



# Prevalence of vesicoureteral reflux and renal scarring in a pediatric population with Urinary tract infections: comparing patients $\leq 5$ years with those $> 5$ years of age

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# Abstract

**Introduction:** Vesicoureteral reflux (VUR) has been reported in 0.4–2% of the general population. In children with first urinary tract infections (UTIs), a prevalence rate of VUR was 10-51.4%. The National Institute for Health and Care Excellence (NICE) guidelines have presented recommendations for imaging studies in children with urinary tract infection (UTI). We applied NICE guidelines with some modifications, including in indications of performing voiding cystourethrogram (VCUG), and Tc-99m DMSA scan. The study aimed to determine the frequencies of missing VUR, high-grade VUR, and renal scarring if NICE guidelines were used.

## Materials and methods:

A cross-section retrospective study was performed on children with a diagnosis of UTI from April 2003 to 2016. All patients with atypical or recurrent UTIs underwent VCUG and Tc99m-DMSA scans. Those with abnormal findings in kidney ultrasound and siblings of VUR cases underwent VCUG and were evaluated for renal scarring if having VUR.

Results: Of 642 enrolled cases, 88.8% were girls and the mean age of the patients was  $33.4 \pm 31.7$  months. The frequency of VUR was significantly lower in patients  $> 3$  years (32%) compared to children  $< 6$  (55.7%) and 6-36 months (52.2%) ( $P < 0.0001$ ). However, the frequency of high-grade VUR was not significantly different ( $P = 0.057$ ). Renal scarring was significantly more prevalent in children  $> 3$  years (40.8%) compared to  $< 6$  (20.5%) and 6-36 months (27.8%) ( $P = 0.039$ ).

## Conclusion:

Applying the NICE guideline, 25%, 20%, and about two-thirds of VUR, high-grade VUR, and renal scarring will be missed.

## Keywords:

UTI, children, NICE guideline, VUR, renal scarring

