Serum Alkaline Phosphatase and 3-Year Mortality in 7,596 Chronic Peritoneal Dialysis Patients

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Background

- Serum alkaline phosphatase (AlkPhos), a marker of renal osteodystrophy, was recently found to be a better death predictor than PTH in maintenance hemodialysis patients (Kalantar-Zadeh et al, Kidney International 2006, 70:771-80).
- Since adynamic bone disease appears more common in chronic peritoneal dialysis (CPD) patients, we examined the mortality predictability of AlkPhos in them.

Hypothesis

- We examined a large and contemporary cohort of 7,596 CPD patients who underwent dialysis treatment for at least 3 months in a DaVita dialysis clinic between July 2001 and June 2004.
- All serum AlkPhos values measured within a 3-month calendar quarters were averaged into one single value.
- In these patients, serum AlkPhos was measured at least once during the first 3 mo (calendar quarter) of the cohort.
- Patients were followed over 3 yrs (7/2001-6/2004).
- Serum AlkPhos was divided into 6 a priori selected groups by increments of 30 IU/L.
- Cox models calculated both unadjusted and fully adjusted death hazard ratios (HR) and 95% confidence intervals (CI) for case-mix (age, gender, race/ethnicity, comorbidity, vintage, insurance, marital status, smoking, and dialysis dose) and malnutrition-inflammation complex syndrome (lymphocyte percentage, hemoglobin, serum albumin, creatinine, TIBC, WBC, calcium, phosphorus and PTH), respectively.

Results

- Patients were 46.5+/−10.4 years old and included 48% women, 22% African Americans, 14% Hispanics and 50% diabetics.
- Almost incremental death hazard ratios (HR) were noted (AlkPhos 30-60 IU/L as the reference group) including in the multivariate adjusted models for case-mix (gender, age, race, ethnicity, dialysis vintage, residual renal function and Kt/V) and malnutrition-inflammation complex syndrome [MICS] (lymphocyte percentage, hemoglobin, serum albumin, creatinine, TIBC, WBC, calcium, phosphorus and PTH), respectively.

Conclusions

- In CPD patients incrementally higher levels of serum AlkPhos as an indicator of worsening high-turnover bone disease is a strong predictor of mortality, whereas lower AlkPhos is associated with significantly better survival.
- Interventions that decrease serum AlkPhos may improve longevity in CPD pts.

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