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SMALL INCREASES IN PHOSPHORUS MEAN HIGHER RISK OF HEART DISEASE

Higher Phosphorus and Lower Kidney Function Linked to Coronary Artery Calcifications

Washington, DC (November 3, 2009) — Higher levels of phosphorus in the blood are linked to increased calcification of the coronary arteries— a key marker of heart disease risk, according to a study in an upcoming issue of *Clinical Journal of the American Society of Nephrology* (CJASN). "This may help to explain why even early-stage chronic kidney disease (CKD) is associated with increased cardiovascular risk that is not otherwise explained by traditional risk factors," comments Katherine R. Tuttle, MD (Providence Medical Research Center, Spokane, WA).

The study looked at the relationship between phosphorus levels and coronary artery calcification (CAC) in nearly 900 healthy adults from the Spokane Heart Study, a long-term study of heart disease risk factors. Previous studies have linked CAC—an early sign of atherosclerosis ("hardening of the arteries")—to an increased risk of myocardial infarction (heart attack) and other cardiovascular events. At the start of the study, 28 percent of the participants had CAC.

After six years' follow-up, another 33 percent of participants had developed CAC. For those who already had CAC, the level of CAC increased during follow-up.

The relationship between phosphorus levels and CAC remained significant even after adjustment for other factors. "Even small increases in the blood level of phosphorus predicted an increased risk of progressive CAC in these apparently healthy adults," says Tuttle. The phosphorus-related increase in CAC was comparable to that seen with traditional heart disease risk factors like high blood pressure and high cholesterol.

In addition, participants with lower levels of kidney function—even if not below the normal range—were more likely to have progressive CAC. Recent studies have linked higher phosphorus levels to increased CAC in patients with CKD as well.

MORE

"Our results may help explain why even early-stage CKD is associated with increased cardiovascular risk that is not explained by traditional risk factors," says Tuttle. More research will be needed to see if treatments to lower phosphorus levels can reduce heart disease risk in people with early-stage CKD, or even those without CKD who have CAC."

The study had some important limitations, including the use of estimated kidney function levels. In addition, it did not address several factors that can affect phosphorus levels, such as parathyroid hormone and vitamin D.

Robert A. Short, PhD (also of Providence Medical Research Center) was co-author of the study. The authors reported no financial disclosures.

The study, "Longitudinal Relationships among Coronary Artery Calcification, Serum Phosphorus, and Kidney Function," will appear in an upcoming issue of CJASN and online at <http://cjasn.asnjournals.org/> on November 5, doi 10.2215/CJN.01250209.

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