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abstract

Contribution of Arterial Stiffness and Wave Reflection on Central Blood Pressure

The contributions of arterial stiffness and pressure wave reflection on the central blood pressure (CBP) were examined. In 2691 Japanese men aged < 60 years old, the brachial-ankle pulse wave velocity (baPWV), radial augmentation index (rAI) and second peak of the radial pressure waveform (SBP2), a marker of CBP, were measured. A quadratic relationship was observed between the baPWV and the rAI: the increase in the rAI associated with increase of the baPWV became attenuated at baPWV values of ≥ 15 m/sec. On the contrary, a linear relationship was observed between baPWV and CBP. A stepwise multivariate linear regression analysis demonstrated that the rAI accounted for 33.6% of the total variation in the SBP2 in subjects with baPWV values of <15.0m/sec, but only 16.2% of the total variation of the SBP2 in subjects with baPWV values of ≥ 15.0 m/sec. Thus, in non-elderly Japanese men, the severity of arterial stiffness may modulate the contribution of the wave reflection to the CBP, and its contribution may be attenuated in subjects with higher levels of arterial stiffness.