PAEDIATRIC HOTLINE

Urinary Tract Infection

Think of UTI in any child with fever or vomiting and no apparent cause.

Urinary tract infection (UTI) is common in childhood. Diagnosis is important because of the strong chance of underlying congenital renal abnormalities. Untreated, these can lead to recurrent infections, scarring of the kidneys, hypertension and chronic renal failure. Most such renal scarring results when children are affected at an early age.

DIAGNOSIS

Clinical

The signs and symptoms of UTI are often extremely subtle.

The younger the child the more general the symptoms:

fever
vomiting
lethargy/poor feeding
irritability
diarrhoea
jaundice
failure to thrive
convulsions

Up to one third of young infants with UTI are also septicaemic.

In older children the signs and symptoms may be more typical, but not always! Consider UTI in any child with fever, abdominal pain, vomiting or other non-specific illness.

Collection of Urine Samples

Midstream 'clean catch'.

The best method in older children.

Urine bag.

This is the most convenient method of collection in young children. About one third of specimens are contaminated by bacteria on the skin. The genitalia should be washed with warm water before applying the bag, and the bag left exposed so that the urine may be detected and the sample obtained the moment it is passed. A negative bag sample excludes UTI.

Catheterisation and suprapubic aspiration are invasive and should only be used in special circumstances.

Renal scarring can occur with untreated vesicoureteric reflux..

Urine Examination

Careful collection of samples is essential to avoid contamination of the urine by bacteria on the skin. (See 'Collection of Urine Samples'). Rapid processing of the specimen is important because organisms in urine can double in number over 20 minutes. If there will be any delay before a specimen reaches the laboratory, refrigerate (but don't freeze) it. It is impossible to diagnose UTI after antibiotics have been started.

'Dipstix' testing

This is an easy, cheap and rapid way of *excluding* UTI. Positive tests require confirmation by urine culture. However, in situations where culture is not feasible UTI may be diagnosed if *both* leucocyte esterase *and* nitrite tests are strongly positive, and the clinical findings suggest UTI. The urine must be fresh when tested and the test must be read at the correct time. If both leucocyte esterase and nitrite are negative, 95% of UTIs are excluded.

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Microscopy

Using unspun urine, more than 1 pus cell in each high power field, or more than 5 pus cells/mm^3 in a counting chamber, suggests UTI.

Urine culture

This is the only way to diagnose a UTI, and is also very important in providing information on the antibiotic sensitivity of the pathogen. Bacterial counts are unreliable if the urine specimen is not fresh.

MANAGEMENT

- Supportive care:
  Paracetamol for pain or fever
  Drink plenty of fluids
- Appropriate antibiotic
- Investigate the underlying renal abnormality
- Tips to prevent recurrence.

Which Antibiotic?

Mild UTI Duration 5-7 days

Nalidixic acid (Wintomylon, 50 mg/kg/day, in 4 divided doses)

or

Nitrofurantoin (Furadantin, Under 7 kg: 6 mg/kg/day, Over 7 kg: 5-10 mg/kg/day, in 4 divided doses)

Oral cephalosporins or *amoxycillin and clavulanate* (Augmentin) are also excellent treatment, if cost is not an issue.

Amoxycillin and co-trimoxazole are less effective in the Western Cape, because of the high incidence of resistant organisms.

Severe UTI Duration 7-10 days (ie if high temperature, rigors or flank/back pain)

Oral or *parenteral cephalosporin*

or

Parenteral aminoglycocide

In children under 6 weeks of age a parenteral aminoglycoside or cephalosporin is necessary.

Laboratory sensitivities should be checked in each case and antibiotics changed where appropriate. The urine is normally sterile within 2-3 days.

In children who have attained bladder control, it is advisable to give the night time dose of antibiotic after urinating just before going to bed. This ensures a high concentration in the bladder during sleep, and is of particular importance in recurrent or chronic infections.

Investigations

Who?

Up to one half of boys and one third of girls with UTI have underlying urinary tract abnormalities.

Therefore, all children need investigation for these abnormalities after the first well-documented UTI. A possible exception is girls who are over 5 years of age with an uncomplicated first lower tract infection.

What?

Ultrasound

- This investigation excludes most abnormalities, but not vesico-ureteric reflux. If a person experienced in renal ultrasound in children is not available, an intravenous pyelogram (IVP) is probably preferable.

Micturating cystourethrogram (MCUG)

- To exclude vesico-ureteric reflux and bladder outlet obstructions such as urethral valves.
- It is indicated:
  i) in all children under 3-4 years, or
  ii) in recurrent infections, or
  iii) if clinical or ultrasound findings suggest reflux or obstruction
- Delay this until a few weeks after the infection (provided the ultrasound is normal) because infection itself can cause transient reflux
- The urine must be sterile.

Advice to Parents

Give paracetamol for pain or fever, as prescribed,

Drink plenty of fluids.

Tips to prevent recurrence:

- double micturition
- shower rather than bath
- avoid bubble baths
- wipe from front to back at toilet.

Refer If:

Suspected pyelonephritis, and no facilities for treatment.

Under 6 weeks of age.

Suspected septicaemia.

Renal abnormality detected.

To Receive Future Copies of the Newsletter or for Further Information, Contact: Paediatric Hotline c/o Parke-Davis, 241 Main Road Retreat 7945.