Conclusions: Suppressed renin activity and aldosterone were associated with uncontrolled nighttime and morning SBP in treated and good 24-hour BP controlled elderly population. Even in good 24-hour BP, low renin activity may be associated with residual ABP risk in elderly population.

ASSOCIATION OF AMBULATORY AND HOME BLOOD PRESSURE VARIABILITY FOR CARDIOVASCULAR OUTCOMES

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Objective: Although blood pressure (BP) variability (BPV) is reportedly associated with cardiovascular prognosis, there is no evidence that either ambulatory BPV (ABPV) or home BPV (HBPV) is a superior clinical marker.

Design and method: We analyzed the association of ABPV and HBPV with cardiovascular prognosis in 1,319 hypertensive outpatients who underwent both home and ambulatory BP measurements in the Japan Morning Surge-Home Blood Pressure (J-HOP) study. BPV is evaluated by standard deviation (SD), coefficient of variation (CV), and average real variability (ARV) of 24-h ambulatory and average morning and evening home systolic BP.

Results: During the median 6.9 years of follow-up, 109 cardiovascular events occurred. All SD, CV, and ARV of HBPV were significantly associated with cardiovascular risk even after adjusted by ABPV (1-SD of HR [95%CI] in SD, CV, and ARV of HBPV: 1.47 [1.23–1.75]; 1.48 [1.24–1.75]; and 1.33 [1.14–1.54]). In the model improvement using goodness-of-fit, HBPV values significantly improved the model predictability when adding to the model including confounding factors and mean 24-h ambulatory SBP and ABPV values. However, these relationships were not shown in ABPV parameters.

Conclusions: Based on the findings from this study using both ambulatory and home BP monitoring in the same individuals, HBPV, i.e., day-to-day BPV, was suggested to have superiority in predicting for cardiovascular incidence compared to ABPV, i.e., short-term BPV through 24-hours.

A STUDY OF 24HOUR CENTRAL BLOOD PRESSURE VARIABILITY WITH MEASURES OF MACRO- AND MICROVASCULAR FUNCTION IN A POPULATION OF UNTREATED HYPERTENSIVE AND NORMOTENSIVE INDIVIDUALS

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Objective: Central blood pressure (cBP) has been more closely associated with target-organ damage compared with brachial BP, although a bidirectional interplay between central and peripheral arteries exists. Brachial short term BP variability (BPV) has been increasingly related to impaired macro- and microvascular function. However, scarce data exists regarding 24hour central BPV (cBPV) and its impact on organ damage. This study aimed to measure 24h cBPV in a population of untreated essential hypertensive (UHTs) and normotensive (NTs) individuals and evaluate its association with measures of macro- and microvascular function.

Design and method: Newly-diagnosed UHTs and NTs were enrolled. 24hour cBP and 24h pulse wave velocity (PWV) were measured with the Mobil-O-Graph device. BPV including average real variability (ARV) of 24h central systolic BP (cSBP) and diastolic BP (cDBP) was calculated according to a standardized formula based on the ambulatory BP monitoring (ABPM) measurements. Urine albumin excretion (UAE) was measured in 24h samples.

Results: We recruited 119 individuals including 79 UHTs and 40 NTs that didn't differ in baseline characteristics. As expected, PWV was increased in UHTs compared to NTs [7.7 (1.5) vs 6.7 (1.2) m/s, p<0.001]. Similarly, in a subset of 60 individuals, UAE was increased [12.1 (9.7) vs 6.4 (4.5) mg/24h, p = 0.008]. UHTs presented higher ARV of 24h, daytime and nighttime cSBP/cDBP compared to NTs (p<0.05 for all comparisons). In total population, 24h PWV positively correlated with ARV of 24h cSBP (r = 0.353, p<0.001) and cDBP (r = 0.235, p = 0.010), ARV of daytime cSBP (r = 0.342, p<0.001) and cDBP (r = 0.235, p = 0.010), and nighttime cSBP (r = 0.297, p = 0.007). Furthermore, UAE correlated with ARV of nighttime cDBP (r = 0.372, p = 0.017). In multivariate analysis after adjusting for age, sex, and hypertension, ARV of 24h cSBP remained an independent predictor of PWV (beta = 0.109, p<0.001). Likewise, ARV of nighttime cDBP independently predicted UAE (beta = 0.480, p = 0.002).

Conclusions: In a population of untreated hypertensives and normotensives, cARV indices are significantly and independently associated with measures of macro- and microvascular function including PWV and UAE, respectively. Further studies are warranted to ascertain the clinical value of cARV in terms of risk stratification and management.

ASSOCIATION BETWEEN MASKED NOCTURNAL HYPERTENSION AND DEPRESSION DISORDER IN COVID-19 POSITIVE PATIENTS

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Objective: An effect of depression for masked hypertension are scarce. We evaluated the prevalence and clinical characteristics of masked nocturnal hypertension (MNH) under hypertension in COVID 19 positive patients

Design and method: The study evaluated 158 hypertensive patients with COVID 19 positive and depression disorder, evaluated by self BP monitoring. Among the participants, classified as masked nocturnal hypertension(MNHT) (Daytime BP below 135/85 mmHg and night-time BP over 120/70 mmHg.

Results: COVID 19 positive patients with depressive symptoms had a significantly higher incidence of hypertension in women compared to men with depressive symptoms. In the logistic regression analysis, the presence of depressive symptom was significantly associated with masked hypertension with COVID 19 positive independently of age, body mass index, education level, and current smoking and drinking status.

Conclusions: COVID 19 positive patients with Depressive symptoms were highly associated with the incidence of hypertension among middle aged women and The highly significant predictive risk factor of depression disorder might be high nighttime BP. Comparison of clinic BP with either daytime high BP or awake high BP

MACHINE LEARNING CLASSIFICATION ON BLOOD PRESSURE VARIATION FOR THE RISK OF COGNITIVE IMPAIRMENT: A CROSS-SECTIONAL STUDY FROM A BLOOD PRESSURE MANAGEMENT COHORT IN HONG KONG

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Objective: The evidence for the association between blood pressure variability (BPV) with cognitive impairment is still uncertain in the Asia population. This study explored whether a machine learning classification on BPV is associated with cognitive impairment among the elderly in Hong Kong.

Design and method: Random samples of 573 participants were selected from a community-based cohort for blood pressure management in July 2021. Participants regularly measured blood pressure. K-means clustering methods were applied to group the standard deviation of BPV into high, medium, and low variations. This method considered both systolic and diastolic blood pressure variations. For cognitive functions, participants were assessed by the shorted version of the Montreal Cognitive Assessment Version, i.e., 5-min MoCA (Hong Kong validated version). Mild cognitive impairment (MCI) was defined with adjustment of age and education according to the 5-min MoCA. BPV was defined as the standard deviation of systolic and diastolic blood pressure values. Logistic and quantile regression models were conducted to explore the association of MCI with systolic or diastolic BPV and a combined BPV classification. Odds ratios (OR) were adjusted for age, gender, educational background social economic status, and other medical histories, including hypertension, hyperlipidemia, diabetes, and stroke.

Results: The 573 participants had a mean age of 72 years with 86% of females. The median follow-up period was eight months with a median number of 19 blood pressure records. Systolic BPV increases the risk of MCI (adjusted OR, 95% CI = 1.18, 1.05 to 1.31), but not diastolic BPV. The quantile regression found that the magnitude of association is more substantial among the population with lower cognitive function (Figure 1). With reference to the machine learning classification, participants with high BPV were shown to have a 5.5 times higher risk of MCI than those with low BPV.

Conclusions: Participants with higher systolic BPV are shown to be associated with poorer cognitive function, and therefore, long-term management of blood pressure variability is also important to reduce the risk of cognitive impairment.