Atorvastatin Before Percutaneous Coronary Intervention

A loading dose of atorvastatin 80 mg/d for a patient about to undergo percutaneous coronary intervention (PCI) can help reduce dangerous inflammation and improve postoperative cardiac function, according to a study conducted by researchers from the General Hospital of Chinese People's Armed Police Forces in Beijing, China.

In the trial, 102 patients with ST-segment elevation myocardial infarction (STEMI) were randomly assigned to 3 groups. Group A (n = 32) received atorvastatin 80 mg before emergency PCI, atorvastatin 40 mg for 4 weeks post-PCI, and then atorvastatin 20 mg for 20 weeks. Group B (n = 32) received no loading dose, but received atorvastatin 40 mg for 4 weeks, followed by 20 mg for 20 weeks. Group C (n = 38) received only post-PCI atorvastatin 20 mg for 24 weeks.

Patients in group A had the lowest plasma levels of high-sensitivity C-reactive protein (hs-CRP), B-type natriuretic peptide (BNP), and matrix metalloproteinase type 9 (MMP-9) ($P < .05$).

Inflammation, as manifested by hs-CRP, BNP, and MMP-9, has been associated with severity of lesions in coronary arteries; it is also a predictor of ventricular remodeling and prognosis. One of the most important inflammatory markers, hs-CRP is considered to play an essential role in how atherosclerosis develops and progresses. MMP-9 is critical to wound healing and is linked to the vulnerability of plaque and ventricular remodeling after myocardial infarction (MI).

In this study, the levels of MMP-9 declined faster in groups A and B, compared with group C at 7 days, 4 weeks, and 24 weeks. The researchers cite another study that also found a dose as low as atorvastatin 20 mg may reduce plasma MMP-9 and hs-CRP; that study also found it helped stabilize borderline vulnerable plaques and reversed the progress of atherosclerosis. Similarly, BNP, also an inflammatory marker and involved in remodeling of the left ventricle, was significantly lower in group A 7 days after PCI. Groups A and B also showed significant improvements in left ventricular ejection fraction (LVEF), compared with group C.

The researchers point out that many clinical studies have shown statins to have powerful antiinflammatory effects—especially atorvastatin, which acts rapidly on inflammation—within 5 minutes of administration. Those antiinflammatory effects, not the lower low-density lipoprotein cholesterol levels, are what produce the benefits to patients, the researchers contend.

Combining all their findings, they say, the LVEF improvements imply that intensive treatment with atorvastatin (80-mg loading dose and 40 mg/d for 4 weeks) could have "great suppressive effects" on the inflammation involved in the onset of acute MI. ●

Source: Liu H-L, Yang Y, Yang S-L, et al. *Clin Ther.* 2013;35(3):261-272.
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