

Greater Interdialytic Fluid Retention Is Associated with Poor Survival in Maintenance Hemodialysis Patients

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Background

- Many maintenance hemodialysis (MHD) patients gain excessive amounts of weight between two subsequent HD sessions.
- We hypothesized that in MHD patients greater interdialytic fluid retention is associated with poor survival.

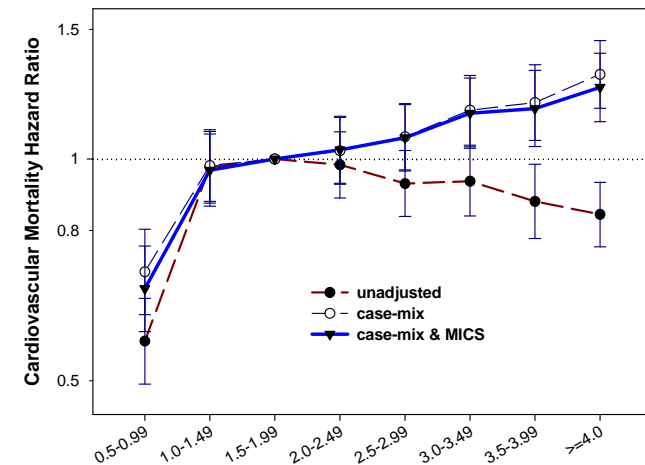
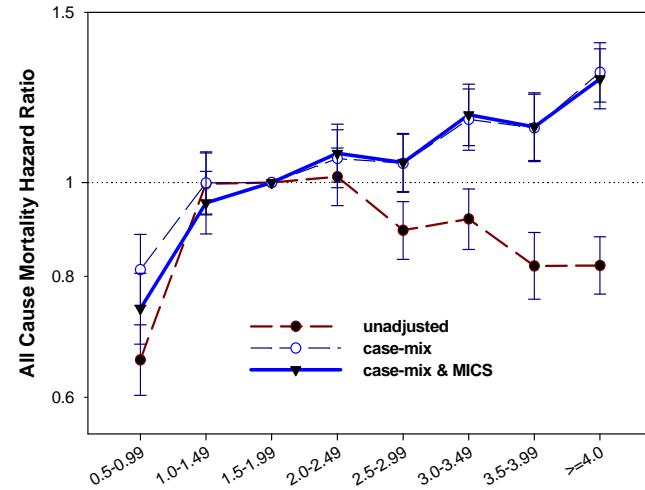
Methods

- We examined the 2-year (7/2001-6/2003) mortality in 34,003 MHD patients across the United States,
- Patients had an averaged weight gain of at least 0.5 kg above their end-dialysis dry weight by the time the subsequent MHD treatment started.
- The 3-month averaged interdialytic weight gain was divided into 8 categories of 0.5 kg increments (up to ≥ 4.0 kg).

- In unadjusted analyses, higher weight gain was associated with better nutritional status, i.e., higher protein intake, serum albumin and body mass index, and tended to be linked to greater survival.

Variable (mean±SD or %)	Women (n=26,807)	Men (n=31,251)
Age (years)	59.7±15.7	61.8±15.2
>65 years old (%)	47	41
Diabetes mellitus (%)	48	42
Race and ethnicity:		
Caucasians (%)	34	40
Blacks (%)	34	30
Asians (%)	4	4
Hispanics (%)	16	17
Vintage (time on dialysis):		
3-6 months (%)	40	41
6-24 months (%)	22	22
2-5 years (%)	24	24
>5 years (%)	14	13
Primary insurance		
Medicare (%)	60	60
Medicaid (%)	6	5
Causes of death:		
Cardiovascular (%)	51	52
Infectious (%)	11	10
Cancer (%)	2	3
Gastrointestinal (%)	2	2
Others/unknown (%)	34	33
SMR	0.82±0.32	0.81±0.30
Cohort time (days)	456±258	451±258
Post-HD weight (kg)	68.8±19.4	78.0±19.2
Body mass index (kg/m ²)	26.6±6.7	25.7±5.5
Kt/V (single pool)	1.61±0.31	1.46±0.28
nPCR or nPNA (g/kg/day)	0.99±0.25	1.00±0.23
Serum albumin (g/dL)	3.70±0.40	3.79±0.41
creatinine (mg/dL)	8.2±2.8	9.7±3.5
ferritin (ng/mL)	638±499	591±459
TIBC (mg/dL)	198.9±42.5	203.9±41.7
Blood hemoglobin (g/dL)	11.9±1.2	12.1±1.3
WBC (per fl)	7.44±2.37	7.21±2.33
Lymphocyte (% of WBC)	21.2±7.5	20.7±7.6

Results



- After multivariate adjustment for demographics (case-mix) and also surrogates of malnutrition-inflammation complex syndrome (MICS), higher weight gain increments were associated with increased all-cause death risk (see Figures)

Conclusions

- All things equal, in MHD patients greater fluid retention between two subsequent HD treatment sessions is associated with worse survival.
- The impact of fluid retention on survival in MHD patients warrants further research.

Acknowledgements

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