

Editorial



Noninvasive Functional Evaluation of Coronary Microvascular Dysfunction

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Conflict of Interest

The author has no financial conflicts of
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Statin therapy effectively decrease cardiovascular morbidity and mortality.¹⁾ In the Heart Outcomes Prevention Evaluation-3 trial, statin therapy reduced significantly the risk of cardiovascular events in a diverse population of persons who did not have cardiovascular disease and who were at intermediate risk.²⁾ The exact mechanism of a benefit of statin therapy on cardiovascular morbidity and mortality is still unclear. Possible mechanisms of these beneficial effects of statin therapy may be improvements in endothelial dysfunction and coronary flow reserve (CFR).³⁾ As activation of the renin-angiotensin-aldosterone system and sympathetic nervous system could cause endothelial dysfunction in the hypertensives, the addition of statin therapy to antihypertensive medications, which may improve in endothelial dysfunction and CFR, may be related to a significant reduction of cardiovascular events.

In the issue of the *Journal of Cardiovascular Imaging*, Yang et al.⁴⁾ investigated the effect of statin on CFR using echocardiography. In this double-blind, randomized controlled trial, they analyzed the data of total 95 hypertensives at cardiovascular risk. Patients were randomly assigned in a 1:1 ratio to receive statin or placebo in addition to standard antihypertensive therapy and lifestyle modification. They demonstrated that statin treatment could improve CFR in hypertensive patients at cardiovascular risk.

Due to the invasiveness, measurement of CFR using a Doppler guidewire has not been adequately used to evaluate the efficacy of any medications or assess the coronary vascular function in patients at intermediate cardiovascular risk. Although invasive measurement of CFR has many data as a diagnostic or prognostic tool in patients at cardiovascular risk, this test could not be easily used in clinical practice. Recent advances in echocardiographic imaging techniques have made it feasible to measure CFR noninvasively. Measurement of CFR using echocardiography usually correlated well with invasive methods using a Doppler guidewire.⁵⁾ In this study, CFR was measured by echocardiography. By echocardiography, they could evaluate the changes of CFR noninvasively in patients at intermediate cardiovascular risk. Measurement of CFR using echocardiography was feasible in the follow-up of the patients, at minimal to no inconvenience to the patient. This point may suggest the noninvasive measurement of CFR using echocardiography could be used in clinical practice.

Although there are still technical limitations, noninvasive measurement of CFR using echocardiography could be applied as both a diagnostic and prognostic tool in patients at cardiovascular risk.

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