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Cutting Dietary Phosphate Doesn't Save Dialysis Patients' Lives, Study Suggests

Doctors often ask kidney disease patients on dialysis to limit the amount of phosphate they consume in their diets, but this does not help prolong their lives, according to a study appearing in an upcoming issue of the Clinical Journal of the American Society Nephrology (CJASN). The results even suggest that prescribing low phosphate diets may increase dialysis patients' risk of premature death.

Blood phosphate levels are often high in patients with kidney disease, and dialysis treatments cannot effectively remove all of the dietary phosphate that a person normally consumes. Because elevated phosphate can lead to serious complications and premature death, dialysis patients are advised to restrict their phosphate intake and/or take phosphate binder medications. Kidney specialists and dietitians have long espoused dietary phosphate restriction; however, there have been few studies of its long-term effects on patient survival and health.

To investigate the issue, Steven Brunelli, MD, MSCE (Brigham and Women's Hospital and Harvard Medical School), Katherine Lynch, MD (Beth Israel Deaconess Medical Center), and their colleagues analyzed data from 1751 patients on dialysis who were followed for an average of 2.3 years. Prescribed daily dietary phosphate was restricted to levels < 870 mg, 871-999 mg, 1000 mg, 1001-2000 mg, and not restricted in 300, 314, 307, 297 and 533 participants, respectively.

The researchers found that patients who were prescribed more restrictive dietary phosphate levels had poorer nutritional status and were more likely to require nutritional supplements. Also, patients with more liberal dietary phosphate restrictions were less likely to die during the study. Specifically, patients prescribed 1001-2000 mg/day were 27% less likely to die and those with no specified phosphate restriction were 29% less likely to die than patients prescribed < 870 mg/day.

When comparing different subgroups of patients, the investigators found a more pronounced survival benefit of liberal dietary phosphate prescription among non-blacks,

patients without elevated phosphate levels, and those not taking vitamin D.

"Our data suggest that prescription of low phosphate diets did not improve survival among hemodialysis patients and may, in fact, be associated with greater mortality," said Dr. Brunelli. "In part, this may relate to compromised intake of other essential macronutrients -- such as protein -- that occur unintendedly when low phosphate diets are prescribed, which may offset or supersede any beneficial effects on phosphate mitigation."

Dr. Brunelli noted that these findings apply to naturally occurring phosphate only and do not pertain to foods that are high in phosphate due to phosphate-containing food additives, which were much less abundant in foods at the time the study data were collected (1995-2001). This is very important for several reasons: 1) phosphate additives are now exceedingly common in foods and are present in high doses, 2) additive phosphate is more readily absorbed by the body than naturally occurring phosphate, and 3) foods with intrinsically high phosphate tend to be rich in other nutrients, whereas foods rendered high in phosphate are not necessarily so. Therefore, the effects of foods that are high in phosphate-containing food additives should be investigated in future studies.

Study co-authors include Rebecca Lynch, MS, RD (Brigham and Women's Hospital) and Gary Curhan, MD, ScD (Brigham and Women's Hospital and Harvard Medical School).

Steven Brunelli, Katherine Lynch et al. The Association between Prescribed Dietary Phosphate Restriction and Mortality among Hemodialysis Patients. Clinical Journal of the American Society Nephrology, Dec 9, 2010 DOI: 10.2215/CJN.04620510