

# Association of Circulating Lipopolysaccharide Binding Protein and Survival in Long-Term Hemodialysis Patients

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## INTRODUCTION

Lipopolysaccharide Binding Protein (LBP) is a 60 kDa lipid/phospholipid binding and transfer protein.

LBP facilitates interaction with CD14 receptor resulting in target cell activation.

We recently showed that elevated soluble CD14 in long-term hemodialysis (HD) patients (pts) is associated inflammatory cytokine activation and mortality (Raj et al, AJKD 2009).

We now hypothesize that higher LBP is associated with greater survival.

## METHODOLOGY

- We measured LBP, endotoxin and sCD14 level in a cohort of 287 DaVita HD pts.
  - LBP - 22.2±22.8 µg/ml
  - Endotoxin - 2.38±3.18 µg/ml
  - sCD14 - 7.17±2.42 µg/ml
- Case mix adjusted for age, gender, vintage, diabetes, Charlson index score, and Black race.
- Over the 33 months follow-up, 59 pts died.

## RESULTS

Table 1. Correlations coefficients

	Tumor Necrosis Factor-alpha	Interleukin-6	Ferritin	Transferrin	p-value
sCD14	r = 0.24	r = 0.18	r = 0.21	r = -0.19	<0.001
LBP	r < 0.1	r < 0.1	r < 0.1	r < 0.1	NS
Endotoxin	r < 0.1	r < 0.1	r < 0.1	r < 0.1	NS

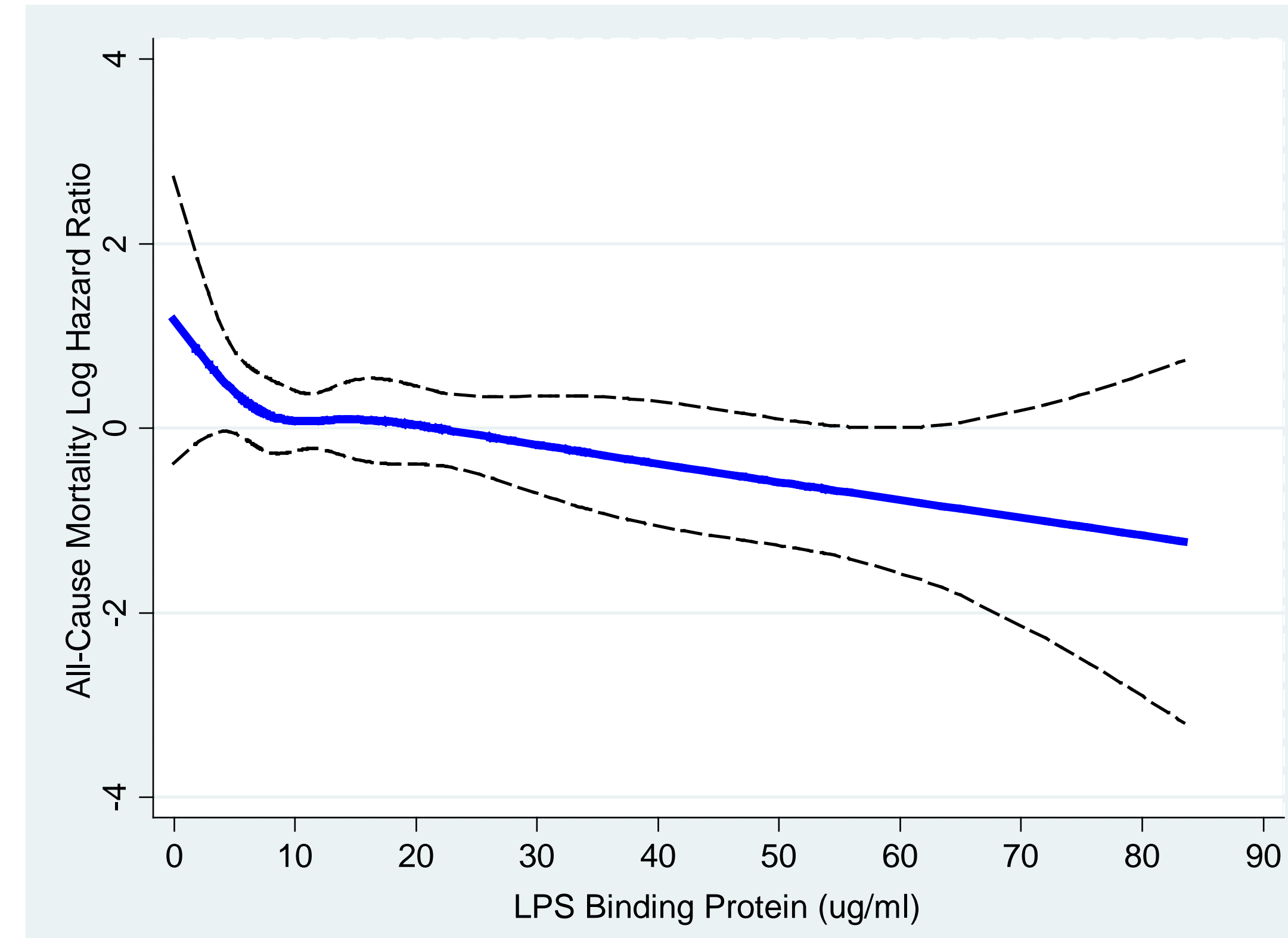


Figure 1. Cubic spline modeling of the association between LBP and survival in 287 MHD patients, based on Cox proportional hazard regression

## CONCLUSIONS

- Whereas sCD14 had significant positive correlations with tumor necrosis factor- $\alpha$ , interleukin (IL)-6, ferritin, and transferrin, LBP or endotoxin did not show any significant associations with these or with sCD14 (Figure 1).
- Cox analysis adjusted for case-mix and other confounders including serum TNF- $\alpha$ , C-Reactive protein, IL-6, sCD14 and endotoxin showed that each 10 µg/ml increase in LBP is associated with 18% improvement in survival (hazard ratio: 0.82, 95% CI: 0.68-0.98, p=0.03), whereas endotoxin did not correlate with mortality (Figure 1).

## KEY LEARNINGS

- ✓ Elevated sCD14 is a mortality predictor and positively related to markers of inflammation, circulating LBP may be a predictor of greater survival in HD patients
- ✓ Future studies are needed to examine the usefulness of measuring or modulating LBP and sCD14 pathways in risk stratification, clinical decision-making process or improving outcomes of HD pts.

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