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Authors

Pai, Alex
Tantisattamo, Ekamol
Wenziger, Cachet
et al.

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ASSOCIATION OF SODIUM WITH A DECLINE IN RESIDUAL KIDNEY FUNCTION AMONG THRICE-WEEKLY HEMODIALYSIS PATIENTS:

Alex Pai[1], Ekamol Tantisattamo[1], Cachet Wenziger[1], Ramy Hanna[1], Connie Rhee[1], Kamyar Kalantar-Zadeh, MD[1], Elani Streja[1]. [1]UC Irvine, Orange, CA, United States

Although a growing body of evidence suggests that both residual kidney function (RKF) decline and hyponatremia contribute to increased mortality risk in patients with end-stage renal disease (ESRD), the association between sodium and RKF decline remains unclear.

We retrospectively reviewed a cohort of 3,162 patients who initiated thrice-weekly hemodialysis (HD) from 2007 to 2011. Patients were included in the study based on availability of sodium and renal urea clearance (KRU) data at baseline (first 90 days), and had KRU data at 6 months after HD initiation. Patients were categorized into 3 groups according to baseline sodium measurements (<135, 135 to <140, and ≥140 mEq/L). Rapid decline in RKF was defined as a decline in KRU of more than 20% over a 6-month period. The association between sodium and rapid decline in RKF was examined using logistic regression models with adjustments for case-mix variables, baseline RKF, and laboratory markers of malnutrition and inflammation.

In our HD cohort, mean age was 63 ± 14 years, 64% were men, 22% were African American, 69% had diabetes, and mean baseline sodium was 138.29 ± 2.88 mEq/L. Median (interquartile range) baseline KRU was 4.27 (2.05 – 5.75) mL/min/1.73m^2. Rapid decline in RKF was observed in 55%, 56%, and 54% of patients in sodium groups of <135, 135 to <140, and ≥140 mEq/L, respectively (p = 0.6109). In the fully adjusted model, sodium was not found to be significantly associated with odds of rapid decline of RKF: odds ratios (95% confidence intervals) were 0.98 (0.76-1.26) and 0.90 (0.76-1.08) in sodium <135 and ≥140 mEq/L groups (reference: sodium 135 to <140 mEq/L) [Figure 1A]. Additionally, we found no association between sodium and trajectory of KRU decline in a multilevel mixed effects model stratified by baseline sodium (p = 0.8384) [Figure 1B].

Among incident thrice-weekly HD patients, baseline sodium was not significantly associated with a rapid decline in RKF. Further studies are needed to highlight the underlying mechanisms from which these two variables influence mortality among ESRD patients.