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24 hour urine metabolic differences between solitary and recurrent stone formers: results of the Collaboration on Urolithiasis in Pediatrics (CUP) working group

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Summary *Introduction:* Specific factors associated with the risk of developing pediatric urinary stone disease remain unclear, especially those that may be associated with recurrent stone disease.
Objective: We compared the results of 24-hour urine collections in children with a solitary stone episode to those with recurrent stone episodes to determine if there is a difference that may be associated with recurrent stone formation in children.
Study design: A multi-institutional retrospective analysis was completed to assess 24-hour urinary metabolic profiles in children with urolithiasis aged 2–18 years old. Differences in mean urine collections between the two groups were assessed using chi-square tests to test the associations among gender, stone type, and recurrence status, as well as multivariate analyses using general linear models.
Results: We analyzed 142 solitary stone patients and 136 recurrent stone patients from four centers were included. Recurrent stone patients were older than solitary stone patients (mean 13.4 ± 3.6 years vs. 12 ± 3.9 years, p=0.002). Females were more likely to have recurrent stones (58% vs. 39%, p=0.002). BMI was not associated with recurrence (p=0.8467). Recurrent stone formers had lower urine volumes, although this did not reach statistical significance when compared with solitary stone formation (20.4 mL/kg/day ± 11.5 vs. 22.9 ± 13.0, p = 0.0880). Higher values for super-saturation of calcium oxalate were associated with recurrent stone disease in univariate (p=0.0485) and multivariate analysis (p=0.0469) (Figure). Centers located in the Southeast of the United States saw a higher