Urotherapy for childhood dysfunctional voiding and OAB

Tuesday 14th February, 2012, 9.20-10.00am
Urotherapy

- Urotherapy means non-surgical, non-pharmacological treatment for LUT dysfunction.
- Non-standardised term
- Described as ‘rehabilitation of LUT’
- Involves
  - Education
  - Intervention
  - Life-style advice
  - Documentation
  - Support and encouragement
Aims of Urotherapy

- Normalise bladder emptying
- -> decreased bladder overactivity
- Normalise bladder filling
- Facilitate age-appropriate storage
- Facilitate optimal bowel function
- Normalise defaecation dynamics
Treatment: Goals

- No more symptoms
  - urgency, wetness
- No more signs
  - ↑PVR, high pdet, +ve EMG during voiding
- Normalised flow curve
- PFM relaxation during void
- Normalised bladder capacity
- No further episodes of UTI
- Reduction in grade of VUR
- Normal bowel function
Urotherapy: Patients

- Significant morbidity without treatment in 40% children:
  - high detrusor pressure
  - destabilised micturition reflex
  - UTI
  - VUR
  - upper tract damage
  - constipation
  - hypocontractile detrusor
  - renal failure
Urotherapy: Patients

• Collateral damage:
  • self-esteem
  • self-worth
  • isolation
  • confidence
  • socialization
  • QoL
Behavioural co-morbidities

“comorbid disorders interfere with treatment for enuresis/incontinence. Affected children show lower compliance and treatment results are lower. Therefore, children with incontinence should be screened for psychological disorders even in pediatric and urological settings.

Children with a severe condition should be referred to the mental health service (child psychiatrists and child psychologists). An interdisciplinary approach is needed for optimal care in daytime wetting children.”

- Screening all children

  - History, observation, exploration
  - Short screening questionnaires
  - Problem items/behaviours present?
    - YES
  - Standard long questionnaires
  - Problem items/behaviours present?
    - YES
  - Full child psychiatric/psych assessment
  - Child psychiatric disorder present?
    - YES
    - Treatment of disorder
    - In addition to NE/incontinence
    - Treatment of
      - enuresis/incontinence only
    - NO
  - NO
  - NO
  - Counselling in addition to
    - treatment of
    - enuresis/incontinence
    - NO
Questionnaires

• Short
  – Short screening instrument for psychological problems in enuresis. SSIPPE (Van Hoecke 2007) Validated. 13 items. Yes/no
  – Parental Questionnaire Enuresis/Urinary Incontinence (von Gontard 2003) Non-validated. 15 items. Yes/no

• Standard long CBCL (Achenbach 1991) 113 items

• QoL – generic, disease specific eg PinQ (Bower et al. 2006)

• Other
Working with children

• Education, education, education
• Understand the pace of assessment and treatment is slower
• Let the family know at the outset ‘this takes time’
• The child is your collaborator - in assessment and treatment
• Treatment is not ‘done’ to the child – he/she participates
• The child is the focus- not the problem
• Understand different behaviours eg a withdrawn child, de-motivated child,
• Offer structured choices, achievable goals. Set the child up for success not failure
• Remove blame and guilt for every-one
Treatment Components

Assessment
Re-assessment

Intervention

Education
Motivation
Removal of shame and blame
• Put Documentation in place

• PROGRESS NOTES
  • Child's name___________________________
  • Date of consultation_____________________
  • Diagnosis______________________________
  • Results
    • Test results___________________________
    •
  • Bladder diary
    • Voiding frequency □ <4/day □ 4-8/day □ > 8/day
    • Fluid intake __________________________
    • MVV_______ Ave.VV_______ 1st am void_______ O/N urine vol_________
  • Wetting
    • ______nights/week _______times/night □ damp □ wet □ flooded
    • ______days/week _________times/day □ damp □ wet □ flooded
  • Medications taken

• Alarm diary
  • ______ dry nights/week Alarm_________times/night.__________ nights/week.
  • Time/s of alarm________________________Waking to alarm YES NO With help YES NO
  • Size of wet patch □ small □ medium □ large
  • Problems______________________________

• Bowel diary
  • Bowel actions ________/day ________/week BSS __________________________
  • □ Self-initiated □ Sits
  • Soiling YES / NO □ Stain □ Scrape ________/day ________/week
  • Parent's compliance □ good □ fair □ poor □ N/A
  • Child's compliance □ good □ fair □ poor □ N/A

• Progress overall

• Today's Flow/scan pattern____________________ MFR________ ml/sec PVR_______ mls
  • Urinalysis___________________________

• Further management/problems

• Further referrals
• Name __________ Signature

• BECAUSE
• Chronicity
• Motivation
• Relapse
• Ongoing assessment
• Measure outcomes
Treatment: Education

- Child’s understanding of bladder structure and function
- Don’t assume child / parents understand LUT
- Age-appropriate explanation of
  - anatomy
  - aetiology of specific dysfunction
Treatment: Education

- What is **not** associated with disorder
  - laziness, naughtiness, dirtiness, low IQ
- Attribute dysfunction to external factors
- Establish prevalence in realistic context
- Explore motivation
- Establish child as co-investigator and collaborator
First-active bowel management

• For 6 months minimum

• Hygiene, correct wiping, containment
Treatment: “Standard Therapy”

- Routine hydration
- Regular, optimal voiding
- Pelvic floor muscle awareness
- +/- pharmacotherapy
- +/- biofeedback training
- +/- neuromodulation
- +/- alternative / holistic intervention
“Standard Therapy”

- Routine hydration
  - Often voluntary dehydration
  - Re-set high set-point for thirst
  - Drinks of 200mls +/- age -dependent
  - 5-6 / day
- Dilutes concentrated (? irritating) urine
- Avoid sugar and caffeine
“Standard Therapy”

- Regular voiding:
  - Every 2-3 hours
  - May need vibrating alarm watch
  - Prevent over-distension (including overnight)
  - Re-establish sensory awareness
  - Minimised OAB activity -> leakage
  - Must be unopposed emptying
FROM THIS TO THIS
PFM Relaxation
Let’s first identify

• Correct PFM action
• “lift”
• Co-contraction of lower Trans versus Abs, NOT Rectus Abs
• Lower chest breathing

Treatment: PF relaxation

- **Learn to contract** and relax the PF muscles
  - Without valsalva / accessory muscles
- **Practice of correct recruitment** +/- any form of biofeedback

**Therapist Palpation/observation**
- Lower transversus abdominis
- Perineal body/lift
- Med’l border ischium
- Muscle balance between PFM and upper abdominals-observe breathing/abd’l action

**Child palpation/observation**
- Self-palpation of PF or transverse abdominus
- Watching abdomen in mirror and identifying rectus activity
PFM Relaxation

- Pelvic floor muscle: awareness and relaxation
  - Sufficient awareness to practise correctly
  - Apply during initiation of void
  - Apply throughout void
  - Apply during defaecation
PFM Relaxation

- Optimal voiding mechanics
  - Supported seating / squatting
  - Neutral lumbar spine
  - Feet on stool; knees apart
  - Prevent urine entrapment
  - No pushing
  - Focused abdominal relaxation
  - Aim for a “waterfall” void
  - Double void

- Poor lumbo-thoracic posture
- Foot position
PFM Relaxation

- +/- biofeedback during voiding
- Real time uroflow
- Auditory feedback
- EMG
- Abdominal ultrasound
- Post void ultrasound for residual volume
Use of TAUS

PFM relaxation

- PFM contraction
- 5-year-old girl
- Bladder neck ‘lift’

- SAGittal VIEW
- Rectus abdominis
- Transversus abdominis
- Bladder neck
Use of TAUS
Measure rectal diameter

Treatment OAB
Pharmacotherapy

• When to supplement standard therapy with anticholinergics:
  • Idiopathic OAB with no evidence of dysfunctional emptying
  • OAB with concurrent VUR or RUTI
  • Very small FBC
  • Properties: anti-muscarinic, local anaesthetic, SM relaxant
  • S/E: personality changes, headache, blurred vision, constipation, dry mouth, flushing

Monitor bladder emptying and constipation
Treatment

Pharmacotherapy

• Other medications
  • alpha-blockers: for dysfunctional bladder neck; may be used when PFM retraining doesn’t improve PVR

• Botulinum toxin A

• Antibiotics
  Treatment of UTI (of course)
  Long-term prophylaxis in some children with recurrent UTIs due to residual urine
Recent review articles:


Urotherapy

Neuromodulation

• Neuromodulation for OAB
  • Increases release of neurotransmitters →
  • ↓ cholinergic activity
  • ↑ beta adrenergic activity (→ relax bladder vault)
  • VIP, serotonin
• Inhibition of OAB: 5-10Hz
  • TENS – pudendal afferents, S2,3 foraminae, S3 dermatome
  • SANS/PTNS (20Hz)
  • Electro-acupuncture
Urotherapy

Neuromodulation

Contraction of detrusor:
- Intravesical stimulation

Bladder pain
- Suprapubic or spinal

Pelvic floor/sphincter strengthening
- Anorectal malformation
- Pelvic floor relaxation
- Not routinely used for sensory awareness
- ? Perineal / anal electrode

Adjunctive- not stand-alone therapy
Training in electrotherapeutics prerequisite for clinical use
Urotherapy
Neuromodulation Efficacy

• No known predictors of efficacy
• Most studies pre/post intervention series
• Sans- 50-80% improvement in clinical refractory OAB symptoms (De Gennaro M et al. 2004., Hoebeke P et al 2002)
• For OAB Tens - clinical changes:
  • Significant decrease number wet episodes
  • Significant decrease urge intensity
  • Significant improvement in FVC parameters
  • Significant improvement in U/D parameters

Hagstrom et al. report on RCT
Tens refractory daytime urinary urge incontinence
N=27
The active group had a significantly greater decrease in daily incontinence episodes compared to the sham treated group (p < 0.01)
No change in MVV or AVV ? Changes related to sensory mechanisms
First line treatment (Lordelo et al)

Lordelo et al. 2009 J Urology, 182(6), 2900-2904.
Urotherapy
Neuromodulation Efficacy

IVS - neurogenic and idiopathic detrusor underactivity - voiding was normalised in 85% - effect long lasting in 72%; idiopathic > neurogenic (Gladh G et al 2003)

Efficacy requires:

- patient co-operation
- preserved reflex arc
- compliant bladder
- active detrusor fibres
- total or partial integrity of PFM innervation (Fall & Lindstrom 1991)

Urotherapy
Neuromodulation neurogenic bladder

• Different outcome measures – difficult to collate studies
• Some improved bladder storage
• Some improved emptying
• Minimal improvement in continence
• 1 RCT using IFT - with significant improvement in all UDS parameters except for maximum bladder capacity and significant improvement in continence in treatment group (Kajbafzadeh et al 2009)

Urotherapy
Neuromodulation Bowel

Sacral Tens – clinically bowel sensation improves but not studied

- RCT - Transcutaneous electrical stimulation using IFC increased bowel motility, decreased bowel transit time, pain and soiling and improved physical QoL in children with STC.
- Daily home-based IFT further improved defaecation frequency
- Pilot study IFT lumbo-sacral placement of electrodes – sig > se def’n no, improvement in abd’il pain
- SN implantation – children with bladder and bowel dysfunction, constipation
  - improved in 12 of 15 patients (80%)
  - 7 (41%) had resolution

• Clarke et al. 2009 J Pediatr Surg, 44: 408
• Ismail et al. 2009 J Pediatr Surg, 44: 2388
• Humphreys et al. 2006 J Urology, 176(5), 2227-2231
• Roth et al. 2008 J Urology, 180(1), 306-311 (discussion 311).
Neuromodulation: Summary

• Positive role for neuromodulation in children with LUTD
• Adjunctive to other intervention
• No known predictors of efficacy
• Understanding of electrotherapeutics is a prerequisite for clinical use
• Neuromodulation of the bowel shows promise
Urotherapy
Clean intermittent catherisation

• The friend of the upper tracts
• Assist in bladder emptying
• Assist in reducing high detrusor pressures
• Can be introduced through stoma
• Very young children can learn to use
• Essential with neurogenic bladder, earlier commencement -> better protection
• Bladder underactivity, ↑PVR, recurrent UTI, wetting
• Prevent overdistension day and night
Urotherapy
Urethro-vaginal reflux

• Post-void dampness
• 24 hours of reverse toileting ie facing wall/cistern -may be diagnostic
• Teach the child to void with anterior pelvic tilt
• Knees well apart
• So urinary stream directed down, not back
• Increasing IAP ie. cough at end of voiding will help vagina empty

Urotherapy
Troubleshooting

• Specifics of problems
• Strategies to change situation in future
  • Action by child
  • Action by teacher / parent / other
  • Who needs to facilitate change
• Contact with teacher
• Containment advice in key situations
Urotherapy: Review

- “.. frequent follow-up with emotional support and encouragement .. important components of intervention” (Longstaffe et al 2000)
- Irrespective of treatment success
- How frequent: depends on
  - Type of intervention
  - Feedback / measures needed
  - Child’s motivation
Urotherapy
Outcome Measures

• Realistic and achievable
  • improved hydration: e.g. finish drink bottle
  • regular voiding
  • completion of FVC / bowel diary
  • use of watch alarm
• Unambiguous:
  • Quantified
  • Precise: e.g. wet patch or dried wet patch
• Validated and reliable

• LOOK AT ICCS WEBSITE
Urotherapy

Efficacy

- Evaluate by resolution of symptoms
  - Incontinence episodes / pads used
  - Urge episodes
  - UTI
  - Faecal soiling
  - Psychological effects and QoL
- Resolution of signs
  - Bladder emptying efficiency (incl. PVR)
  - Bladder wall changes
  - Dyssynergic voiding pattern
  - Grade of VUR
Urotherapy approaches are significantly better than historical results utilising anticholinergic medication alone

Urotherapy effective in decreasing urinary tract infections, improving constipation, and decreasing the need for intervention in patients with vesicoureteral reflux

For how long?

- Till symptoms or signs have resolved
- Till the child is happy
- Till the family is happy
- Till the bladder is “normal” as you can make it
- Till the upper tracts are at least risk
- Bowel function is normal or actively managed
- AND if there is likely to be change/deterioration you will know about it because of recall appointments
• The Joint Meeting of the
  • International Children’s Continence Society and the Continence Foundation of Australia

• Sep or Oct 2014

• Serious Business in Australia’s Most Stunning Location

• Cairns Convention Centre - Australia