Lack of vitamin D may increase heart disease risk

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The same vitamin D deficiency that can result in weak bones now has been associated with an increased risk of cardiovascular disease, Framingham Heart Study researchers report in *Circulation: Journal of the American Heart Association*.

“Vitamin D deficiency is associated with increased cardiovascular risk, above and beyond established cardiovascular risk factors,” said Thomas J. Wang, M.D., assistant professor of medicine at Harvard Medical School in Boston, Mass. “The higher risk associated with vitamin D deficiency was particularly evident among individuals with high blood pressure.”

In a study of 1,739 offspring from Framingham Heart Study participants (average age 59, all Caucasian), researchers found that those with blood levels of vitamin D below15 nanograms per milliliter (ng/mL) had twice the risk of a cardiovascular event such as a heart attack, heart failure or stroke in the next five years compared to those with higher levels of vitamin D.

When researchers adjusted for traditional cardiovascular risk factors such as high cholesterol, diabetes and high blood pressure, the risk remained significant with a 62 percent higher risk of a cardiovascular event in participants with low levels of vitamin D compared to those with higher levels.

Researchers observed the highest rate of cardiovascular disease events in

subset analyses dividing 688 participants according to high blood pressure status. After researchers adjusted for conventional cardiovascular risk factors, participants with hypertension and a vitamin D deficiency had about 2 times the risk of having a cardiovascular disease event in five years.

Researchers also found an increase in cardiovascular risk with each level of vitamin D deficiency.

“We found that people with low vitamin D levels had a higher rate of cardiovascular events over the five-year follow-up period,” Wang said. “These results are intriguing and suggestive but need to be followed up with further study.”

Study participants had no prior cardiovascular disease and were tested for vitamin D status and then followed for an average of 5.4 years.

The participants attended the offspring examinations between 1996 and 2001. Researchers obtained medical history, physical examinations and laboratory assessments of vascular risk factors. They also obtained medical records related to cardiovascular disease.

Overall, 28 percent of individuals had levels of vitamin D below15 ng/mL and 9 percent had levels below10 ng/mL. Although levels above 30 ng/mL are considered optimal for bone metabolism, only 10 percent of the study sample had levels in this range, researchers said.

During follow-up:

-- 120 participants developed a first cardiovascular event including fatal and nonfatal coronary heart disease;
-- 28 participants had fatal or nonfatal cerebrovascular events such as nonhemorrhagic stroke;

-- 19 participants were diagnosed with heart failure; and
-- 8 had occurrences of claudication, fatigue in the legs during activity.

“Low levels of vitamin D are highly prevalent in the United States, especially in areas without much sunshine,” Wang said. “Twenty to 30 percent of the population in many areas has moderate to severe vitamin D deficiency.”

Most of this is attributed to lack of sun exposure, pigmented skin that prevents penetration of the sun’s rays and inadequate dietary intake of vitamin D enriched foods, researchers said.

“A growing body of evidence suggests that low levels of vitamin D may adversely affect the cardiovascular system,” Wang said. “Vitamin D receptors have a broad tissue distribution that includes vascular smooth muscle and endothelium, the inner lining of the body’s vessels. Our data raise the possibility that treating vitamin D deficiency, via supplementation or lifestyle measures, could reduce cardiovascular risk.

“What hasn’t been proven yet is that vitamin D deficiency actually causes increased risk of cardiovascular disease. This would require a large randomized trial to show whether correcting the vitamin D deficiency would result in a reduction in cardiovascular risk.”

Therfore, Wang doesn’t recommend physicians check for vitamin D deficiency or that those with a known vitamin D deficiency be treated to prevent heart disease at this time.

During the past decade, researchers have studied several other vitamins that initially showed promise in reducing heart disease. But the vitamins didn’t reduce heart disease in subsequent large randomized trials.

“On the flip side, just because other vitamins haven’t succeeded doesn’t

preclude the possibility of finding vitamins that might prevent cardiovascular disease," Wang said. "This is always an area of great interest. Vitamins are easy to administer and in general have few toxic effects."

The American Heart Association recommends that healthy people get adequate nutrients by eating a variety of foods in moderation, rather than by taking supplements. Food sources of vitamin D include milk, salmon, mackerel, sardines, cod liver oil and some fortified cereals. Vitamin or mineral supplements aren't a substitute for a balanced, nutritious diet that limits excess calories, saturated fat, trans fat, sodium and dietary cholesterol. This dietary approach has been shown to reduce coronary heart disease risk in healthy people and those with coronary disease.

Source: American Heart Association