

Urinary Stone Events Are Predicted by Urinary Oxalate Excretion in Enteric Hyperoxaluria

Session Information

- Mineral Disease: Nephrolithiasis
November 02, 2017 | Location: Hall G - Posters
Abstract Time: 10:00 AM - 12:00 PM

Category: Mineral Disease

- 1204 Mineral Disease: Nephrolithiasis

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BACKGROUND

Elevated urinary oxalate (UOx) excretion is considered an important pathologic contributor towards the development of renal complications of enteric hyperoxaluria (EH). Since there are limited outcomes data we assessed the relationship between UOx and kidney stone events in an EH cohort.

METHODS

In all, 589 patients from Olmsted County, MN were identified who had 24h urine supersaturation test results and a diagnosis of malabsorption or bariatric surgery (defined as EH). "Baseline" was the date of the first available 24h urine. Urologic procedures and emergency department visits with diagnostic codes consistent with kidney stones ≥ 1 month after baseline were considered a stone event. Multivariate logistic regression was performed to predict a first stone event >6 months after index date.

RESULTS

Median follow-up time was 4.2 yrs. Mean age was 50.2 yrs and 74% were female. Baseline UOx was associated with a first stone event in models adjusted for baseline urine calcium and citrate (Table). For each 10 mg/24h increase in UOx, odds of a stone event was 1.15 ($p=0.012$). Similarly, among EH patients with baseline urine oxalate of 60 mg/24h or greater, odds of a stone event after six months was 2.75 times greater than for EH patients whose baseline urine oxalate was below 40 mg/24h ($p=0.030$); for baseline urine oxalate between 40 and <60 mg/24h this odds ratio was 2.69 ($p=0.008$).

CONCLUSION

Baseline UOx predicts risk of future stone events in a cohort of EH patients. This risk persists even after adjustment for other urinary stone risk factors, including calcium and citrate excretion. Thus strategies to reduce UOx in EH patients should also reduce kidney stone risk.

**PREDICTORS OF FIRST STONE EVENT
SIX MONTHS OR MORE AFTER BASELINE**

| Model 1* | Odds Ratio | Lower 95% CL | Upper 95% CL | p-value |
|-------------------------------------|------------|--------------|--------------|---------|
| Baseline UOxalate (per 10 mg/24h) | 1.15 | 1.03 | 1.28 | 0.012 |
| Baseline UCalcium (per 10 mg/24h) | 0.99 | 0.96 | 1.04 | 0.71 |
| Baseline UCitrate (per 10 mg/24h) | 0.99 | 0.98 | 1.01 | 0.38 |
| Model 2** | | | | |
| Baseline UOxalate | | | | 0.045 |
| Baseline UOxalate 40 - < 60 vs < 40 | 2.69 | 1.08 | 6.72 | 0.008 |
| Baseline UOxalate 60+ vs < 40 | 2.75 | 0.98 | 7.69 | 0.30 |
| Baseline UCalcium (per 10 mg/24h) | 0.98 | 0.94 | 1.03 | 0.53 |
| Baseline UCitrate (per 10 mg/24h) | 0.99 | 0.98 | 1.01 | 0.37 |

*AIC: 211.89; AUC: 0.645 **AIC: 213.30; AUC: 0.649

D'Costa MR et al. J Am Soc Nephrol 28, 2017:380.