

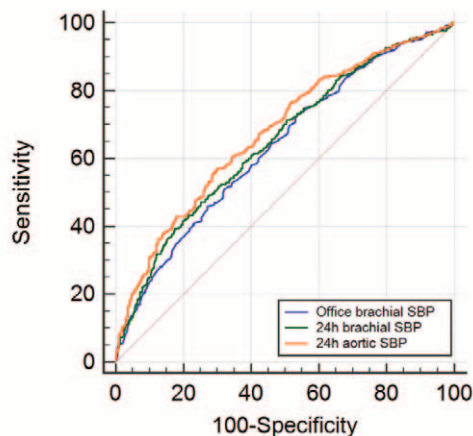
failure, there seems to be a beneficial effect of valsartan versus amlodipine, independent of blood pressure. These data deserve further investigation.

RELATIONSHIP BETWEEN 24-HOUR AMBULATORY BRACHIAL VERSUS AORTIC SYSTOLIC BLOOD PRESSURE AND LEFT VENTRICULAR MASS. THE INTERNATIONAL 24 HOUR AORTIC BLOOD PRESSURE CONSORTIUM

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Objective: There is evidence of a closer relation between 24hour aortic systolic blood pressure (aSBP) and left ventricular mass (LVM) compared with 24hour brachial SBP. However, sample sizes are relatively small and there is some inconsistency in findings. We sought to address this by pooling data from 11 centers in Asia and Europe to determine the relationship between LVM and brachial office, as well as brachial and aortic 24hour ambulatory SBP.

Design and method: In all centers, brachial and aortic SBP was measured with the same validated oscillometric device (Mobil-O-Graph, I.E.M. GmbH, Germany), using a transfer function for aortic pressure, and mean/diastolic pressure calibration. LVM was determined by echocardiography.



Results: We studied 1299 participants (613 women) with a mean age of 50.8 years. Mean brachial office BP was 139/86 mm Hg, and mean 24hour bSBP and aSBP was 128 [127.3;128.7] and 131 [130.3;131.7] mm Hg, respectively. Mean LVM indexed to body surface area was 98 g/m², and 34% of participants had left ventricular hypertrophy (LVH). The correlation coefficients between LVM and brachial office SBP, 24hour bSBP, and 24hour aSBP were 0.30, 0.35, and 0.42, respectively ($P < 0.001$ for comparison between brachial office SBP and 24hour aSBP and $P = 0.01$ for comparison between 24hour bSBP and 24hour aSBP). The areas under the curve for prediction of LVH were 0.634, 0.651, and 0.678 for brachial office SBP, 24hour bSBP, and 24hour aSBP, respectively ($P = 0.004$ for comparison between brachial office SBP and 24 h aSBP, and $P = 0.001$ for comparison between 24hour bSBP and 24hour aSBP) - Figure.

Conclusions: In this pooled analysis of international data, we demonstrate that aortic ambulatory 24 hour SBP, measured with an oscillometric cuff, shows a significantly closer association with hypertensive cardiac organ damage (left ventricular mass and hypertrophy) than brachial office/brachial ambulatory systolic blood pressure.

THE ASSOCIATION BETWEEN BLOOD PRESSURE AND MULTIMORBIDITY IN INCIDENT HYPERTENSION: A COHORT STUDY

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Objective: Investigate the trends and association between blood pressure (BP) and a) number of comorbidities, and b) specific comorbidities, in incident hypertension

Design and method: We used a random 10% sample of the UK Clinical Practice Research Datalink (CPRD), a population-based general practice dataset covering approximately 7% of the UK population and linked to Hospital Episode Statistics (HES). We identified patients diagnosed with incident hypertension in primary care between 2000 to 2014. We examined 22 comorbidities, classified into six categories: cardiometabolic, respiratory, mental illness, musculoskeletal, cancer, haematological. We used linear regression at annual timepoints up to 10 years after diagnosis of hypertension, to estimate the mean difference in systolic and diastolic BP and 95% confidence intervals (CI). The exposure was number of comorbidities, specific comorbidity and disease category. We adjusted for age, sex, socioeconomic status, ethnicity, antihypertensive medications, year of hypertension diagnosis, cholesterol, body mass index and smoking status.

Results: We identified 32,484 patients with incident hypertension. In patients diagnosed with hypertension, systolic blood pressure (SBP) was lower in patients with a higher number of comorbidities, compared to those with only hypertension. At 1 year after hypertension diagnosis, the SBP in patients with one comorbidity was 0.63 (95% CI 0.05 to 1.21) less, and in those with 5 or more comorbidities, was 4.73 (3.39–6.06) less than patients with hypertension alone. This pattern was maintained over time from 1 to 10 years after diagnosis. The greatest difference in SBP was seen in those with cardiometabolic conditions. Diastolic blood pressure (DBP) showed similar patterns and trends to SBP.

Conclusions: There is an inverse relationship between number of comorbidities and BP in incident hypertension. Patients with five or more comorbidities have SBP about 5mmHg less than those without any comorbidities, and this difference is maintained over time. The greatest reductions in BP were seen in those with cardiometabolic conditions. Further research into reasons behind the association between comorbidities and BP is needed to improve hypertension management in primary care.

AUTOMATED BLOOD PRESSURE MEASUREMENT IN PATIENTS WITH HYPERTENSION AND ATRIAL FIBRILLATION. DATA FROM THE ESH RESEARCH PROJECT "MANAGEMENT OF ARTERIAL HYPERTENSION IN PATIENTS WITH HIGH BLOOD PRESSURE AND ATRIAL FIBRILLATION"

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Objective: Atrial fibrillation (AF) is a frequent complication of long lasting hypertension, and carries a high risk of morbidity and mortality as well as of cardiovascular events. AF is also responsible for possible errors in blood pressure (BP) measurement. Limited information is available on the accuracy of blood pressure measurements when automated oscillometric (OSC) devices are used instead of the standard auscultatory approach (AUSC). The aim of this analysis was to compare blood pressure values measured using either a mercury sphygmomanometer or an automated electronic device in patients with AF.

The analysis was limited to 353 patients (mean CHA2DSVA2SC score 3.9), enrolled in the international multicenter ESH Research Project on arterial hyperten-

sion and atrial fibrillation, in whom BP was measured 4 times with the standard AUSC approach (according to Guidelines) and 4 times with an OSC device.

Results: mean age was 72 ± 11 (range 20–94), BMI 28 ± 5 , mean CHA2S-2VAS 3.9. Mean BP values were 130.3 ± 19.5 for AUSC-SBP and 131.5 ± 20.1 for OSC-SBP and 75.8 ± 11.4 for AUSC-DBP and 76.5 ± 12.3 for OSC-DBP. Correlation coefficients between automated and manual blood pressure measurements were: $r = 0.917$ for SBP and $r = 0.856$ for DBP ($p < 0.0001$). The difference between the oscillometric and manual measurement was on average of 1.2 mmHg for systolic BP (SBP) and of 0.7 mmHg for diastolic BP (DBP). The standard deviations (SD) of the differences were, respectively, 8.07 and 6.39, and progressively increased when 4, 3, 2 or 1 measurements were used. At Bland-Altman analysis the limits of agreement were -17 to 14.7 mmHg for SBP and -13.3 to 11.8 for DBP.

Conclusions: In patients with hypertension and AF measurement of BP values with oscillometric devices provides similar BP values, with SD at the upper limit of AAMI criterion for the validation of devices, at least when 4 BP measurements are performed.

LEFT AND RIGHT ATRIAL FUNCTION AND DIMENSION - MARKERS OF PAROXYSMAL ATRIAL FIBRILLATION IN HYPERTENSIVES

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Objective: Introduction: Hypertension increases the risk for atrial fibrillation and is the most common underlying risk factor for the development of atrial fibrillation (1). Discovering predictors for the onset of atrial fibrillation in hypertensives may have prognostic value.

Objective: We evaluated left atrium (LA) and right atrium (RA) dimension and function in our attempt to find an echocardiographic marker of paroxysmal atrial fibrillation in hypertensive patients without other significant heart disease.

LA Strain/Type of patient group LA PALS	Group 1 (N=20) 21.69 ± 10.23	Group 2 (N=41) 25.94 ± 6.89	Group 3 (N=19) 17.13 ± 6.56	p F(2,77)=8.579, p<0.001*
LA PACS	-11.71 ± 3.59	-1.86 ± 2.15	-2.39 ± 2.61	F(2,76)=95.536, p<0.001*
RA Strain/Type of patient group RA PALS	Group 1 (N=19) 19.163 ± 8.499	Group 2 (N=39) 15.603 ± 6.643	Group 3 (N=17) 12.441 ± 6.548	p F(2,72)=4.011, p=0.022*

Design and method: Methods: We prospectively enrolled three groups of patients: 21 healthy patients (Group 1); 42 hypertensive patients without paroxysmal atrial fibrillation (Group 2) and 22 hypertensive patients with paroxysmal atrial fibrillation (Group 3). Secondary causes of HTN and other coexistent severe pathology were excluded.

LA and RA diameters and volumes were measured by echocardiography, using modified Simpson biplane method. Peak longitudinal strain of LA and RA walls were analyzed using 2D speckle-tracking echocardiography. We also measured the LV mass using the M-mode method, but also area-length method.

Results: LA and RA diameters, as well as all the volumes were significantly greater in hypertensive groups compared to controls ($p < 0.001$).

There was found a significant difference between peak LA and RA longitudinal strain parameters in the three groups, with the lowest values in Group 3 ($p < 0.001$). There was also found a significant difference of LV mass between the three groups ($p < 0.001$); the highest values of the LV mass are found in the patients with hypertension and atrial fibrillation ($p < 0.001$, $R = 0.453$). A strong negative correlation between LV linear mass/BSA and LA PALS (peak atrial longitudinal strain) was determined ($p = 0.003$, $R = -0.645$) which means that patients with LV linear mass/BSA at high values have also low values of LA PALS in group with atrial fibrillation compared with the other 2 groups.

Conclusions: In our study hypertension was associated with structural and functional remodeling of both LA and RA. So, speckle tracking methods and volumes applied for both atria can be successfully used in identifying hypertensive patients with LA and RA dysfunction at high risk to develop atrial fibrillation.

IMPACT OF BLOOD PRESSURE CONTROL ON STROKE IN PATIENTS WITH ATRIAL FIBRILLATION. RESULTS FROM NATIONWIDE CROSS-SECTIONAL REGISTRY OF PATIENTS WITH NON-VALVULAR ATRIAL FIBRILLATION

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Objective: Atrial fibrillation (AF) and arterial hypertension (AH) are highly prevalent conditions that often coexist together. Even they are both responsible for high morbidity and mortality, adequate AH control is only marginally followed. Adequate antihypertensive treatment is a paramount to protect patients from devastating consequences of structural heart disease (LV hypertrophy, LV dilatation and impaired LV function) that increases risk of thromboembolic complications. At the same time uncontrolled high blood pressure (BP) increases the risk of stroke and bleeding events (ie intracranial bleeding) and furthermore may lead to recurrent AF.

Design and method: All 1975 consecutive patients with non-valvular (NV) AF that visited 150 out-patient clinics were enrolled to nationwide prospective cross-sectional registry.

Results: AH was the most frequent comorbidity in the registry that was observed in 1756 (88.9%) pts. Coronary artery disease was disproportionately frequent, documented in 833 (42.2%) pts; 329 (16.7%) pts suffered from previous stroke/transient ischemic attack, heart failure was presented in 587 (29.7%) pts. Target BP levels according to ESC guidelines were achieved in 91% pts. (mean SBP 133.6 ± 15.1 mmHg; DBP 79.5 ± 9.5 mmHg). Those with inadequate BP control had mean SBP 157.9 ± 21.8 and DBP 89.5 ± 12.6 mmHg. AH control in this selected population with NVAF was much better than in other nationwide registries of patients with other cardiovascular conditions that were done previously. The results of BP measurements in the SLOV-FIB registry dispute the truth of essential impact of BP control for development of stroke/TIA in observed pts. Better BP control could be explained by better adherence of pts with AF to antihypertensive treatment. Nevertheless, the fact that pts were managed dominantly by specialists in internal medicine and cardiology may also play role in better BP control.

Conclusions: More attention should be paid to rigorous blood pressure control in AF pts. It is an integral part of their management both in primary as well in secondary prevention of AF and its complications.

THE ASSOCIATION OF INTRACRANIAL ARTERIAL STENOSIS WITH HOME BLOOD PRESSURE LEVEL AND VARIABILITY

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Objective: Intracranial arterial stenosis (ICAS) is a major cause of ischemic stroke. However, the associations of ICAS with home blood pressure (BP) and variability remains unclear.

Design and method: Outpatients not on antihypertensive medications were recruited from 2009 to 2013. ICAS was defined if the peak systolic flow velocities measured with transcranial Doppler sonography were respectively of at least 140 cm/s, 120 cm/s, or 100 cm/s at middle, anterior, or posterior and vertical cerebular arteries. Home BP was self-measured by Omron HEM-7051 device for seven days. BP variability was assessed as variability independent of the mean, standard deviation, maximum–minimum difference, and average real variability.

Results: The prevalence of ICAS in the 801 participants (average age 51 years, 50% males) was 7.9% (63 cases). Patients with ICAS compared to those without had significantly higher clinic (135.8 vs 131.9 mmHg, $P = 0.01$) and home systolic BPs (134.8 vs 128.6 mmHg, $P < 0.001$). In multivariate-adjusted regression model, home systolic BPs, irrespective of at morning or evening, were associated with ICAS independently of other risk factors including any BP variability indices (OR, 1.47 to 1.82; $P < 0.005$). However, after similar adjustment including home systolic BP, ICAS was only associated with seven-day morning systolic BP variability (OR, 1.35 to 1.47; $P < 0.02$), neither with evening BP variability ($P > 0.47$), nor any day-to-day BP variability indices ($P > 0.07$).

Conclusions: Asymptomatic ICAS was moderately prevalent in Chinese untreated patients. Both home morning and evening systolic BPs were important determinants of ICAS, and BP variability in the morning was also associated with ICAS.