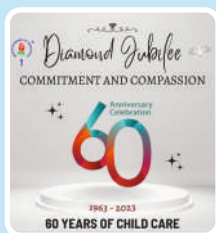


Indian Academy of Pediatrics (IAP)



nRICH

Newer **R**esearch and recommendations **I**n **C**hild **H**ealth

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UNDER THE AUSPICES OF THE IAP ACTION PLAN 2023

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Dear fellow IAPans,

nRICH

Newer Research and recommendations In Child Health-aims to bring you the abstracts of some of the breakthrough developments in pediatrics, carefully selected from reputed journals published worldwide.

Expert commentaries will evaluate the importance and relevance of the article and discuss its application in Indian settings. nRICH will cover all the different subspecialties of pediatrics from neonatology, gastroenterology, hematology, adolescent medicine, allergy and immunology, to urology, neurology, vaccinology etc. Each issue will begin with a concise abstract and will represent the main points and ideas found in the originals. It will then be followed by the thoughtful and erudite commentary of Indian experts from various subspecialties who will give an insight on way to read and analyze these articles.

I'm sure students, practitioners and all those interested in knowing about the latest research and recommendations in child health will be immensely benefitted by this endeavor which will be published online on every Monday.

Happy reading!

*Upendra Kinjawadekar
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Kidney Ultrasonography After First Febrile Urinary Tract Infection in Children

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BASED ON ARTICLE

Yang S, Gill PJ, Anwar MR, et al. Kidney Ultrasonography After First Febrile Urinary Tract Infection in Children: A Systematic Review and Meta-analysis [published online ahead of print, 2023 May 30]. *JAMA Pediatr.*2023;e231387. doi:10.1001/jamapediatrics.2023.1387

SUMMARY

The objective of this systematic review and meta-analysis was to determine the prevalence of urinary tract abnormalities detected on kidney ultrasonography (USG) after the first febrile UTI in children. After literature search for articles published between January 1, 2000 and September 20, 2022, 29 studies with 9170 children with first febrile UTI reporting kidney ultrasonography findings were included. 8 studies with 2569 children reported clinically important abnormalities.

The primary outcome was prevalence of urinary tract abnormalities and clinically important abnormalities detected on kidney ultrasonography. The authors of this meta-analysis defined clinically important as those that changed clinical management. Secondary outcomes included the urinary tract abnormalities detected, surgical intervention, health care utilization, and parent-reported outcomes. The median percentage of males was 60% (range, 11%-80%). The prevalence of abnormalities detected on renal ultrasonography was 22.1% at all ages (95%CI, 16.8-27.9; I² = 98%; 29 studies,) and 21.9% at age <24 months (95%CI, 14.7-30.1; I² = 98%; 15 studies). The prevalence of clinically important abnormalities was 3.1% at all ages (95%CI, 0.3-8.1; I² = 96%; 8 studies, all ages) and 4.5% at age <24 months (95%CI, 0.5-12.0; I² = 97%; 5 studies). The most common findings detected were hydronephrosis, pelviectasis, and dilated ureter. Urinary tract obstruction was identified in 0.4% (95%CI, 0.1-0.8; I² = 59%; 12 studies), and surgical intervention occurred in 1.4% (95%CI, 0.5-2.7; I² = 85%; 13 studies). One study reported health care utilization. No study reported parent-reported outcomes.

Overall, the study suggested that 1 in 4 to 5 children with first febrile UTI have a urinary tract abnormality detected on kidney ultrasonography and 1 in 32 have an abnormality that changes clinical management. A well designed prospective longitudinal study is required to evaluate whether renal ultrasound is required in UTI.

COMMENTARY

This study aimed to find out the utility of renal USG after the first febrile UTI by estimating the prevalence of urinary tract abnormalities and clinically important urinary tract abnormalities. Although, 1 in 4-5 children (22%) at all ages were detected to have any urinary tract abnormality, the prevalence of clinically important abnormality was quite low (3.1%). Only 8 studies reported on

clinically important abnormalities and it is likely that these studies had variability in the definition and reporting of ‘clinically important abnormalities’. Hence a wide range of prevalence from 0.3 to 8.1% can be seen.

The authors acknowledge the existence of heterogeneity as there is no universally accepted standard for reporting of ultrasound abnormalities nor in the definition of clinically significant abnormalities. They also acknowledged that minor abnormalities may have been underreported, hence the pooled prevalence may have been an underestimate.

The American Academy of Pediatrics also recommends that febrile infants with UTI should undergo renal and bladder ultrasound to detect anatomic abnormalities that would require further evaluation. The AAP also recognizes the variability in the timing and quality of prenatal ultrasounds in detecting structural abnormalities, which is a common scenario in smaller towns in India.

This study shows that 1 in 5 children with first febrile UTI are likely to be detected with a urinary tract abnormality. It is also interesting to note that similar prevalence was noted across all age groups, not just below 24 months. These findings reinforce the existing recommendations by the Indian Society of Pediatric Nephrology in 2011 to perform renal USG after the first UTI across all age groups.

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