

SERUM PHOSPHATE LEVELS AND MORTALITY IN PATIENTS WITH NORMAL RENAL FUNCTION ATTENDING INNER-CITY OUTPATIENT CLINICS

Matthew Abramowitz, William Southern, Irwin Lotwin, Maria Coco, Thomas Hostetter, Michal L. Melamed; Albert Einstein College of Medicine, Bronx, NY.

Elevated phosphate levels have been associated with mortality in patients with ESRD, early CKD and in mostly white participants of a Framingham Study. We conducted a non-concurrent observational cohort study to test whether an elevated serum phosphate level was associated with mortality in a mostly minority outpatient population.

Patients with a serum phosphate level measured and an estimated GFR (eGFR) >60 ml/min/1.73m² visiting a Montefiore Medical Center clinic (excluding oncology, HIV and transplant clinics) from 1/1/2000 to 12/31/2002 were included (n=13,092). Baseline data including serum phosphate, creatinine, demographics, comorbidities and insurance status were collected. GFR was estimated using the 4-variable MDRD Study equation. Outcome data was obtained from linking to the Social Security Administration records (sensitivity 87% for in-hospital deaths). Cox proportional hazards models were constructed to compare mortality among patients with different phosphate levels after adjustment for clinical variables.

Patients in the highest quartile of serum phosphate (>3.6 mg/dl) were more likely to be younger ($p<0.001$), female (<0.001), non-Hispanic black ($p=0.007$), diabetic (0.02) and had higher eGFRs and serum calcium and lower serum bicarbonate and hemoglobin levels ($p<0.001$ for all). Compared to the lowest quartile of phosphate (<3.0 mg/dl), the hazard ratio for mortality for those in the highest quartile of serum phosphate after adjustment for all of the above factors and hypertension, history of cardiovascular disease, serum albumin and insurance status was 1.24 (1.04-1.47) (p-trend across phosphate quartiles 0.03). Each 1 mg/dl higher serum phosphate was associated with a hazard ratio of 1.12 (1.01-1.24) for mortality.

High normal serum phosphate levels are associated with mortality in a multi-ethnic inner-city clinic population. Further studies are needed to further delineate mechanisms and test interventions to reduce phosphate levels.