



Conference Abstract

P.38 Comparison of Arterial Hemodynamics in Early Vascular Aging (EVA), Average Vascular Aging (AVA) and Healthy Vascular Aging (HVA)

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ABSTRACT

Background: Large artery stiffening, as indexed by carotid-femoral pulse wave velocity (cfPWV), may vary substantially among individuals. The present study aimed to characterize the arterial mechanical properties of the macro- and microvasculature in subjects with early or healthy vascular aging (EVA, HVA).

Methods: Carotid and femoral pressure and central flow waveforms were noninvasively acquired in a total of 873 community residents (aged ≥ 50 years, mean age 66.9 years, 69.2% female). They were classified as EVA and HVA, according to the highest and lowest 10% of the cfPWV stratified by 5-year intervals. The remaining 80% were defined as average vascular aging (AVA). Macrovascular and microvascular functions were characterized by aortic input impedance, systemic vascular resistance and wave reflection indices.

Results: EVA subjects had significantly higher prevalence of hypertension and diabetes. In multivariable analysis adjusting for sex, height, weight and mean arterial pressure (MAP), EVA had significantly increased characteristic impedance and reduced arterial compliance. By contrast, for the microvascular functions, systemic vascular resistance (not adjusted for MAP), amplitude of the reflected wave (Pb) and excess pressure integral (XSPI) derived from the reservoir-wave analysis were significantly increased in EVA when compared with HVA or AVA (all $p < 0.05$). Primary determinants of HVA included female, lower value of XSPI and SVR, whereas determinants of EVA included male, elevated BP, metabolic syndrome, increased Pb and SVR.

Conclusions: Systemic microvasculature play an important role in interacting with macrovasculature, as evidenced from increased or reduced systemic resistance and wave reflection, in subjects with HVA and EVA.

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