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A Snapshot of the Guidelines on Vesicoureteral Reflux in Children

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Abstract

The main goal in the management of patients with vesicoureteral reflux (VUR) is the preservation of kidney function by minimizing the risk of pyelonephritis. By defining and analyzing the risk factors for each patient depending on age, sex, grade of reflux, lower urinary tract dysfunction, anatomic abnormalities, and kidney status, it is possible to identify those patients with a potential risk of upper urinary tract infection and resulting renal scarring. This paper gives a brief overview of the European Association of Urology guidelines for the management and treatment of VUR in children. These guidelines are based on the best currently available knowledge and evidence.

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The main goal in the management of patients with vesicoureteral reflux (VUR) is the preservation of kidney function by minimizing the risk of pyelonephritis. By defining and analyzing the risk factors for each patient depending on age, sex, grade of reflux, lower urinary tract dysfunction (LUTD), anatomic abnormalities, and kidney status, it is possible to identify those patients with a potential risk of upper urinary tract infection (UTI) and resulting renal scarring.

This paper gives a brief overview of the European Association of Urology guidelines for the management and treatment of VUR in children [1]. These guidelines are based on the best currently available knowledge and evidence.

1. General recommendations

Regardless of the grade of reflux or the presence of renal scars and symptoms, all patients diagnosed with VUR within the first year of life should be treated initially with continuous antibiotic prophylaxis (CAP).

For children presenting with low-grade VUR and without LUTD and with no scars in the kidney, close surveillance without antibiotic prophylaxis can be an option. If no treatment is given, parents should be informed about the risks of infection.

During early childhood, the kidneys are at higher risk of developing new scars. Immediate antibiotic treatment should be initiated for febrile breakthrough infections;

treatment may be parenteral in children who are not capable of taking oral medications.

Definitive surgical or endoscopic correction is the preferred treatment for patients with frequent breakthrough infections. Surgical correction should be considered for patients with persistent high-grade reflux (grades IV and V). There is no consensus about the timing or the preferable type of surgical correction. The outcome of open surgical correction is better than that with endoscopic correction for higher grades of reflux. Satisfactory results can be achieved by endoscopic injection for lower reflux grades.

No evidence shows that correction of persistent low-grade reflux (grade I–III) in patients without febrile UTIs and normal kidneys offers a significant benefit. These patients may be candidates for endoscopic treatment.

For all children presenting at ages 1–5 yr with dilating reflux (grades III and IV), CAP is the preferred option for initial treatment. For patients with high-grade reflux or abnormal renal parenchyma, surgical repair is a reasonable alternative.

A detailed investigation for the presence of LUTD should be performed in all children after toilet training has been completed. If LUTD is detected, the initial treatment should be directed toward the LUTD.

If parents prefer definitive therapy over conservative management, surgical correction may be considered. Endoscopic treatment is an option for all children with low grades of reflux.

The traditional approach of offering initial medical treatment after diagnosis and shifting to interventional

Table 1 – Management based on risk analysis

Risk	Presentation	Initial treatment	Risk	Follow-up
High	Symptomatic male or female patients after potty training with high-grade reflux, abnormal kidneys, and LUTD	Initial treatment is always for LUTD in case of BT infection, or persistence-of-reflux intervention may be considered.	Higher chance of earlier intervention	More aggressive follow-up for UTI and LUTD; full reevaluation after 6 mo
High	Symptomatic male or female patients after potty training with high-grade reflux, abnormal kidneys, and no LUTD	Intervention should be considered	Open surgery has better results than endoscopic surgery	Postoperative VCUG on indication only, follow-up of kidney status until after puberty
Moderate	Symptomatic male or female patients before potty training with high-grade reflux and abnormal kidneys	CAP is the initial treatment in case of BT infection, or persistence of reflux intervention may be considered	Spontaneous resolution is higher in male patients	Follow-up for UTI or hydronephrosis and full reevaluation after 12–24 mo
Moderate	Asymptomatic patients (PNH or sibling) with high-grade reflux and abnormal kidneys	CAP is the initial treatment, in case of BT infections or persistence-of-reflux intervention may be considered		Follow-up for UTI or hydronephrosis and full reevaluation after 12–24 mo
Moderate	Symptomatic male or female patients after potty training with high-grade reflux and normal kidneys with LUTD	Initial treatment is always for LUTD in case of BT infection, or persistence-of-reflux intervention may be considered	In case of persistence of LUTD despite urotherapy, intervention should be considered; choice of intervention is controversial	Follow-up for UTI and LUTD, kidney status, full reevaluation after successful urotherapy
Moderate	Symptomatic male or female patients after potty training with low-grade reflux and abnormal kidneys with or without LUTD	Endoscopic treatment plus LUTD treatment if needed		Follow-up for UTI LUTD, and kidney status until after puberty
Moderate	All symptomatic normal kidneys with low-grade reflux with LUTD	Initial treatment is always for LUTD		Follow-up for UTI and LUTD
Low	All symptomatic normal kidneys with low-grade reflux with no LUTD	No treatment or CAP	If no treatment is given, parents should be informed about risk of infection	Follow-up for UTI
Low	All asymptomatic normal kidneys with low-grade reflux	No treatment or CAP for infants	If no treatment is given, parents should be informed about risk of infection	Follow-up for UTI

BT = breakthrough; CAP = continuous antibiotic prophylaxis; LUTD = lower urinary tract dysfunction; LUTS = lower urinary tract symptoms; PNH = prenatal hydronephrosis; UTI = urinary tract infection; VCUG = voiding cystourethrogram.

treatment in case of breakthrough infections and new scar formation must be challenged because the treatment should be tailored to the risk group.

The choice of management depends on the presence of renal scars, the clinical course, the grade of reflux, ipsilateral renal function, bilaterality of reflux, bladder function, associated anomalies of the urinary tract, age, compliance, and parental preference. Febrile UTIs, high-grade reflux, bilaterality, and renal cortical abnormalities are considered to be risk factors for possible renal damage. The presence of LUTD is an additional risk factor for the development of new renal scars. In high-risk patients who already have renal impairment, a more aggressive, multidisciplinary approach is needed.

The basis for risk analysis and appropriate management is summarized in [Table 1](#).

2. Conclusions

Although it is important to avoid overtreatment, finding a way to identify cases with clinically insignificant VUR and

cases that require immediate intervention should be the guiding principle in the management of children presenting with VUR.

Conflicts of interest

The author has nothing to disclose.

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Reference

- [1] Tekgül S, Riedmiller H, Hoebeke P, et al., European Association of Urology. EAU guidelines on vesicoureteral reflux in children. *Eur Urol* 2012;62:534–42.