

Association of Lean Body Mass with Serum Creatinine in Hemodialysis Patients

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INTRODUCTION

In long-term hemodialysis (HD) patients (pts), serum creatinine levels prior to an HD treatment session may be a measure of nutritional status, (i.e., muscle mass and probably meat intake.)

We hypothesized that a direct correlation exists between the measure of muscle mass using a test of body composition and the pre-HD serum creatinine level in HD patients.

METHODOLOGY

- The *Nutrition and Inflammation Evaluation in Dialysis Patients* (NIED) Study (www.NIEDstudy.org) is an NIH/NIDDK sponsored prospective cohort study, which was conducted during 2001 to 200.
- We measured body composition including and lean body mass (LBM) using portable near-infrared interactance (NIR)
- A total of 747 DaVita HD pts underwent the NIR measurement, and compared their KBM to 3-month averaged pre-HD serum creatinine during the same calendar quarter.

RESULTS

Table 1. Three-Month Averaged Serum Creatine and Other Clinical Outcomes by LBM Quintile

LBM (kg)	<40 (n=97)	40-<50 (n=226)	50-<60 (n=234)	60-<70 (n=115)	≥70 (n=75)	P-Value
Creatinine (mg/dL)	8.5±2.4	9.6±2.8	10.8±3.3	11.3±3.3	11.7±3.9	<0.0001
Kt/V (single pool)	1.8±0.3	1.7±0.3	1.6±0.2	1.5±0.2	1.4±0.2	<0.0001
Albumin (g/dL)	3.83±0.38	3.86±0.35	3.96±0.38	3.94±0.32	3.86±0.44	0.0134
nPNA (g/kg/day)	1.10±0.26	1.07±0.23	1.09±0.22	1.06±0.24	0.99±0.22	0.0174
BMI (kg/m ²)	22.3±3.6	25.9±4.5	25.9±5.5	28.1±6.3	32.6±7.3	<0.0001
Total Body Fat%	29.0±6.8	31.0±9.7	23.7±11.1	23.7±9.8	27.4±10.6	<0.0001

RESULTS & CONCLUSIONS

- Patients were: 53.6±14.8 yrs and included 48% women, 32% Blacks and 51% diabetics. Three-month averaged creatinine was 10.2±3.1 mg/dL.
- Case mix adjusted for age, gender, vintage, diabetes, Charlson index score, and Black race.
- Correlation coefficients between serum creatinine and LBM was:
 - 0.26 (unadjusted) and
 - 0.19 (case mix adjusted).
- After dividing the LBM into 5 a priori selected groups, serum creatinine was incrementally higher across higher LBM quintiles (Table 1).
- Spline models showed an almost linear association between LBM and creatinine even after multivariate adjustment (Figure 1).

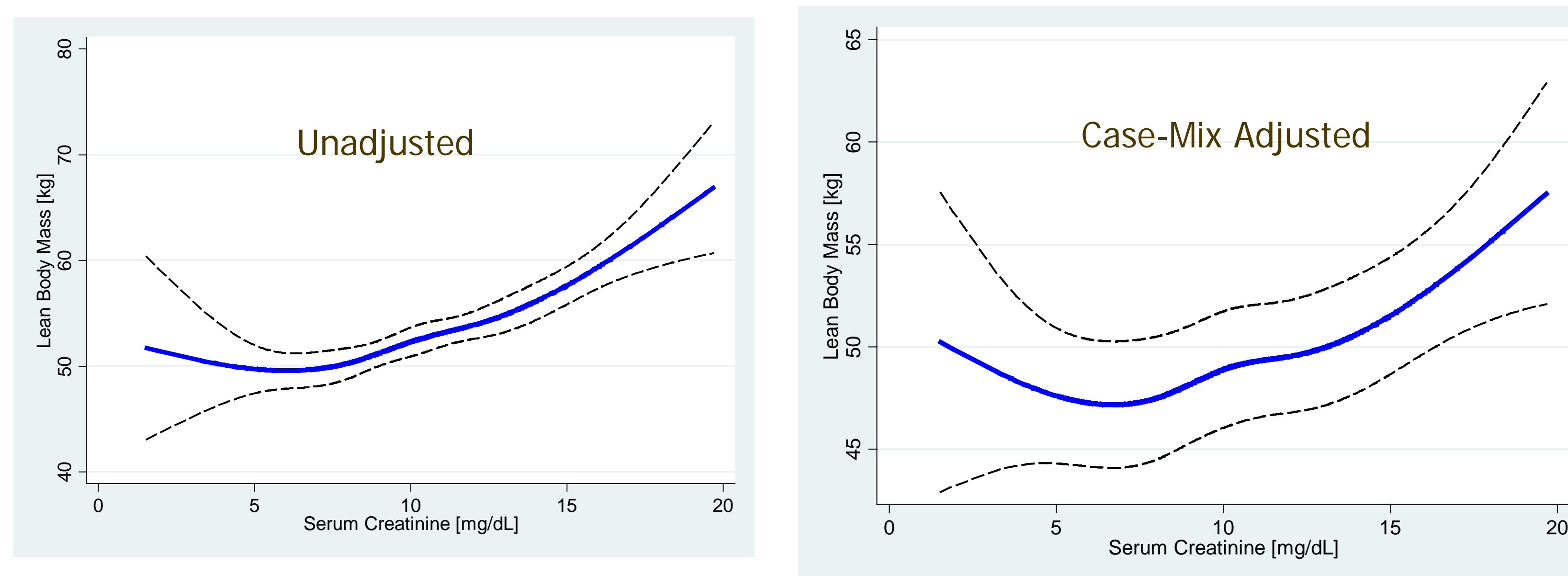


Figure 1. Lean Body Mass (LBM) and 3-month averaged serum creatinine

KEY LEARNINGS

- ✓ Among long-term HD patients, serum creatinine may be a surrogate of LBM.

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