

Are stone protocol computed tomography scans mandatory for children with suspected urinary calculi?

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Urology. 2011; 78: 662-6

Objective: To examine the clinical utility of noncontrast-enhanced computed tomography (NCCT) in pediatric patients with urolithiasis who progressed to surgery. Although NCCT is routine for the evaluation of adult patients with suspected urolithiasis, its routine use in the pediatric population is tempered by concern about radiation exposure.

Methods: We conducted a retrospective chart review of all pediatric patients who had undergone surgery for urinary stones from 2003 to 2008 at our institution. The imaging modalities used, surgery type, stone composition, 24 - hour urinalyses, and relevant predisposing conditions were characterized.

Results: A total of 42 pediatric patients (24 males and 18 females) were treated during the 6-year period. The average age was 11.3 ± 5.3 years (range 2.7 - 25.4), and the most common treatment modalities were shock wave lithotripsy (28%) and ureteroscopy (22%). A discernible risk factor or cause of urolithiasis was absent in 21 patients (47%). A review of imaging studies found 38 with stones visible on ultrasonography and/or abdominal plain film. A total of 21 patients underwent NCCT, in addition to ultrasonography and/or abdominal plain film. Of these, only 5 patients required NCCT for the diagnosis or management of their stone.

Conclusion: Nearly 90% of pediatric patients treated for symptomatic urolithiasis could have completed their evaluation and treatment without undergoing NCCT. For children who present with signs and symptoms suggesting urinary calculi, an initial evaluation and imaging with ultrasonography and abdominal plain film might suffice, avoiding the radiation of NCCT.

Editorial Comment

While non-contrast CT scans have become the gold standard for imaging of urinary tract stones in the adult population, legitimate concerns have been raised regarding the widespread use of CT scans in the pediatric population. These authors performed a retrospective review of their pediatric stone patients over a five year period of time to determine the usefulness of CT scans compared with ultrasound and/or KUB. They were able to identify 42 patients during the study period and found that 90% of the stones were visible on ultrasound and/or KUB.

This study brings to light, the importance of using clinical judgement when evaluating children with suspected stone disease. By starting with an ultrasound and KUB first, the vast majority of children can be spared significant radiation exposure. One can always fall back to CT scan in those cases where the initial imaging studies are indeterminate.

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