

# Association of Paricalcitol Dose with Higher Circulating Lipopolysaccharide Binding Protein (LBP) in Hemodialysis Patients

Dominic S. C. Raj, MD;<sup>2</sup> Vallabh Shah, PhD<sup>2</sup>; Jennet Ferguson, MS<sup>2</sup>; David Van Wyck, MD<sup>3</sup>; Csaba P. Kovessy, MD<sup>4</sup>; and Kamyar Kalantar-Zadeh, MD, MPH PhD<sup>1\*</sup>  
 (1)Harold Simmons Center for Chronic Disease Research & Epidemiology, Harbor-UCLA, Torrance, CA; (2)George Washington Univ., Washington DC; (3)DaVita Inc., Lakewood, CO; (4)VAMC, Salem, VA

## INTRODUCTION

Active vitamin D appears associated with greater survival in hemodialysis (HD) patients (pts). Higher circulating LBP level may be associated with salutary effects by binding to endotoxin & modulating soluble CD14.

We have found that elevated LBP in HD pts is associated with greater survival (Raj et al, AJKD 2009). We now hypothesize that higher paricalcitol dose is associated with higher LBP in HD pts.

## METHODOLOGY

- We measured LBP in the stored specimens of 292 DaVita HD pts who were on paricalcitol.
- LBP was 21.9±22.8 mcg/ml (median: 13.6, Q25-50: 7.3-26.3).
- Cumulative paricalcitol dose (averaged 37±36 mcg/mo) was divided into 3 a priori selected groups of <20, 20 to 50 and ≥50 mcg/mo.
- Logistic regression calculated odds ratio (OR) across the 3 groups after adjustment for case mix (age, sex, race, diabetes, vintage, BMI, Kt/V) and malnutrition-inflammation complex (MICS) (albumin, creatinine, hemoglobin, nPCR, lymph%, IL-6, TNF-α, endotoxin and soluble CD14)

## RESULTS

Table 1. LDL Size Quartiles and Mortality Hazard Ratios

Paricalcitol dose (µg/mo)	0 to 20 (n=73)	20 to 50 (n=137)	≥50 (n=82)	p-value
LBP (µg/ml)	18.7 ± 19.7	20.5 ± 20.1	27.1 ± 28.2	0.04
LBP>26.3 µg/ml (%)	19%	23%	37%	0.03
Intact PTH (pg/ml)	188 297	164 112	215 192	0.15

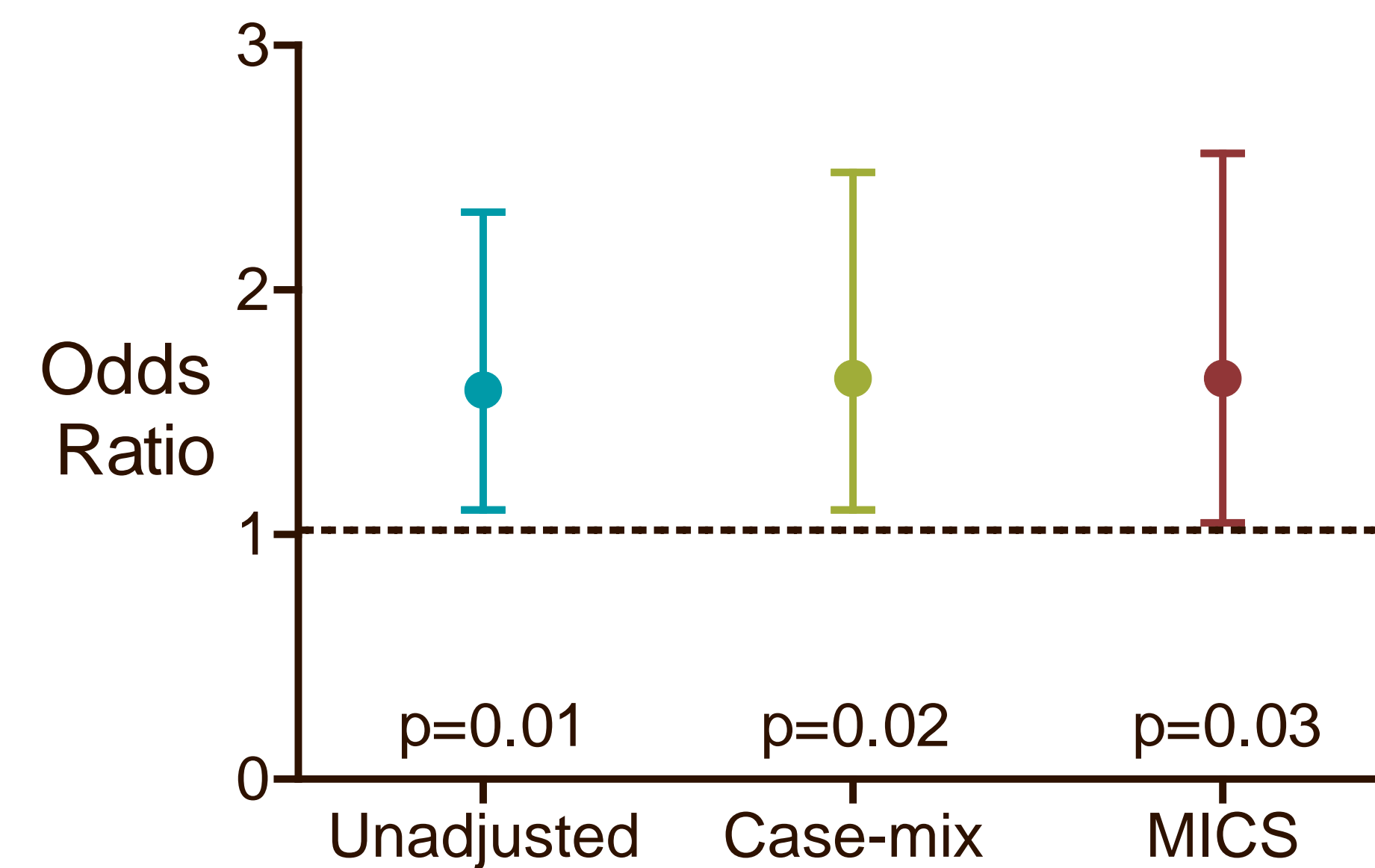


Figure 1. Odds Ratio of High (>26.3 µg/ml) LBP and Paricalcitol Dose

- LBP was 21.9±22.8 mcg/ml (median: 13.6, Q25-50: 7.3-26.3).
- Logistic regression calculated odds ratio (OR) of being in the highest quartile (>26.3 mcg/ml) across the same 3 dose groups, after adjustment for case mix were:
  - Unadjusted: 1.59 (95% CI: 1.10-2.32, p=0.01),
  - case-mix: 1.64 (1.10-2.48, p=0.02), and
  - MICS: 1.64 (1.05-2.56, p=0.03).

## CONCLUSIONS

- ANOVA test showed that LBP levels and proportions of pts with the highest quartile of LBP (>26.3 mc/ml) were incrementally higher across increasing paricalcitol dose (p: 0.04 and 0.03, respectively) (Table 1).
- Using paricalcitol dose as a continuous variable, each 10 mcg/month increase in dose was associated with a fully adjusted OR of 1.10 (1.01-1.19, p=0.02) (Figure 1).

## KEY LEARNINGS

- ✓ Hence, higher doses of the paracalcitol are associated with higher likelihood of having LBP>26.3 mcg/ml.
- ✓ This finding may be a potential mechanism linking *paricalcitol* to its survival advantages that have been observed in epidemiologic studies in HD patients.

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