Urinary incontinence in children

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Nocturnal enuresis

Types of NE

<table>
<thead>
<tr>
<th>Type</th>
<th>Definition</th>
<th>Treatment</th>
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</thead>
<tbody>
<tr>
<td>Monosymptomatic</td>
<td>No daytime symptoms</td>
<td>Alarm/ DDAVP</td>
</tr>
<tr>
<td>Non-monsoymptomatic</td>
<td>With LUT symptoms +/-incontinence</td>
<td>Treat underlying problem first</td>
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<tr>
<td>Primary</td>
<td>Always wet at night</td>
<td></td>
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<tr>
<td>Secondary</td>
<td>&gt; 6 months of night dryness previously</td>
<td>Pathological or psychological factors more common</td>
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Enuresis

- Involuntary passage of urine at night in the absence of physical disease beyond the age of 5 years
- Spontaneous remission 14-16% / year
  - 20% 5 yrs → 10% 10 yrs → 3% 15 yrs → 0.5-2% adults
  - More common in boys (60%)

Factors contributing to enuresis

- Deep sleep/poor arousal
- Small or unstable bladder
- Nocturnal polyuria

How do you determine the role of each?
Time and volume chart

- Expected maximum voided volume
  
  \[(\text{Age} + 1) \times 30\]
  
  (max 400mls)
  
  (small bladder)

- Overnight urine
  
  \[(\text{max EMVV} \times 1.3)\]
  
  (nocturnal polyuria)

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Treatment for NE

- Level I evidence (Cochrane systematic reviews)
  
  - Alarm therapy
  
  Glazener 2005
  
  - Desmopressin
  
  Glazener 2002
  
  - Tricyclics
  
  Caldwell 2016
  
  - Other medications
  
  Deshpande 2012

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Alarms

- How alarms work
  
  - Alarms - first line therapy for NE
    - 2/3 become dry during treatment,
    - 1/2 remain dry after treatment cease
      
      (Glazener)
  
  - Alarm is wetness sensor
  
  - Bed (bell and pad) or body worn, (+/- wireless)
  
  - Trains child to wake to void or inhibit voiding when bladder is full
  
  - Training time 2-3 months (parental support)

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Alarm access

- Alarms can be hired (from chemist, continence services, alarm companies) or purchased (online)
  
  - Malem, Dri-Sleeper (Eclipse), Wet alert (Ferring), Ramsey Coote
  
  - Variable qualities
  
  - Need to choose one to suit the child

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Alarm failure

- Failure to wake to stimuli
  
  - Failure to respond (get up and void)
  
  - Attachment problems (body worn)
  
  - Wearing pants (bell and pad)
  
  - Inadequate training time (need for 2-3 months)
  
  - Have not trained to wake to void (need overlearning)
Desmopressin

- Second line therapy for NE
  - Reduces overnight urine volume
- Use:
  - Sleep-overs (short term)
  - Alarm failure
  - In combination with other treatments
  - For breaks eg alarm fatigue, menstruation
- Precaution with fluids

Desmopressin failure

- Timing of dose (1 hour before bed best)
- Inadequate dose
  - Max: tablet 400mcg, melt 240mcg, spray 40mcg
- Drinking too much at night (risk of SE)
- Despite reducing urine volume, it is still larger than bladder capacity
- Nephrogenic diabetes insipidus

Other medications

- Tricyclics third line therapy for treatment failure
  - 20% dry, relapse on stopping medication
  - Mechanism of action: anticholinergic effect?
  - Concerns regarding cardiac SE and accidental overdose (?ECG)
- Anticholinergics combined with other therapies increased efficacy and reduced relapse rates by about 20%.
- May try combination therapy in treatment resistant enuresis.

Psychological factors

- Psychological comorbidities high (20-40%), affects treatment adherence and response
  - Eg ADHD, ODD and other externalising behavioural problems
    (Von Gontard 2011)
- Stress and poor self esteem can affect child’s attitude to treatment, involvement of psychologist or use of motivational strategies may help
- Parental attitude can impact on treatment
  - (eg frustration or blaming, anxiety, helplessness)

Motivation strategies

- Reward chart

Daytime incontinence
Background for DUI

- 17% - 20% wet ≥ 2 per week
- Associated with adult urge incontinence
- Impacts quality of life worse than for NE
- Many causes for daytime wetting:
  - Overactive bladder
  - Voiding postponement
  - Dysfunctional voiding
  - Constipation
  - Vaginal reflux
  - Pollakiuria
  - Giggie incontinence
  - UTIs, diabetes mellitus, diabetes insipidus, anxiety etc

Overactive Bladder

- Presents with urgency, frequency & DUI
- Often small bladder capacity, associated with constipation
- Rx
  - Urotherapy (fluids, bowel program, timed voiding)
  - Anticholinergics (oxybutynin, tolterodine, solifenacin)
  - TENS (Transcutaneous Electrical Nerve Stimulator)
  - Botox (experimental)

Voiding Postponement

- Habitually postponing micturition
- Common in children (don’t want to miss out play)
- Presents with: holding manoeuvres, urgency, fluid restriction
- Reduces awareness of bladder sensation
- Rx: timed voiding (alarm watch)

Constipation

- Cause DUI in 1/3, 90% resolve with treatment for constipation
- Assess using ROME III score, Bristol Stool Chart, rectal diameter on U/S
- Rx
  - Adequate drinking, diet (fibre)
  - Laxatives (taste important for children, macrogols most effective for disimpaction & maintainance
  - Foot support, regular toilet sits (gastro-colic reflex)

Rectal distension

- Urine leakage 5-10 minutes after void
- No other LUT symptoms
- Common in prepubertal girls
- Treatment: toilet posture (straddling the toilet backwards)
Pollakiuria

- “Extraordinary daytime frequency”
- Frequent small daytime voids (>20)
- Symptoms disappears in sleep
- Recent stressor in >50%
- Self limiting, reassurance after excluding other causes

Giggle incontinence

- Voiding to completion during laughter
- ? Type of cataplexy
- Uncommon (most cases are overactive bladder or voiding postponement)
- Treatment:
  - Methylphenidate (stimulant to prevent spontaneous activation of pontine micturition center in response to laughter)
  - Biofeedback (pelvic floor training)

Stress incontinence

- Rare in neurologically normal children
- DD: OAB, voiding postponement
- Caused by increased intra-abdominal pressure eg CF, urological surgery, elite gymnasts
- Treatment: pelvic floor awareness, pelvic exercises

Summary

- Urinary incontinence impacts on QOL
- Urotherapy (education, drink advice, bowel program, timed voiding) often helps
- Most treatments can be managed by GPs
- Refer if child fails to respond within 6 months or if suspected uro/neurological condition (eg continuous incontinence)
- Refer adolescents earlier

Useful websites

- ERIC: (Education and Resources for Improving Childhood Continence) http://www.eric.org.uk/

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