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Cardio-Ankle Vascular Index as a Surrogate Marker of Early Atherosclerotic Cardiovascular Disease in Koreans with Type 2 Diabetes Mellitus (*Diabetes Metab J* 2018; 42:285-95)

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Early detection of subclinical atherosclerosis in patients with type 2 diabetes mellitus (T2DM) is important, as atherosclerotic cardiovascular disease (ASCVD) is the leading cause of death in these patients [1]. Arterial stiffness is one of the earliest detectable manifestations of arterial dysfunction, and it is a strong predictor of future ASCVD events and all-cause mortality [2].

The cardio-ankle vascular index (CAVI) is a novel marker of arterial stiffness, which has been developed and widely studied in Japan [3]. It's non-invasive, easy to measure, unaffected by blood pressure, and superior in reproducibility compared with pulse wave velocity (PWV) [4]. Recent studies demonstrated the potential role of CAVI as a surrogate marker of atherosclerosis in patients with T2DM; CAVI may reflect endothelial function in T2DM [5], is useful for detecting coronary artery calcifications [6,7], and may be an important ASCVD risk factor in elderly (≥65 years) patients with T2DM [8].

In this article entitled "Cardio-ankle vascular index as a surrogate marker of early atherosclerotic cardiovascular disease in Koreans with type 2 diabetes mellitus," Park et al. [9] investigated the correlation between surrogate markers of subclinical atherosclerosis including carotid artery intima medial thickness (IMT), ankle-brachial index (ABI), PWV, and CAVI and their optimal use in diabetic patients. They showed that a high CAVI was an independent risk factor in the non-ASCVD group for both 10-year ASCVD and atherosclerosis, concluding that CAVI is the most sensitive surrogate marker for identifying subclinical atherosclerosis in patients with T2DM without ASCVD. There are several issues that need to be addressed.

First, careful interpretation of CAVI results is required, because a high CAVI represents vascular stiffness as well as an increased vascular tone caused by smooth muscle contraction [4]. Furthermore, patients with a low ABI (<0.9) may show a falsely low CAVI and, therefore, are recommended to be excluded from CAVI study [2-4]; however, patients with a low ABI (<0.9) were not excluded in the present study. Second, a substantial number of patients in the non-ASCVD group might not have undergone examinations to detect ASCVD; therefore, asymptomatic ASCVD may have remained undetected. Third, Kim et al. [10] reported that a high CAVI in Korean patients with T2DM is associated with the presence of arterial plaque, increased IMT, and microvascular complications such as nephropathy and neuropathy. Microalbuminuria was the only marker of microvascular complications included in the present study, and showed no significant difference between ASCVD and non-ASCVD group. However, the possible reasons for this result were not discussed. Further investigations about the correlation between CAVI and microvascular

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complications are required. Finally, the authors divided the non-ASCVD group into three subgroups according to CAVI: low (CAVI <8), moderate (8≤CAVI<9), and high (CAVI ≥9). It would be helpful for readers to mention whether these criteria are from the manufacturer's instructions or some other references.

CONFLICTS OF INTEREST

No potential conflict of interest relevant to this article was reported.

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