Metro North Hospital and Health Service *Putting people first*

Senior Paediatrician and UQ Clinical Site Coordinator | Caboolture Hospital

UTI in Children – What's New

Dr Lisa Kane

Effective: 29 Mat 2019

Queensland Government

UTI in Children – What's New

Dr Lisa Kane

Senior Paediatrician and UQ Clinical Site Coordinator Caboolture Hospital

UTI in Children

- Epidemiology
- Diagnosis
- Management
- Investigations

Definition

- Combination of symptoms
  - Abdominal pain, dysuria, frequency, fever, loin pain, irritability/non-specific in infants

and

- a positive bacterial culture

Epidemiology

- Incidence: Before 7rs old – 6-8% female and 2% male
- Recurrence rate: 13-19%
- <6yo – 25% VUR at first UTI
- Of these 25% (6.25%) Grade IV or V VUR

In the Past

- Long term low dose Abs following all UTIs until at least 5yrs of age
- 2000 and 2001 – systematic reviews – no evidence to support this practice
- Larger trials subsequently – small benefit (6% reduction) but considerable increase rates of Ab resistance

Bacteria

- E coli 75-85%
- Klebsiella, Enterobacter
- Staph saprophyticus – adolescent females
- Others – more likely with anatomical or functional abnormalities
- ESBL – rare in paediatric UTI in Australia

How to Diagnose

- Suspect on history
- Collect urine for dipstick and send to lab for MCS
- No symptoms – don't test urine
- Consider checking BP - https://www.nhlbi.nih.gov/files/docs/guidelines/child_tbl.pdf

Collecting urine

- SPA (https://www.rch.org.au/clinicalguide/guideline_index/Suprapubic_aspirate/)
- Clean catch urine (CCU) *
- Mid-stream urine (MSU) *
- In-out catheter specimen (CSU)
- Bag urine – only good if negative dipstick to rule out UTI – not recommended for diagnosis

Dipstick results

- Leucocyte esterase and nitrite +ve – highly likely UTI
- If Nitrite +ve – 99% specificity for UTI
- If both neg – unlikely UTI
- Leucocyte esterase – can be +ve with other infections

Immediate management

- If symptoms and dipstick +ve – commence Abs
- Symptoms with negative dipstick – consider treating while awaiting microscopy and culture

Culture results

- SPA – any growth
- CSU - $<10^8$ cfu/L (10^6-10^8 cfu/L – possible)
- MSU or CCU - $<10^8$ cfu/L (10^7-10^8 cfu/L – possible)

Likely contamination

- Growth from a bag specimen
- More than 1 organism
- Skin commensals
- cfu less than recommended minimum counts
- If necessary – repeat collection

Management

- Cystitis
  - Lack systemic symptoms >1mth
  - Oral Abs
  - 2-4 days (3 days)
- Pyelonephritis
  - Systemically unwell or <1 mth
  - IV Abs
  - 7-10 days (total)

Management - Cystitis

- Trimethoprim/Sulfamethoxazole (Bactrim)
  - 4mg+20mg/kg 12 hr (10kg – 5mLs BD)
- Cefalexin
  - 12.5mg/kg 6hr (10kg – 5mLs 6hr)
- Augmentin – Don't use as too broad spectrum and risk C difficile
- Norfloxacin – inadequate tissue concentration in renal tissue

Management- Pyelonephritis

- IV gentamicin – variable dose depending on age
- IV Amoxicillin/Ampicillin – 50mg/kg (max 2g) 6h
- If gentamicin contraindicated
  - Cefotaxime 50mg/kg (max 1g) 8h OR
  - Ceftriaxone 50mg/kg (max 1g) daily

Ongoing management

- Once sensitivities known – rationalise treatment with least broad spectrum Ab
- If no response
  - Reassess diagnosis
  - Oral → IV
  - Multi-drug resistance (rare in Australia)
- Do not repeat urine after treatment unless ongoing symptoms

Imaging

- Ultrasound
- Micturating cystourethrogram (MCUG)
- Dimercaptosuccinic Acid (DMSA) scan
- Mercaptoacetyltriglycine-3 (MAG-3) scan

<6 mths old

- Ultrasound
  - During infection if atypical or recurrent
  - Otherwise within 6 wks
- DMSA
  - If atypical or recurrent – do 4-6 mths after UTI
- MCUG
  - If atypical or recurrent – do 4-6 mths after UTI

6mths – 3 yr

- Ultrasound
  - During infection if atypical
  - Otherwise within 6 wks
- DMSA
  - If atypical or recurrent – do 4-6 mths after UTI
- MCUG
  - Generally not done

>3yrs

- Ultrasound
  - During infection if atypical
  - Otherwise within 6 wks if recurrent
- DMSA
  - If recurrent – do 4-6 mths after UTI
- MCUG
  - Not done

Prevention

- Prophylactic Abs – not routine (risk multi-resistance)
- Constipation, increasing fluid intake, avoiding bubble baths, hygiene measures – no harm, maybe beneficial
- Cranberry juice, probiotics, Vit A, nasturtium and horseradish, methenamine Hippurate and Uro-Vaxom – no demonstrated efficacy
- Surgery for VUR – correct the anatomy, no supporting evidence prevents UTIs

Other conditions

- Vulvovaginitis - https://www.rch.org.au/clinicalguide/guideline_index/Prepubescent_gynaecology/
- Pin worms
- Dysfunctional voiding – older child, detrusor instability

Summary

- Diagnosis – Sx + culture
- If sick – refer to hospital for IV Abs
- If well – Bactrim (0.5mL/kg BD)
- Ultrasound if sick/recurrent/atypical

Caboolture Hospital

- Just celebrated 25 years
- New 32-bed adult ward and secure Gentlemen and Ladies Aging with Dignity Unit for frail and elderly patients
- New Specialist Outpatient Department
- Upcoming expansion of the Emergency Department
- Upcoming new car park

Caboolture Hospital

- 24 hr Paediatric cover – can be contacted via switch 5433 8888 (registrar or consultant)
- If appropriate (not needing emergency care) – following phone contact may have direct admit organised