St Helens and Knowsley Teaching Hospitals NHS Trust

Vesico Ureteric Reflux (VUR)

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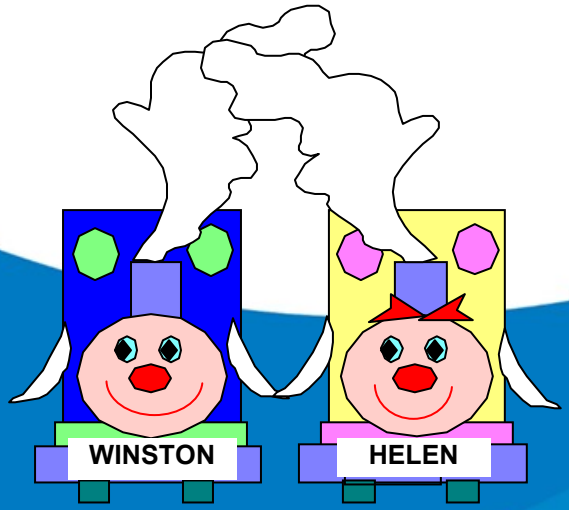

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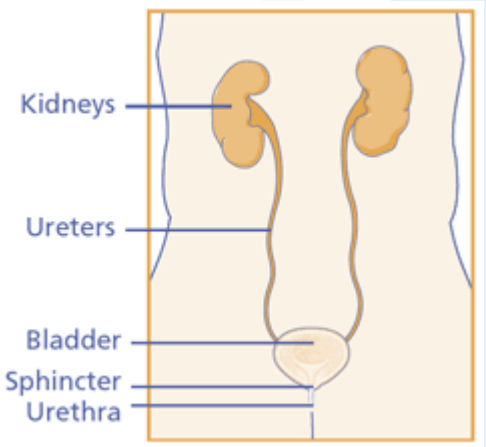
How does the urinary system work?

The urinary system consists of the kidneys, the bladder and ureters. The kidneys filter the blood to remove waste products and form urine. The urine flows from the kidneys down through the ureters to the bladder.



The ureters tunnel through the wall of the bladder at an angle to form a flap that acts as a valve. There is also a ring of muscle (sphincter) at the junction of the bladder and the urethra that stops urine leaking out in between passing water. When passing water, the muscles of the bladder wall squeeze the urine out of the bladder at the same time as the muscles in the sphincter need to relax to let the urine flow down the urethra.

The valves between the ureters and bladder prevent urine flowing backwards into the ureters; so that all the urine in the bladder is passed in one go, as the urine cannot travel anywhere else. As the urine leaves the bladder at a high pressure, the valves stop this high pressure being passed on to the kidneys.

Nature and Reasons for condition

Vesico-ureteric reflux (VUR) occurs when the valve between the ureters and the bladder is not working properly, allowing urine to flow backwards into the ureters. Depending on the severity of the VUR, sometimes the urine can flow backwards as far as the kidneys. If infected urine flows into the kidneys, this can damage them.

What are the symptoms of VUR?

Sometimes VUR can be diagnosed before birth when an ultrasound scan shows that one or both of a baby's kidneys look swollen and larger than usual (hydronephrosis). VUR is one of the conditions that cause hydronephrosis (swelling of the kidneys due to a blockage).

When VUR is diagnosed after birth, it is usually suspected if a child has repeated urine infections. Symptoms of a urine infection can include: burning sensation during urination, urinating more often than usual, abdominal pain, a high temperature, vomiting, reduced appetite or foul smelling urine. If a child has VUR, urine infections can damage the kidneys, as the urine flowing backwards towards them contains bacteria. Kidney damage can cause high blood pressure in later life or if untreated, may lead to kidney failure.

How is VUR diagnosed?

VUR is diagnosed and monitored using two particular scans:

- Ultrasound scans are used to diagnose hydronephrosis before birth and to check the structure of the bladder, ureters and kidneys after birth.

- The other test is called Voiding Cysto-Urethrogram (VCUG).

This uses a liquid that shows up on x-rays, which is put inside the bladder through a catheter (thin, plastic tube) inserted into the urethra. Once the bladder is full of this liquid, the child urinates while being scanned. This shows whether all the liquid is being passed through the urethra, or whether any of it is flowing backwards through the ureters towards the kidneys.

The VCUG test is also used to ‘grade’ the degree of reflux, according to its severity. Grade 1 is the least severe form of VUR, where urine is flowing back up the ureters but is not reaching the kidneys and, grade 5 is the most severe, where a great deal of urine is reaching the kidneys, making the ureter and kidney swollen. VUR is also described as ‘unilateral’ or ‘bilateral’ depending on whether one kidney (unilateral) is affected or both (bilateral).

What causes VUR?

In many children, the tunnel through the bladder wall is not long enough, so the valve does not work properly, but this can improve as the child grows. In some children, the ureters enter the bladder in a higher position than normal, which also means that the valve does not work properly; this is less likely to improve as the child grows.

How common is VUR?

VUR occurs in about one in every 100 children. It is ten times more common in white children than black children, and is also a lot more common in girls than in boys. If one child in a family has VUR, there is a chance that the other children could have VUR too, so monitoring might be suggested for brothers and sisters.

VUR is usually diagnosed in under fives; it is much less common in older children, who may have outgrown the problem.

The usual form of treatment

Medicines are first line treatment. Usually, a low dose of antibiotics is given on a long-term basis, often until the child is five years old or more. This prevents urinary tract infections, which in turn, prevents any damage to the kidney caused by infected urine flowing backwards into them. Treatment with antibiotics gives many children the opportunity to outgrow VUR.

Children with VUR who are taking antibiotics will often need to give regular urine samples, to be checked for any urine infections, particularly at an early stage. If you suspect that your child has a urine infection, please ring your GP to have a urine sample tested. Ultrasound scans are often used to check that the kidneys are growing properly.

Risks, discomforts of treatment and alternatives

Some children who continue to have urinary tract infections despite treatment with antibiotics, or still have severe reflux after the age of five years, may need an operation to correct the problem causing the VUR. In this operation, called ureteric re-implantation, the ureters are disconnected from the bladder and re-attached at an angle to create a valve.

Support groups:

There is no support group for children with VUR, but the following organization may be able to put you in touch with another family with a child with VUR:

Contact a Family
209-211 City Road
London EC1V 1JN
Tel: 020 7608 8700

Website: www.cafamily.org.uk

The medicines for your child are as follows:-

If you have any further questions please contact your child's consultant via their secretary via the hospital switchboard. The secretaries are available Monday to Friday 9.00 am to 5.00 pm

If you need to contact the Department outside of these hours please phone either:

Ward 3F	**0151 430 1616**
Ward 4F	**0151 430 1791**

Whiston Hospital
Warrington Road,
Prescot, Merseyside, L35 5DR
Telephone: 0151 426 1600

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