



## FOCUS ON SUBSPECIALTIES

# Conventional management of VUR in children questioned

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Over the past few years, serious doubts have arisen over the management practices of vesicoureteral reflux (VUR) in children, particularly the role of antimicrobial prophylaxis.

The conventional management of VUR entails prompt diagnosis and treatment of urinary tract infection (UTI), long-term antimicrobial prophylaxis until the resolution of the VUR, and surgical intervention in those with persistent high-grade VUR, recurrent UTI in spite of prophylaxis with antimicrobial agents, allergy to antimicrobial agents and patient/parent noncompliance with long-term antimicrobials.

Doubts over management, to a large extent, are a result of systematic review of published literature. For example, the Cochrane Review reported that most published studies to date have been poorly designed, with biases known to overestimate the true treatment effect.

Presence of renal scarring (reflux nephropathy) in patients with VUR and no UTI, such as those with VUR diagnosed during follow-up for antenatal hydronephrosis or during sibling screening, have added to the debate over management. Furthermore, renal scars in febrile UTI are known to occur in patients without VUR, and many children with VUR

do not get recurrent UTI or renal scars.

Doubts about long-term prophylaxis for VUR also are reflected in the guidelines from the Academy, American Urological Association and Swedish Medical Research Council, which recommend using long-term antimicrobial prophylaxis yet acknowledge lack of evidence for this recommendation.

The results of surgical intervention are not convincing either. Recurrent UTI is as common after surgical correction as it is in those treated medically, and surgical correction of VUR in most cases does not prevent or reduce the progression of renal scarring.

Previous studies had shown that VUR is associated with increased risk of UTI. Recurrent UTI in young children in the presence of VUR is believed to cause reflux nephropathy, which may cause proteinuria, hypertension and progressive renal damage, leading to a need for dialysis and kidney transplant.

Reflux nephropathy is the fourth (8.4%) most common cause of chronic renal insufficiency in children, according to the North American Pediatric Renal Trials and Collaborative Studies 2007 annual report. A comprehensive literature review on febrile UTI in children by the AAP Committee on Quality Improvement (Subcommittee on Urinary Tract Infection) identified children younger than 2 years old as being at highest risk of renal damage with febrile UTI.

The natural course of VUR is spontaneous resolution in most cases, particularly in those with low-grade VUR. A systematic review of published literature on the resolution of VUR revealed that increasing age at presentation and bilateral VUR decrease the probability of resolution, and bilateral high-grade VUR has a particularly low chance of spontaneous resolution. Resolution may be delayed by recur-

rent UTI, voiding dysfunction and chronic constipation.

The emerging knowledge about VUR has generated a lot of interest among clinicians as well as researchers. Clinical and possibly genetic differences between VUR diagnosed during sibling screening, during follow-up for antenatal hydronephrosis or after UTI, as well as the role played by voiding dysfunction and/or chronic constipation in the resolution of VUR or the frequency of UTI, have not been completely elucidated.

Prevention of renal scars in children with VUR and the preservation of renal function in those with renal scars remains the most important objective. It is for this reason that the National Institutes of Health/National Institute of Diabetes and Digestive and Kidney Diseases has funded the Randomized Intervention for Children with Vesicoureteral Reflux (RIVUR) study, which is in the patient recruitment phase. The main objective of this randomized, double-blind, placebo-controlled study is to evaluate the role of long-term antimicrobial prophylaxis in reducing the risk of UTI and renal scarring in children ages 1 month to 5 years old with grades I-IV VUR.

While in the midst of this potential paradigm shift in the management of VUR, there lies a risk of some practitioners not appropriately investigating young children with UTI or not using long-term antimicrobial prophylaxis in those with VUR. It is advisable that until the results of RIVUR or any other similar study become available, VUR and UTI are considered as risk factors for renal scarring and each patient is treated with prudence.

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