Associations Between Loop Diuretic Use and Outcomes Among Patients Treated With Peritoneal Dialysis

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Introduction

- Among hemodialysis patients, an active loop diuretic prescription at the time of dialysis initiation is associated with a lower hospitalization rate, lower intradialytic hyptension, and lower interdialytic weight gain, compared to no prescription. [1-3]
- Whether this finding extends to patients treated with peritoneal dialysis (PD) is unknown.

Objective

- To determine whether the presence of an active loop diuretic prescription in the peri-initiation period is associated with differential outcomes among incident PD patients.

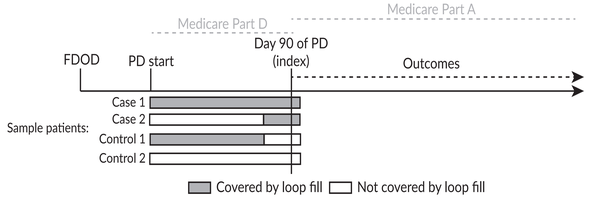
Methods

Data Source, Time Period, and Patients

- Data Source: dialysis organization electronic health records-USRDS merge
- Study Time Periods
  - Patient Accural: 01Jan2006 - 30Jun2014
  - Outcomes Observation: 01Apr2006 - 31Dec2014
- Patients
  - Initiated PD at a dialysis organization during accural period
  - As of initiation, were adults with Medicare Part D coverage
  - Had a 24-hour urine collection of >200cc between PD start and PD day 90
  - During outcomes period, had Medicare Part A coverage

Exposures and Outcomes

- Exposure was considered as the presence or absence of a filling of a prescription for a loop diuretic (furosemide, bumetanide, toresmide) spanning day 90 of PD
- Outcomes, considered beginning on day 91 of PD were:
  - Hospitalization, mortality
  - Serum potassium, renal Kt/V, time to PD failure



Methods cont.

Statistical Analysis

- Patient characteristics were described as of PD day 90.
- Outcomes were compared across exposure groups using appropriate statistical models adjusted for sex, race, etiology of end-stage kidney disease (ESKD), diabetes, ischemic heart disease, peripheral vascular disease, age, dialysis vintage, body mass index (BMI), Charlson comorbidity index (CCI), urine volume , and PD type.

Results

Table 1. Patient Characteristics at Baseline

	No Loop Fill N = 1363	Loop Fill N = 792
Age, years, mean ± SD	62.5 ± 15.0	65.7 ± 13.3
Total dialysis vintage, months, median [p25, p50]	1 [0, 6]	0 [0, 3]
Weight, kg, mean ± SD	83.2 ± 21.1	85.4 ± 21.4
BMI, kg/m², mean ± SD	28.4 ± 6.6	29.5 ± 6.6
CCI, median [p25, p50]	4 [6, 7]	5 [6, 7]
24-hour urine volume, mL, mean ± SD	969 ± 604	992 ± 626
Sex, female, n (%)	576 (42.3)	357 (38.3)
Race, Black, n (%)	252 (18.5)	117 (14.8)
PD type, n (%)		
CAPD	226 (16.6)	161 (20.3)
CCPD	1131 (83.0)	625 (78.9)
Other/missing	6 (0.4)	6 (0.8)
CHF, n (%)	161 (11.8)	114 (14.4)
Diabetes, n (%)	885 (64.9)	587 (74.1)
IHD, n (%)	669 (36.1)	123 (41.1)
PVD, n (%)	741 (37.1)	156 (32.7)
Loop Diuretic type, n (%)		
Furosemide		654 (82.6)
Torsemide		64 (8.1)
Bumetanide		74 (9.3)

Abbreviations: CAPD, continuous ambulatory PD; CCI, Charlson comorbidity index; CCPD, continuous cycling PD; CHF, Congestive Heart Failure; IHD, ischemic heart disease; PD, peritoneal dialysis; PVD, peripheral vascular disease; SD, standard deviation.

Primary Outcomes

- Among patients initiating PD with a loop diuretic prescription, the hospitalization rate during follow-up was 1.76 admissions/patient-year (pt-yr), compared to 1.74/pt-yr for those without (Figure 1).
- Mortality was likewise comparable between groups, crude rates of 0.21 and 0.18 deaths/pt-yr, respectively (Figure 1).

Results

Figure 1. Hospitalization and Mortality Rates Among Patients With and Without a Loop Diuretic Prescription at PD Initiation

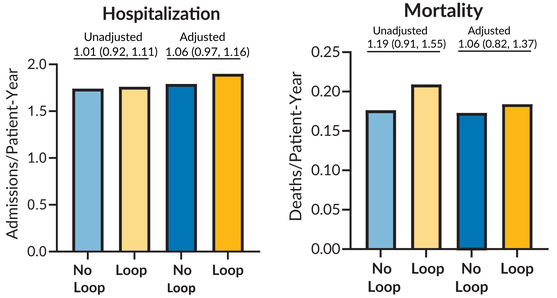
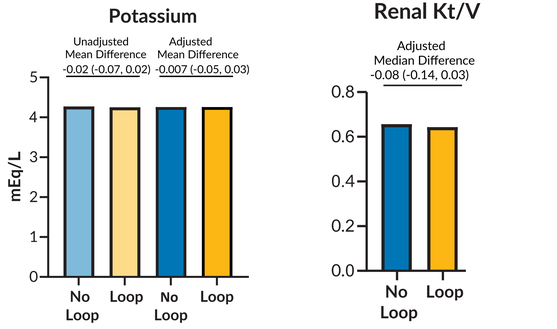


Figure 2. Serum Potassium Levels and Renal Kt/V Among Patients on Loop Diuretics vs. Not



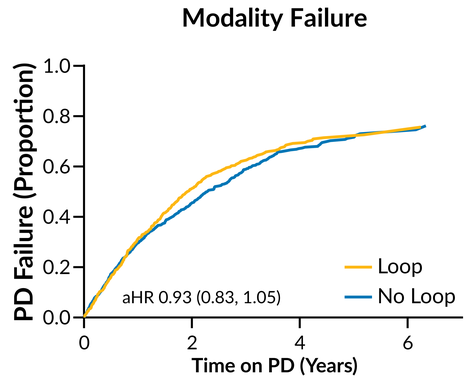
Unadjusted Median Difference -0.01 (-0.08, 0.05)

Secondary Outcomes

- No substantial differences were observed between exposure groups with respect to serum potassium, renal Kt/V, or time to transition to hemodialysis (Figures 2 and 3).

Results

Figure 3. PD Failure Among Patients on Loop Diuretics vs. Not



Comparison was adjusted for imbalanced baseline characteristics. Abbreviations: aHR, adjusted hazard ratio of a Fine-Grey's model.

Conclusions

- Among patients initiating PD, no beneficial associations were observed between loop diuretic use and the outcomes examined.

References

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