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Ask The Doctor

Calcium Intake and Vascular Calcification

By William Davis, MD, FACC

Q: *I've read that arterial calcification means that you have abnormal plaque and hardening of the arteries. If I take a calcium supplement to prevent osteoporosis, will this lead to plaque in my arteries?*

A: You are absolutely correct that arterial calcification can signify hidden atherosclerotic plaque in the carotid or coronary arteries, or any artery for that matter. Calcium consistently makes up 20% of the volume of atherosclerotic plaque that leads to heart attack and stroke. This is the rationale, for instance, behind CT heart scanning as an easy method for detecting hidden coronary plaque. In other words, measuring arterial calcification is an accurate way to gauge total plaque in the heart's arteries.[1]

It is well established that calcium supplementation modestly reduces risk for osteoporosis and fracture.[2] But does your calcium supplement end up adding to calcified plaque in your arteries? No, it does not. In fact, the opposite is true: people with arterial calcification tend to have less calcium in bones, and are therefore at risk for osteopenia (low bone mass) and osteoporosis. Conversely, people with less arterial calcification tend to have more calcium in their bones.[3–5]

The disconnect between arterial and bone calcium occurs because arterial calcification requires an active process within plaque that is not subject to blood levels of calcium, except in extreme situations like kidney failure. Calcium metabolism in bone tissue is an active process that responds to various hormones, local bone processes, and blood levels of calcium. Arterial calcium and bone calcium therefore operate independently and with separate control systems.[6]

There is evidence to suggest that healthy calcium metabolism may actually reduce the risk of heart disease, though the mechanism of action remains unknown. A UCLA team of investigators has documented that the higher your vitamin D blood level (a major determinant of calcium metabolism), the less coronary plaque as measured by CT heart scanning.[7] A fascinating analysis conducted by a British research team demonstrated that the farther away from the equator you live (and thus are exposed to less sunlight that activates vitamin D in the skin), the more likely you are to suffer a heart attack.[8]

You can take calcium without worrying about whether you're contributing to heart attack or stroke risk. In fact, by combining your calcium supplement with vitamin D, you may lower your risk for developing coronary or carotid plaque. Men are advised to take a daily calcium supplement of 800-1000 mg along with 1000 IU of vitamin D; women are advised to take 1000-1200 mg per day of calcium along with 1000 IU of vitamin D. Although the RDA for vitamin D is only 400 IU, people in northern climates or those not exposed to plentiful sunshine (30 minutes a day) require greater quantities for full health benefits. This combination provides protection from osteoporosis and may contribute to lessening the development of arterial calcification.

Dr. William Davis is an author, lecturer, and practicing cardiologist focusing on coronary disease regression. He is the author of Track Your Plaque: The only heart disease prevention program that shows you how to use the new heart scans to detect, track, and control coronary plaque. *He can be contacted at www.trackyourplaque.com.*

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