CONCLUSION: In older hypertensive patients, exaggerated morning BP surge is partly associated with the morning increase in platelet aggregation and is a risk factor for hypertensive cerebrovascular disease in relation to a morning increase in sympathetic activity.

Key Words: Thrombosis, Ambulatory blood pressure monitoring, Morning hypertension

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PROGNOSTIC SIGNIFICANCE OF DAY-BY-DAY VARIABILITY OF SELF-MEASURED BLOOD PRESSURE AT HOME: THE OHASAMA STUDY

It is well known that a short-term blood pressure (BP) variability associates with the risk of cardiovascular diseases. We, then, investigated prognostic significance of day-by-day BP variability, as assessed by self-measured BP at home (HBP). We measured HBP on 2578 subjects aged 35 years or more without a history of stroke in a general population of Ohasama, Japan. Stroke morbidity was followed for a mean duration of 10 years. The HBP was measured once every morning and evening for 4 weeks. Morning measurements were made within 1 h of awakening, before breakfast, before taking drugs, in sitting position with at least 2 min. rest. Evening HBP was measured just before going to bed. The day-by-day variability of HBP in each individual was defined as standard deviation (SD) of all HBP measurements. A Cox proportional hazards model that adjusted for major risk factors was used.

There were 166 first strokes during the follow-up period (cerebral infarction 116, cerebral hemorrhage 31, SAH 8, TIA 7, unclear 2). An increase of 5 mmHg in the SD of both morning and evening systolic HBP was associated with a 25 % (95% confidence interval [CI] 0 to 56%, p = 0.048) increase in the risk of stroke. For diastolic BP, similar trend was observed in the SD of morning and evening diastolic HBP, (relative hazard [RH] 1.24, 95% CI 0.95 – 1.62, p = 0.12 for morning; RH 1.24, 95% CI 0.92 – 1.67, p = 0.16 for evening). For the risk of stroke subtypes, day-by-day variability was significantly associated with the risk of cerebral infarction [RHS 1.42 (95% CI 1.10 to 1.82, p = 0.006), 1.31 (95% CI 1.01 to 1.69, p = 0.042), 1.31 (95% CI 0.96 to 1.80, p = 0.087) and 1.24 (95%CI 0.87 to 1.78, p = 0.23) for every 5 mmHg increase in SD of morning systolic, evening systolic, morning diastolic and evening diastolic BP, respectively], while there were no consistent association between SD of HBP values and cerebral hemorrhage. In conclusion, day-by-day BP variability derived from HBP is an independent predictor for ischemic stroke risk in general population.

Key Words: time rate, common carotid artery intima-media thickness, blood pressure monitoring

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SUBCLINICAL ARTERIAL DAMAGE IN MASKED HYPERTENSIVE PATIENTS DETECTED BY HOME BLOOD PRESSURE
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Recent studies have demonstrated that the phenomenon of “Masked Hypertension” have a poor cardiovascular prognosis. We examined whether masked hypertensive patients have the impaired arterial properties.

Key Words: self-measurement, population study, blood pressure measurement

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ASSOCIATION OF THE TIME RATE OF BLOOD PRESSURE VARIATION WITH INCREASED COMMON CAROTID ARTERY INTIMA-MEDIA THICKNESS
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The extent of target-organ damage has been positively associated with the magnitude of blood pressure (BP) variability in essential hyperten-

sion. However, the clinical implications of the rate of BP changes have never been investigated. We evaluated the possible association between the 24-hour time rate of systolic blood pressure (SBP) variation derived from computerized analysis of ambulatory BP monitoring (ABPM) data and the extent of common carotid artery intima-media thickness (CCA-IMT) in normotensive (n=237) and in uncomplicated hypertensive subjects (n=284). No antihypertensive and lipid-lowering treatment had ever been administered in any of the 521 subjects who underwent ABPM on a usual working day. The rate time of SBP variation was computed as the first derivative of the SBP values against time. The 24-hour rate of SBP variation was significantly (p<0.001) higher in hypertensive (0.609 mmHg/min, 95% CI: 0.596-0.622) than in normotensive individuals (0.566 mmHg/min, 95% CI: 0.554-0.576) even after adjusting for baseline characteristics, day-night BP changes, 24-hour heart rate (HR), SBP- and HR variability. In the hypertensive subgroup, the multiple linear regression models revealed independent determinants of CCA-IMT in the following rank order: age (p<0.001), 24-hour time rate of SBP variation (p<0.001), smoking (p=0.002), male gender (p=0.008) and triglycerides (p=0.017). Age (p<0.001) and 24-hour time rate of SBP variation (p=0.015) were the only significant determinants of CCA-IMT in normotensive individuals. A 0.1 mmHg/min increase in the 24-hour rate of SBP variation correlated to an increment of 0.024 mm (95% CI: 0.005-0.042) and 0.026 mm (95% CI: 0.013-0.040) in the CCA-IMT of the normotensive and hypertensive subjects respectively even after adjustment for all baseline characteristics and other ABPM parameters. Thus, the rate of BP fluctuations is greater in hypertensive patients and correlates to CCA-intima-media thickening. These findings indicate that steeper BP variations may produce a greater stress on the vessel wall and consequently result in medial hypertrophy of the large arteries.

Key Words: rate time, common carotid artery intima-media thickness, blood pressure monitoring

We consecutively enrolled 156 outpatients (mean age: 69.5 years) without antihypertensive medication, and classified them into 4 subgroups (Normotension; NT, White Coat Hypertension; WCHT, Masked Hypertension; MHT, Sustained Hypertension; SHT) by using home (135/85 mmHg) and office (140/90 mmHg) blood pressure (BP) values.