

PULSATILE HEMODYNAMICS AND MICROCIRCULATION: EVIDENCE FOR A CLOSE RELATIONSHIP IN HYPERTENSIVE PATIENTS

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Abstract

The possible relationships between indicators of small resistance artery structure and of arterial stiffness and central hemodynamics have not yet been evaluated. Aim of this study was to assess the relationship between indicators of large arteries stiffness, including carotido-femoral pulse wave velocity and of vascular alterations in small resistance arteries (media/lumen ratio, M/L) in patients with primary and secondary hypertension. In 73 patients (mean age, 53±14 years, 34 females, 25 with type 2 diabetes mellitus, 18 never treated) with essential (n=37) and secondary (n=36) hypertension, carotido-femoral pulse wave velocity was measured. In all patients, small resistance arteries were dissected from subcutaneous fat biopsies and mounted on an isometric myograph, for the measurement of the M/L. Pulse wave analysis was performed

in 67 patients. M/L ratio was significantly related to brachial systolic blood pressure and pulse pressure (r=0.36 and 0.31, P<0.001, respectively) and to central systolic and pulse pressure (r=0.44 and 0.42, P<0.001, respectively). A positive correlation was observed between M/L ratio and carotido-femoral pulse wave velocity (r=0.45; P<0.001); this correlation remained statistically significant after adjustment for age and mean blood pressure. M/L ratio was also associated to aortic augmentation index (r=0.33; P=0.008), and this correlations remained statistically significant after adjustment for potential confounders. In hypertensive patients, the presence of structural alterations of small resistance arteries may be associated with the increase in large arteries stiffness and possibly contribute to an increase in central pressure by increasing the magnitude of wave reflections. [**Hypertension. 2013;61:130-6**] PMID: 23150518.

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