

Association of Mortality with Serum Alkaline Phosphatase (AlkPhos) and Parathyroid Hormone (PTH) in Chronic Peritoneal Dialysis (CPD) Patients

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INTRODUCTION

- Serum Alkaline Phosphatase (AlkPhos), a direct marker of hyperactive bone disease and renal osteodystrophy, may be a better mortality predictor than parathyroid hormone (PTH) in dialysis patients.
- We examine this hypothesis in chronic peritoneal dialysis (CPD) patients, where adynamic bone disease is highly prevalent.

METHODS

- We examined a large and contemporary cohort of all CPD patients who underwent PD treatment for at least 90 days in any DaVita dialysis clinic from July 2001 through June 2006, and followed-up to June 2007.
- Associations with mortality were examined in Cox models.
- We identified 12,422 CPD patients whose serum AlkPhos and PTH were measured at baseline. The average of the cohort was 54±16 years old, and included 47% women and 23% African Americans.
- Serum AlkPhos was divided into 10 preselected groups by increments of 20 IU/L (reference: 70-90 U/L).

RESULTS

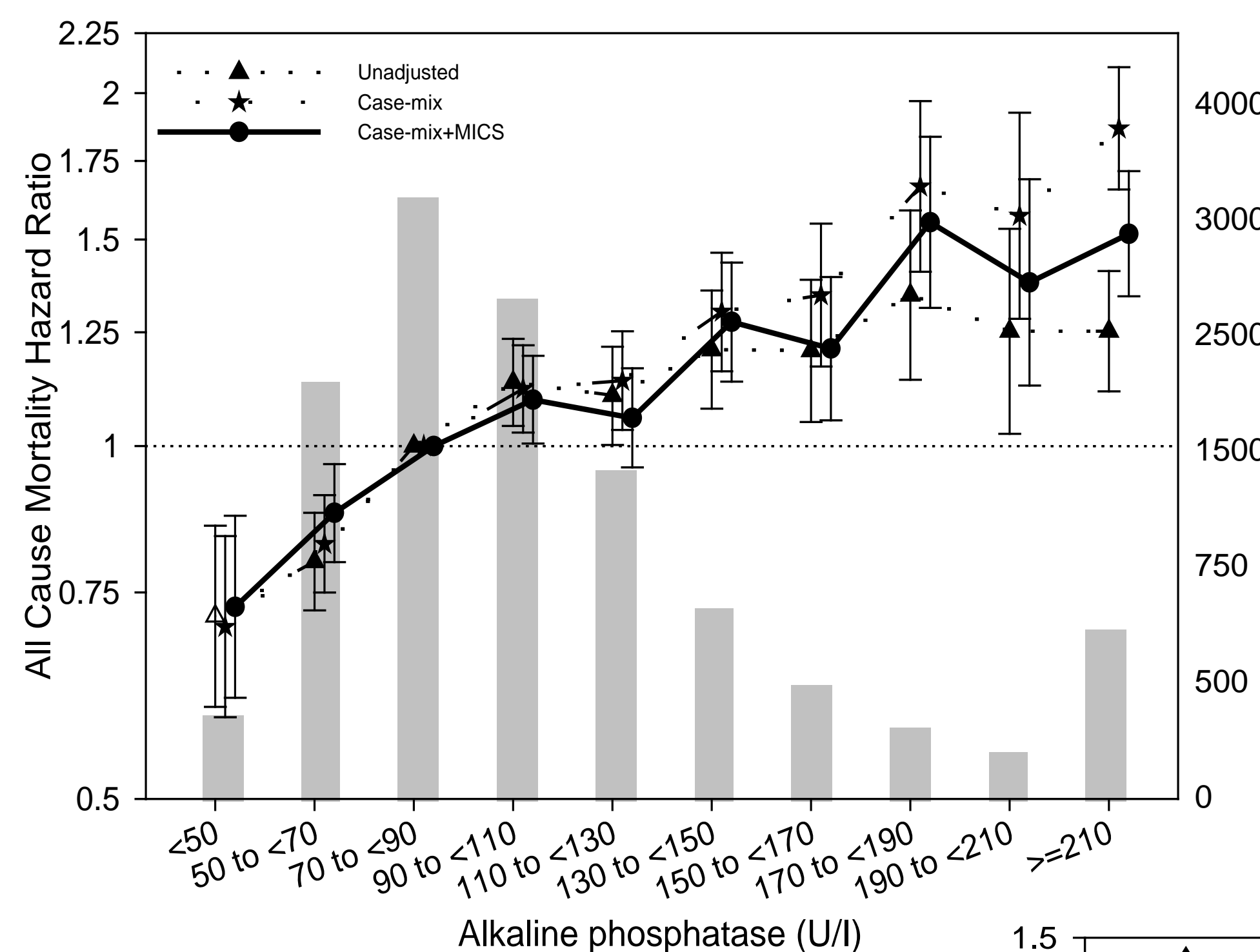


Figure 1. All cause Mortality Hazard Ratio & Baseline Serum AlkPhos

- Higher AlkPhos was linearly and incrementally associated with increased death risk. Death hazard ratios (HRs) and 95% CI for AlkPhos in 130-<150U/L, 150-<170U/L, 170-<190U/L, 190-<210U/L, and ≥210U/L were 1.3(1.1-1.4), 1.2(1.1-1.4), 1.6(1.3-1.8), 1.4(1.1-1.7), and 1.5(1.3-1.7) respectively.
- Lower AlkPhos levels were independently associated with better survival: The death HRs (95% CI) for AlkPhos in 50-<70 and ≤50 U/L were 0.7(0.6-0.9), 0.8(0.7-0.9), respectively (Figure 1).
- By contrast, 8 preselected groups of PTH <100 pg/ml to ≥ 700pg/ml and 6 groups of 100 pg/ml increments in-between did not show any notable association with mortality (Figure 2).

CONCLUSIONS

- In this large national cohort of CPD patients, an increase in AlkPhos (≥130U/L) was associated with an increase in all-cause mortality.
- A decrease in Alkphos (≤70U/L) was associated with greater survival whereas PTH did not exhibit similar association.

KEY LEARNINGS

- ✓ Results from the study suggest that AlkPhos should be kept under 130 U/L. Also, AlkPhos≤70U/L appeared to be a protective factor.
- ✓ Measuring and evaluating total serum AlkPhos may be a useful strategy in the management of CPD patients.
- ✓ Additional studies to examine the utility of AlkPhos for clinical decision making in CPD patients is recommended.

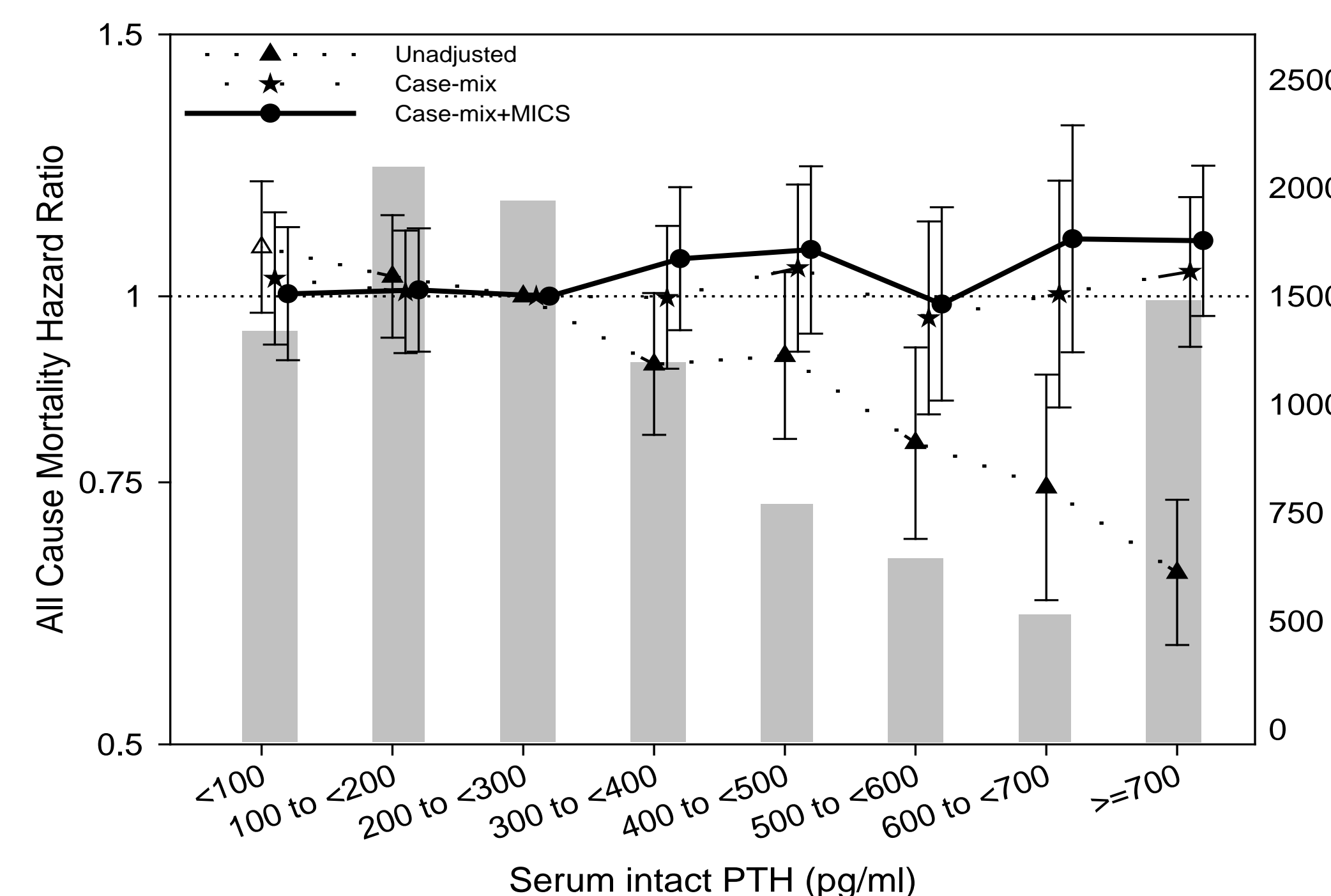


Figure 2. All cause Mortality Hazard Ratio & Baseline Serum PTH

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