

## Editorial



# Smoking Cessation as a Target of Arterial Destiffening

Jin-Sun Park , MD, PhD

Department of Cardiology, Ajou University School of Medicine, Suwon, Korea

► See the article “Dose-Response Association between Smoking Cessation and Arterial Stiffness: The Cardiovascular and Metabolic Diseases Etiology Research Center (CMERC) Cohort” in volume 50 on page 361.

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### Correspondence to


Jin-Sun Park, MD, PhD

Department of Cardiology, Ajou University School of Medicine, 164, World cup-ro, Yeongtong-gu, Suwon 16499, Korea.  
E-mail: lavioli@hanmail.net

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### ORCID iDs

Jin-Sun Park   
<https://orcid.org/0000-0002-7775-4092>

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Smoking is well-known cardiovascular risk factor.<sup>1)</sup> As smoking causes vascular damage resulting in endothelial dysfunction, increased oxidative stress, and inflammation,<sup>2)</sup> it may increase arterial stiffness. Many studies have investigated the effect of smoking on pulse wave velocity (PWV).<sup>2)3)</sup> They reported that smoking was found to be a significant predictor of increased PWV. Increasing arterial stiffness may be one of underlying mechanisms of smoking to progress cardiovascular disease.

Life style modification, including smoking cessation, has been emphasized for cardiovascular disease prevention. After a long period of smoking cessation, the plasma nitric oxide, which contributes to vasodilatation and arterial destiffening, returns to be normal.<sup>4)5)</sup> Smoking effect on arterial stiffness might be reversible. However, the effect of smoking cessation on arterial stiffness has not been fully evaluated.

In the issue of the *Korean Circulation Journal*, Lee et al.<sup>6)</sup> investigated the effect of smoking cessation on arterial stiffness. They analyzed the data of total 1,169 males aged 30–64 years in the Cardiovascular and Metabolic Disease Etiology Research Center cohort. They demonstrated a dose-response change in arterial stiffness, measured by augmentation index from radial artery waveform, according to the duration of smoking cessation. Although this issue could not suggest the definite duration of smoking cessation to reverse arterial stiffness, the results suggest that smoking cessation could reduce the degree of arterial stiffness and the longer duration of smoking cessation might improve more the vascular function.

Arterial stiffness is determined by structural changes in the intrinsic properties of the vessel wall and functional changes, such as endothelial dysfunction related to the sympathetic nervous system. Lee et al.<sup>6)</sup> suggested the nitric oxide synthesis related to the sympathetic nervous system as a possible mechanism of reversible effect of smoking cessation on arterial stiffness. Several data of the relationship between smoking cessation and normalized nitric oxide level support it.<sup>4)5)</sup> Due to combined intrinsic vascular change, arterial destiffening effect of smoking cessation may need long duration.

Many clinical studies have suggested arterial destiffening strategies. Suggested arterial destiffening strategies have been focused on the antihypertensive medication.<sup>7)8)</sup> As subjects were recruited from general population, excluding effect of antihypertensive medication, Lee et al's<sup>6)</sup> findings suggest that life style modification, including smoking cessation, may also be one of destiffening strategies. In at-risk persons, smoking cessation may reduce the incidence of future cardiovascular events by arterial destiffening.

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