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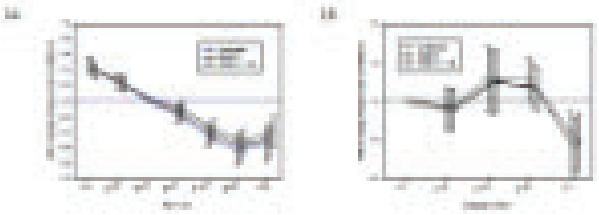
ASSOCIATION OF RED CELL DISTRIBUTION WIDTH AND RESIDUAL KIDNEY FUNCTION IN HEMODIALYSIS PATIENTS:

Haley Surmeian[1], Jui-Ting Hsiung[1], Cachet Wenziger[1], Csaba Kovesdy[2], Kamyar Kalantar-Zadeh[1], Elani Streja[1]. [1]Harold Simmons Center, Orange, CA, United States; [2]Memphis VA Medical Center, Memphis, TN, United States

Red cell distribution width (RDW) and residual kidney function (RKF) decline have both been previously associated with negative health outcomes. However, the relationship between RDW and RKF decline has not been thoroughly studied in hemodialysis (HD) patients. We hypothesized a higher RDW would be associated with a greater decline in RKF.

We studied 6,633 patients who began HD from 2007 to 2011, had a renal urea clearance (KRU) at baseline and at one year after dialysis initiation, and had RDW at baseline. We examined the association between time-varying RDW and KRU change, as well as the change in RDW and KRU change, with a linear mixed effects model with an unstructured covariance matrix, and adjusting for case mix and malnutrition-inflammation complex syndrome (MICS) variables.

The mean age was 62±15 years, 37% were female, 27% were African American, and 59% were diabetic. The mean baseline RDW was 16.1 ± 1.6 % and the median (interquartile range) baseline KRU was 3.79 (2.26 – 5.93) mL/min. An RDW of greater than 16% was associated with a significant decline in KRU. The second largest RDW group (18-19%) was associated with the highest KRU decline, and was consistent after adjustment for covariates (regression coefficient (95% confidence interval): -0.53 (-0.71, -0.35)). [Figure 1A]. While a smaller RDW increase did not show a significant change in KRU, the largest increase in RDW (9+ percent) was associated with a significant decline in KRU [Figure 1B].

In HD patients, a higher RDW was associated with a greater decline in RKF. The implications of this is that RDW, a parameter easily obtainable through a blood test, can serve as a marker for kidney function decline, allowing for quicker diagnosis and treatment of patients.