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

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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.

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

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

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