES AORTIC STIFFNESS IN PEOPLE WITH A HYPERTENSIVE RESPONSE TO EXERCISE VIA THE BLOOD PRESSURE-DEPENDENT EFFECTS OF CANRENOATE

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Background: A hypertensive response to exercise (HRE) is associated with increased aortic stiffness. Spironolactone is thought to improve aortic stiffness via BP-independent (antifibrotic) effects, but the exact mechanisms are unknown. This study aimed to determine the underlying physiological actions of spironolactone in people with HRE.
Methods: 115 people with HRE (aged 54±9 years) were randomized to three months spironolactone (25mg/d) or placebo. Serum samples and physiological data including aortic stiffness (pulse wave velocity; PWV) and 24 hour ambulatory BP were recorded at baseline and three months. Liquid