

Acute kidney injury in children and adolescents admitted for acute renal colic due to kidney stones

Kajal Madan¹, Brittani Smith², Rahul Mal¹, Jay Patel¹, Kirsten Kusumi MD³

¹Northeast Ohio Medical University, Rootstown, Ohio

²Trine University, Angola, Indiana

³Akron Children's Hospital, Akron, Ohio

Objectives: To identify the prevalence of acute kidney injury in a pediatric population admitted for renal colic.

Background: Kidney stones are increasing in children [1,2]. Acute kidney injury (AKI) refers to a rapid decline in kidney function and stones are an uncommon cause of AKI in adults but may be more common in children [3].

Methods: A retrospective chart review of patients presenting to Akron Children's Hospital from 1/2008-12/2017. Patients were identified by ICD 9 and 10 codes for nephrolithiasis and included if they had stone disease confirmed by 1) documentation of known kidney stones by a nephrologist or urologist or 2) CT or renal ultrasound positive for stones. Inpatient admissions were analyzed if specifically, for kidney stones.

Results: 313 inpatient admissions were documented. 18 patients were positive for AKI (AKI+), 91 patients were negative for AKI (AKI-), and 97 patients lacked adequate data for AKI assessment. 30 AKI- individuals (26.1%) received a renal ultrasound (RUS) compared to 12 AKI+ individuals (66.7%) ($p = 0.001$). 16 AKI- individuals (13.9%) had unilateral obstruction vs. 7 AKI+ individuals (38.9%) ($p = 0.017$). 86 individuals of the AKI- group (74.8%) were prescribed NSAIDS compared to 13 AKI+ individuals (72.2%) ($p=0.778$).

Conclusion: More RUS were obtained in the AKI+ group than the AKI- group, and AKI+ patients had a significantly higher occurrence of unilateral obstruction. There was no significant difference in the rate of NSAIDS administered to patients between the AKI- and AKI+ groups. Nephrolithiasis may be a more common cause of AKI in children rather than adults which is concerning given the known association of kidney stones with chronic kidney disease in adults.

References:

1. Hernandez JD, Ellison JS, Lendvay, TS: Current Trends, Evaluation, and Management of Pediatric Nephrolithiasis. JAMA Pediatrics 169: 964-970, 2015
2. Koulouridis I, Jaber BL: Acute Kidney Injury Advisory Group of the American Society of Nephrology: World incidence of AKI: A meta-analysis. Clin J Am Soc Nephrol 8: 1482–1493, 2013
3. Tang, X and Lieske JC; Acute and chronic kidney injury in nephrolithiasis. Curr Opin Nephrol Hypertens 23(4): 385–390, 2014