

Examining the Association between Serum Ferritin and Survival in Chronic Peritoneal Dialysis Patients

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Background

- Serum ferritin, a marker of iron status and inflammation in CKD, is known to be associated with outcome in maintenance hemodialysis (MHD) patients (Kalantar-Zadeh et al, JASN 2005, 16:3070-80, see Figure 1)
- However, these associations may not be extrapolated for chronic peritoneal dialysis (CPD) patients.
- It is not clear whether mild to moderate **hyperferritinemia** (serum ferritin >500 ng/ml to >1,200 ng/ml) is associated with death risk after controlling for **malnutrition-inflammation-cachexia syndrome (MICS)** in CPD patients.
- We hypothesized that, similar to MHD patients, in CPD patients, there is no significant association between moderate hyperferritinemia and mortality.

Methods

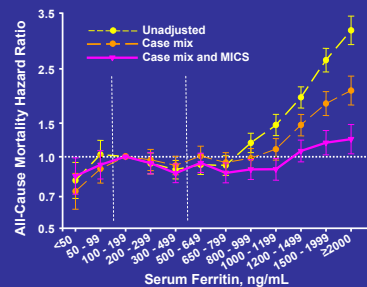
- We examined the contemporary cohort of all CPD patients who underwent CPD for at least 3 months in any DaVita dialysis clinic between July 2001 and June 2004.
- In 6,712 CPD patients baseline serum ferritin were available.

Results

- Patients were 46.3±10.5 years old and included
 - 49% women,
 - 22% African Americans,
 - 15% Hispanics and
 - 48% diabetics.
- Serum ferritin was categorized into 7 a priori selected groups: <100 ng/ml, >1,200 ng/ml and 5 groups in between (see Figure).

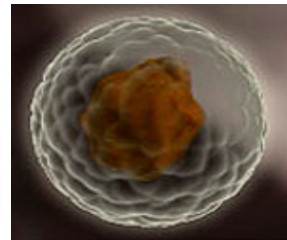
- In unadjusted Cox survival models, CPD patients with a serum ferritin between 800 and 1,200 and ≥1,200, compared to serum ferritin <100 ng/ml, had a 3-year death hazard ratio (HR) [and 95% confidence interval (CI)] of 1.30 (1.06-1.58) and 1.57 (1.27-1.94) respectively.
- In models that were adjusted for case-mix (gender, age, diabetes, race, ethnicity, dialysis vintage, residual renal function and Kt/V) and malnutrition-inflammation complex syndrome (MICS) (serum albumin, creatinine, TIBC, WBC, and lymphocyte percentage and blood hemoglobin), only serum ferritin category ≥1,200 was significantly associated with increased death risk, i.e., HR of 1.53 (1.24-1.90) and 1.48 (1.18-1.86) (see Figure 2)

Figure 1:
Risk of Death by Serum Ferritin Level in 58,058 Hemodialysis Patients



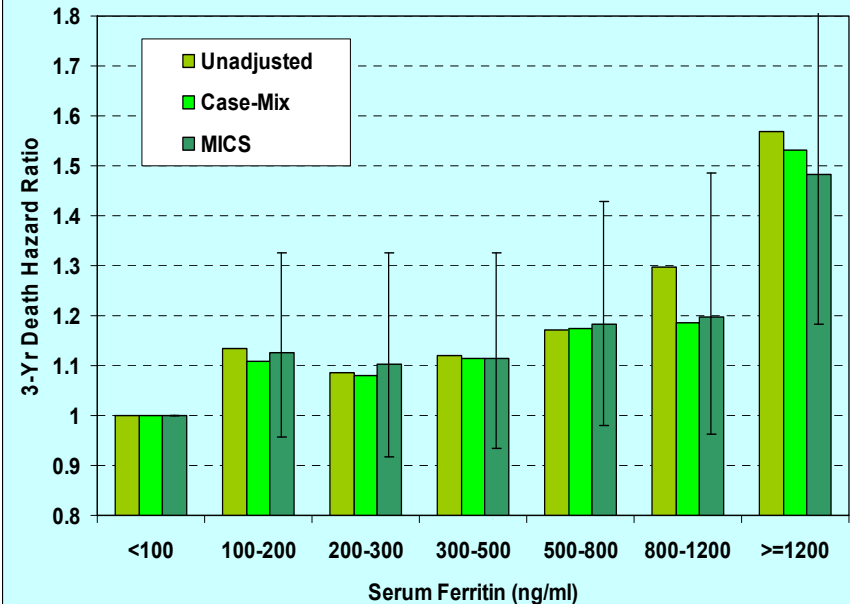
Kalantar-Zadeh et al, JASN 2005, 16:3070-80

Schematic representation of the molecule Ferritin and its iron storage



Results

Figure 2:
Serum Ferritin & Mortality in 6,712 CPD patients (2001-04)



Conclusions

- Only a serum ferritin >1,200 ng/mL is a robust predictor of increased death risk in CPD patients,
- whereas lower levels of serum ferritin do not have an independent association with survival.
- Iron administration in CPD patients with moderately high levels of serum ferritin (up to 1,200 ng/ml) may be safe.

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