

ARTERIAL STIFFNESS AND CIRCARDIAN PATTERN OF BLOOD PRESSURE

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Abstract

Arterial stiffness is a risk factor for cardiovascular morbidity and mortality. The relationship between the arterial stiffness and the circadian pattern of blood pressure (BP) has been controversial. The objective of the present study was to investigate the relationship between arterial stiffness by pulse wave analysis (PWA) and variables of 24-hour ambulatory BP monitoring (ABPM) in patients with high normal BP or hypertension (HTN).

Five hundred forty eight patients (304 males, 48 ± 12 year-old) with high normal BP or HTN were enrolled. BP was measured at the outpatient clinic and 24-hour ABPM was performed. Using radial applanation tonometry, PWA was performed for evaluation of systemic arterial stiffness. Patients were classified into four groups according to the dipping patterns: a nocturnal dipping group, an isolated systolic non-dipping group, an isolated diastolic non-dipping group and a both systolic and diastolic non-dipping group. For adjustment of age, population was divided to 2 groups: old group ≥ 55 year-old ($n = 158$, 75 males), young group <55 year-old ($n = 390$, 229 males).

According to the dipping patterns, augmentation pressure (AP), augmentation index (AI) and heart rate (75bpm) adjusted AI (AI@HR75) showed statistically significant difference ($P = 0.011$, 0.009 and 0.018 , respectively). Multivariate analysis showed that isolated diastolic non-dipping was correlated with arterial stiffness expressed as AI and AI@HR 75, only in young group (β -coefficient = 12.6 , $P = 0.04$ and β -coefficient = 7.503 , $P = 0.028$, respectively).

Arterial stiffness might be closely related with the pattern of non-dipping in young patients with HTN and high normal BP.

Keywords

Arterial stiffness, Circadian pattern, blood pressure, pulse wave analysis, hypertension