Kidney drugs hampered by high blood phosphate

18 August 2011

High blood phosphate levels can set chronic kidney disease (CKD) patients on a rapid path to kidney failure, according to a study appearing in an upcoming issue of the *Journal of the American Society Nephrology* (JASN). To make matters worse, phosphate appears to interfere with the effectiveness of important kidney medications.

The kidneys of patients with CKD cannot efficiently get rid of wastes such as excess phosphate in the blood. As a result, the kidneys become overloaded with phosphate. Carmine Zoccali, MD (CNR-IBIM, Clinical Epidemiology and Physiopathology of Renal Diseases and Hypertension of Reggio Calabria, Italy) and his colleagues wondered how this phosphate overload affects the kidneys of patients with CKD. They also wondered whether phosphate overload alters the effects of ramipril, a drug prescribed to slow the progression of kidney disease. (The use of ramipril and other drugs in its class represents the current standard of care for patients with CKD.)

The researchers studied health information from 331 CKD patients, dividing patients into four groups based on their phosphate levels.

Among the major findings:

- Even though their blood phosphate was still normal or near normal, patients in the two highest phosphate groups progressed more quickly to serious kidney dysfunction or kidney failure than patients with lower phosphate levels.
- Higher phosphate levels blunted ramipril's benefits.

These results suggest that phosphate levels can predict which CKD patients are in serious trouble of developing kidney failure. They also show that high phosphate levels block the beneficial effects of important kidney medications.

Future studies should test whether reducing phosphate improves kidney health and optimizes patients' medications. "Our study opens the exciting possibility that reducing phosphate, either by diet or drug treatment, may enhance CKD patients' response to certain drugs," said Dr. Zoccali. "If our findings are replicated in a new clinical trial, interventions aimed at reducing phosphate will be a relevant step forward in the fight against these dangerous kidney diseases," he added.

More information: The article, entitled "Phosphate May Promote CKD Progression and Attenuate Renoprotective Effect of ACE Inhibition," will appear online at doi:10.1681/ASN.2011020175

Provided by American Society of Nephrology