J Cardiol. 2016 Jul 16. pii: S0914-5087(16)30119-8. doi: 10.1016/j.jjcc.2016.06.002. [Epub ahead of print]

Comparison of the clinical significance of single cuff-based arterial stiffness parameters with that of the commonly used parameters.

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Abstract

BACKGROUND:

We examined the following: (1) whether the new simple markers related to the arterial stiffness/central hemodynamics [i.e. arterial pressure-volume index (API) and arterial velocity pulse index (AVI)] are clinically interchangeable with the commonly used markers [brachial-ankle pulse wave velocity (baPWV) and radial augmentation index (rAI)]; (2) whether the new simple markers reflect vascular damage as reliably as the commonly used markers; (3) which cardiovascular risk factors are reflected by these new simple markers.

METHODS:

API, AVI, baPWV, and rAI were measured simultaneously in consecutive patients admitted for the management of cardiovascular disease and/or cardiovascular risk factors (n=322).

RESULTS:

The API was correlated with the baPWV (R=0.492, p<0.001) and the AVI correlated with the rAI (R=0.462, p<0.001). The API, AVI, baPWV, and rAI were higher in the patients admitted for coronary angiography (CAG group: n=152) than in those admitted for reasons other than coronary angiography (nonCAG group: n=170). After adjustments for confounding factors, only the AVI was found to be higher in the CAG group than in the nonCAG group. Multivariate linear regression analysis revealed that age and the systolic blood pressure were independently associated with the API and AVI after adjustments.

CONCLUSION:

In patients with cardiovascular diseases or cardiovascular risk factors, the new simple markers and the commonly used markers are not interchangeable for assessing vascular damage and/or cardiovascular risk. Further study is proposed to examine whether AVI is higher in subjects with cardiovascular disease than in those without a history of cardiovascular disease. Similar to the case for the commonly used markers, age and the blood pressure significantly influenced both the new markers; therefore, age and the blood pressure need to be taken into account while interpreting the changes

in these new simple markers.

KEYWORDS:
Arterial stiffness; Augmentation index; Pressure wave reflection; Pulse wave velocity