Editorial

New Epoch for Arterial Stiffness Measurement in the Clinic

Jeong Bae Park^a Kazuomi Kario^b

^aDivision of Cardiology, Department of Medicine, Cheil General Hospital, Dankook University College of Medicine, Seoul, South Korea; ^bDivision of Cardiovascular Medicine, Department of Medicine, Jichi Medical University School of Medicine, Tochigi, Japan

Age changes the vascular structure and function in the normal population, but it has a different effect on wave reflection and pulse wave transmission [1, 2]. Many longitudinal studies have found that arterial stiffness measurement among hypertensive patients, diabetic patients, healthy elderly, and people with high cardiovascular (CV) risk will better evaluate arterial health and predict CV events. European guidance for arterial stiffness measurements described in the European consensus document (2006) [3], the publication of the international reference standards (2010) [4] and the American Heart Association (AHA) scientific statement on arterial stiffness measurements in the USA (2015) have standardized arterial measurement [5], and thus arterial stiffness measurements have been more widely used in clinical settings. The question now is which measurement of arterial stiffness is more accurate to precisely predict future CV events. Most of the guidelines designated aortic pulse wave velocity (PWV; carotid-femoral PWV) as the golden standard (especially in the Western society) [6], but in Japan, where arterial stiffness is the most widely used and where they achieved a great amount of data on brachial-ankle PWV and cardio-ankle vascular index (CAVI) [7], studies found a relationship between organ damage and future CV events. Townsend's [8] brief review on recommendations and standardization of PWV measurements also justified its clinical and scholarly use.

The articles from Korea [9] and Thailand [10] describe CV risk factors and outcomes using the CAVI. The modified RAMA-EGAT score from Thailand combined the conventional risk prevention model with arterial function. It would be helpful to have age- and gender-stratified values of the CAVI in healthy Koreans and in high-risk patients of a metabolically risky condition. The study from Thailand developed its own risk prediction model called the RAMA-EGAT score, which proved to be accurate in the prediction of CV risk in patients with intermediate atherosclerotic risk factors in the Thai population [11], and a further modification of the RAMA-EGAT score with the CAVI enhanced its accuracy. Now they are conducting a long-term prognosis study in patients with diverse risk conditions. The Framingham-CAVI

score from Japan [12] is very impressive as well. In many cohort studies, further estimation of arterial structure and function in addition to traditional risk factors have been found to increase the prediction rate of future CV risk, and the fact that the CAVI is widely used in Thailand and Japan indicates that the analysis of arterial structure and function is becoming normal in clinical settings. Based on the studies conducted in Asia reporting on clinical experience and data on the CAVI, the CAVI is expected to be widely used in Europe or the US as well, and further consensus and clinical experience in Western societies will increase its applicability. We believe that the CAVI to predict CV events in Japan (CAVI-J), which examines patients with common high-risk factors such as diabetes mellitus, metabolic syndrome, high-risk hypertension, chronic kidney disease, history of ischemic heart and brain disease for 5 years, will give us further information. In that sense, the mini-reviews of this issue will be a good start.

*Jeong Bae Park, Seoul
Kazuomi Kario, Tochigi*

Disclosure Statement

The authors declare that no conflicts of interest exist.

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