Abstract: TH-OR082

Urinary Oxalate Excretion and the Risk of ESRD and CKD Progression

Session Information

- Novel Risk Factors for CKD October 25, 2018
- Location: 6E, San Diego Convention Center
- Abstract Time: 04:42 PM - 04:54 PM

Category: **CKD (Non-Dialysis)**

- 1901 CKD (Non-Dialysis): Epidemiology, Risk Factors, and Prevention

Authors

- Waikar, Sushrut S., Harvard Medical School, Boston, Massachusetts, United States
- Lieske, John C., Mayo Clinic, Rochester, Minnesota, United States
- Xie, Dawei, University of Pennsylvania School of Medicine Center for Clinical Epidemiology and Biostatistics, Philadelphia, Pennsylvania, United States
- Zhang, Xiaoming, University of Pennsylvania School of Medicine, Philadelphia, Pennsylvania, United States
- Feldman, Harold I., University of Pennsylvania, Philadelphia, Pennsylvania, United States
- Curhan, Gary C., Channing Division of Network Medicine, Brigham and Women's Hospital, Boston, Massachusetts, United States
- Srivastava, Anand, Northwestern University Feinberg School of Medicine, Chicago, Illinois, United States Palsson, Ragnar, Harvard, Belmont, Massachusetts, United States
- Shafi, Tariq, Johns Hopkins University School of Medicine, Baltimore, Maryland, United States
- Hsu, Chi-yuan, University of California San Francisco, San Francisco, California, United States
- Sharma, Kumar, University of Texas Health San Antonio, San Antonio, Texas, United States
- Lash, James P., University of Illinois at Chicago, Chicago, Illinois, United States
- Chen, Jing, Tulane School of Medicine, New Orleans, Louisiana, United States
- He, Jiang, Tulane School of Public Health and Tropical Medicine, New Orleans, Louisiana, United States

Background

Kidney failure from oxalate nephropathy is a devastating complication of rare disorders of oxalate metabolism (e.g., primary hyperoxaluria), oxalate over-absorption (e.g., enteric hyperoxaluria), and ingestion of large amounts of oxalate or its precursors. We hypothesized that higher urinary oxalate excretion, even within the typical range of excretion, would be associated with progression of CKD.

Methods

We measured 24h urinary oxalate excretion in stored specimens from 3,123 participants of the Chronic Renal Insufficiency Cohort study. Baseline eGFR was 43 ml/min/1.73m2. CRIC study participants were followed longitudinally for incident ESRD and/or halving of eGFR. We used Cox proportional hazards models to test whether urinary oxalate excretion was associated with two outcomes: (1) Incident ESRD;

and (2) CKD progression, defined as halving of eGFR or incident ESRD. Multivariable models were adjusted for a number of demographic, clinical, and laboratory variables.

Results

The median 24h oxalate excretion in CRIC participants was 18.6 mg (IQR, 12.9 - 25.7 mg). Cross sectionally, higher oxalate excretion was correlated with lower baseline eGFR (r=-0.1, p<0.001) and greater albuminuria (r=0.15, p<0.001). In prospective multivariable-adjusted analyses, those in the highest vs lowest quintile of oxalate excretion had a 1.41-fold (95% CI 1.09-1.83) higher risk of ESRD and a 1.28-fold (95% CI 1.02-1.61) higher risk of CKD progression (p<0.001).

Conclusion

Among individuals with CKD, higher baseline urinary oxalate excretion is associated with greater risk of ESRD and CKD progression. Oxalate excretion should be tested as a potentially modifiable risk factor for progression of kidney disease.

	Q1 (1.4-11.5 mg)	Q2 (11.5-16.2 mg)	Q3 (16.2-21.0 mg)	Q4 (21.0-27.7 mg)	Q5 (27.7-102.1 mg)	P value for difference
ESRD events/1000py	2.38	3.18	4.44	4.37	4.90	-
Unadjusted HR	ref	1.33 (1.03-1.73)	1.86 (1.45-2.38)	1.83 (1.43-2.34)	2.05 (1.61-2.62)	<>
Adjusted HR	ref	1.04 (0.79-1.37)	1.42 (1.09-1.84)	1.33 (1.03-1.73)	1.41 (1.09-1.83)	0.009
CKD progression events/1000py	3.80	4.56	6.89	6.21	7.16	-
Unadjusted HR	ref	1.20 (0.95-1.51)	1.81 (1.46-2.25)	1.64 (1.31-2.04)	1.89 (1.53-2.34)	<>
Adjusted HR	ref	0.93 (0.74-1.19)	1.31 (1.05-1.65)	1.12 (0.89-1.4)	1.28 (1.02-1.61)	0.006

Adjusted for age, sex, race/ethnicity, systolic blood pressure, diabetes, body mass index, medications, hemoglobin, serum albumin, and baseline eGFR

Funding

- NIDDK Support