

Comparing Mortality-Predictability of Hyperphosphatemia in Maintenance Hemodialysis Patients with and without Polycystic Kidney Disease

Lilia Lukowsky, MPH¹; Csaba P. Kovesdy, MD²; Gabriel McNeill, MPH¹; Elani Streja, MPH¹; Jennie Jing, MS¹; Mahesh Krishnan, MD, MPH, MBA, FASN³; Allen R Nissenson, MD, FASN³; and Kamyar Kalantar-Zadeh, MD, MPH PhD¹

¹Harold Simmons Center for Chronic Disease Research & Epidemiology LABioMed at Harbor-UCLA, Torrance, CA; ²Nephrology Division, VAMC, Salem, VA; ³DaVita Inc., Denver, CO

INTRODUCTION

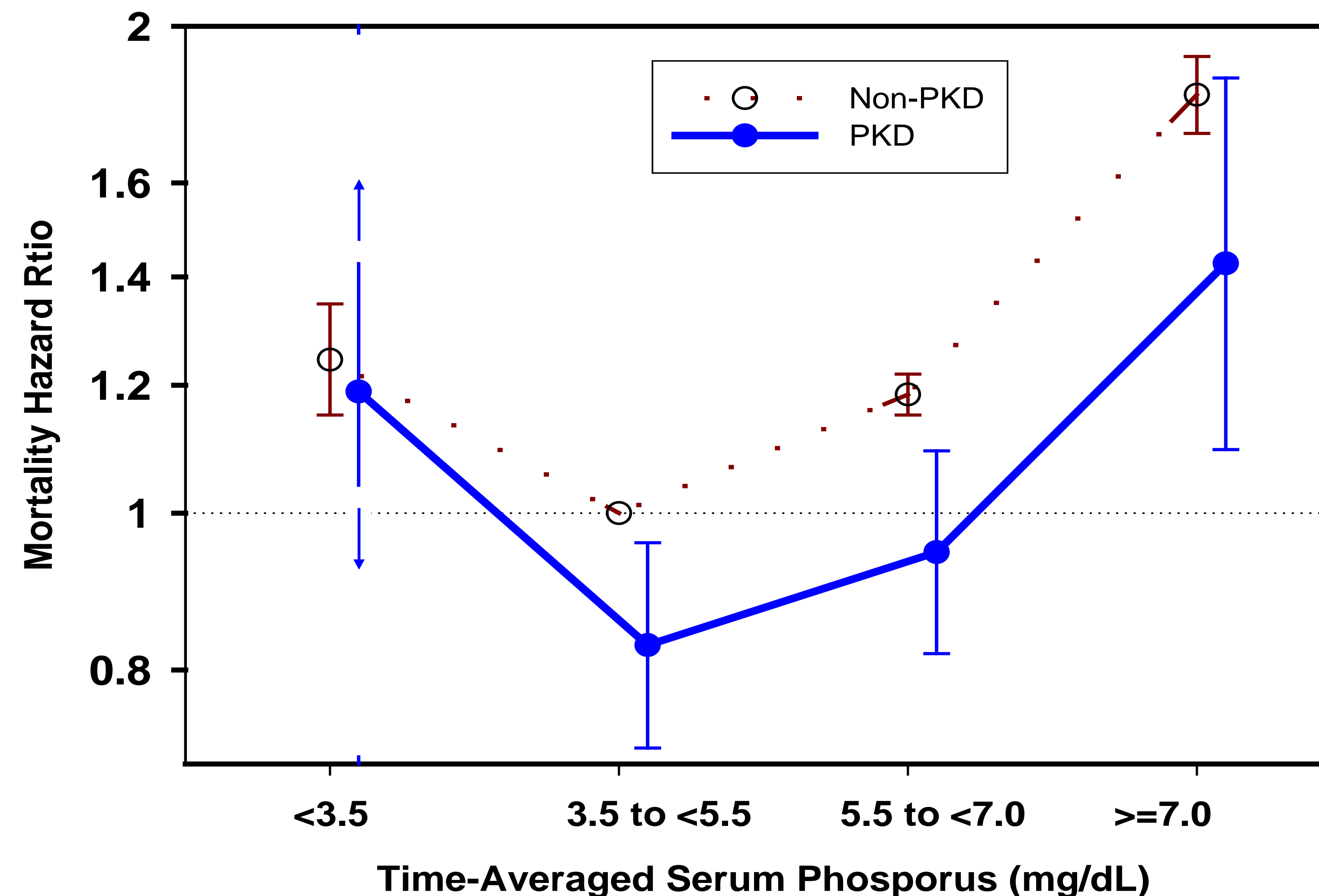
- Although observational studies show consistent associations between high serum phosphorus and death risk in maintenance hemodialysis (MHD) patients, it is not known whether PKD-MHD patients exhibit the same or different associations.
- Patients with PKD, who develop end-stage renal disease and who need to undergo MHD treatment, usually have fewer comorbid conditions and better survival.
- We hypothesized that in PKD MHD patients, similar to non-PKD MHD patients, hyperphosphatemia is associated with increased death risk.

METHODOLOGY

- We examined a 3-year (7/2001-6/2004) cohort of 58,917 MHD patients including 1,562 PKD patients in DaVita clinics using Cox models adjusted for case-mix & malnutrition-inflammation complex syndrome (MICS) including serum calcium and PTH in the MICS adjusted model.
- For each patient we calculated 3-year-averaged serum phosphorus values based on weekly to monthly measured phosphorus levels over 3 years.

RESULTS

- PKD & non-PKD pts were 58.2±13.6 & 61.5±15.4 years old (mean ± SD) & included 49% & 46% women, & 8% & 47% diabetics, respectively. In fully adjusted models across 4 P increments (<3.5, 3.5-<5.5 [ref], 5.5-<7.0 & ≥7.0 mg/dL, P in 3.5 to 5.5 mg/dL range was associated with greatest survival in both PKD & non-PKD pts. Incremental association between hyper-P >5.5 mg/dL & increased death risk were similar in both groups (see Figure):



CONCLUSIONS

- In a large MHD cohort across the nation, associations of 3-year time-averaged serum phosphorus with death risk in PKD MHD patients are similar to their non-PKD counterparts; low phosphorus level (<3.5 mg/dL) is also associated with increased death risk.

KEY LEARNINGS

- ✓ Hyperphosphatemia (phosphorus >5.5 mg/dL) is associated with increased death risk in both PKD and non-PKD MHD patients.
- ✓ The greatest survival is observed with a serum phosphorus between 3.5 and 5.5 pg/ml.
- ✓ Low serum phosphorus level (<3.5 mg/dL) is also associated with increased death risk in both PKD and non-PKD patients.
- ✓ Examining the differences in mortality predictability of hypo- and hyperphosphatemia between PKD and non-PKD patients deserve further research.

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