Urotherapy: Facts and Myths

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Urotherapy

- Urotherapy means nonsurgical, nonpharmacological treatment for LUT malfunction.
- Non-standardized term
- Described as ‘rehabilitation of LUT’
- Involves
  - Education
  - Life-style advice
  - Documentation
  - Support and encouragement
  - Intervention
**Urotherapy**

**Standard urotherapy:**
- Education of the child and the family (Information on how bladder works)
- Bladder diary to monitor progress
- Bowel program
- Encouraging:
  - regular fluid intake
  - regular/timed voiding
  - correct posture for micturition

**Specific urotherapy:**
- Behavioral modification
- Specific pelvic floor training
- Biofeedback training
- Electrical stimulation (Neuromodulation) and catheterization
Aims of Urotherapy

- Normalize bladder emptying
- Normalize bladder filling
- Decrease bladder overactivity
- Facilitate age-appropriate storage
- Facilitate optimal bowel function
Urotherapy

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

- NE
- Dysfunctional voiding
- VUR / UTIs
- Constipation / Encopresis
Urotherapy in Nocturnal Enuresis

- Appropriate fluid intake
  - regular fluid intake during the day
  - minimization of fluid and solute intake 1-2 hours before sleep
- Regular voiding during daytime
- Good voiding posture
- Emptying the bladder before going to bed
- A calendar of dry and wet nights should be kept for self-monitoring and motivation
- Treatment of constipation
Fluid restriction (deprivation) before bedtime is a method frequently used by parents (Shaffer 1977).

Fluid restriction reduces the total overnight urine production which reduces the child's need to void overnight.

However, fluid restriction (particularly during the day) may reduce the bladder volume (Sorotzkin 1984) and hence increase the chance of enuresis by reducing the ratio of bladder volume to overnight urine production.

Even so, it might be useful to limit pre-bedtime fluid intake, particularly drinks with diuretic properties (Novello 1987).
Urotherapy - 1st line of treatment in nocturnal enuresis

**True (Robson LM et al, 2002)**

- **Design:** Prospective, uncontrolled pilot study
  - N=23 (83% primary), initial average 5.9 wet nights/week
- **Intervention:** Timed/double voiding daytime, void before bed, optimal toilet posture, good hydration
- **Follow-up:** 0.5-3 months
- **Outcome:** 70% had 1 less wet night/week, 39% had 50% reduction in wet nights, 22% resolved

**Conclusion:** Urotherapy prior to pharmacological and alarm Tx show promise

**Myth (Cederblad M et al., 2015)**

- **Prospective, randomized, controlled study**
  - N=20 basic bladder advice (BBA) for 4 weeks
  - N=20 alarm Tx for 8 weeks
- **ICCS BBA guidelines:** information/demystification, regular voiding, sound drinking habits
- **Outcome:** number of wet nights during the last 2 weeks of treatment

**Conclusions:** BBA did not significantly decrease the number of wet nights, and did not improve the success of subsequent alarm therapy

Urotherapy as the first line treatment in nocturnal enuresis should be reassessed
Urotherapy approaches are significantly better than historical results utilising anticholinergic medication alone

Urotherapy has been shown to:
- decrease urinary tract infections
- improve constipation
- decrease the need for intervention in patients with VUR

Urotherapy in Voiding Dysfunction

• Substantial number of retrospective clinical studies documenting high rates of success

• No randomized controlled trials on the effect of each urotherapy modality

• No standardised urotherapy protocols

• Differences in:- initial evaluations
  - treatment methods
  - follow-up
Urotherapy-1st line of treatment in daytime wetting - Retrospective studies

Mulders MM, J of Peds Urol 2011

- Retrospective study of 90 children with DI Tx with standard uroTx+PFME+BF
- 42% became completely dry during daytime
- 36% showed a 50% or greater level of response
- Significant reduction in daily voiding frequency (mean 7.0 ± 1.3, P<0.0001)
- Reduction in mean post-void residual (P<0.003)
- Improvement in flow pattern (P<0.05)

Allen HA, Urology 2007

- Retrospective study of 63 ch with DI Tx with timed voiding alone
- 45% had sign improvement in DI within 4 months without anticholinergics
- Pts with good compliance more likely to improve than those with poor compliance
- No reliable predictive factors of success were identified
Assessed long-term efficacy of simple behavioral Tx (timed voiding, modification of fluid intake, + reinf techniques, PFME without biofeedback) for daytime wetting in 48 children using Qnaires mailed to pts

- Mean 4.7 years after Tx, 59% improved DI, 51% improved frequency, 46% improved urgency

- Frequency of UTIs decreased by 56%

- Simple BM with PFME without biofeedback is effective and long lasting first line Tx in DI
Vijverberg MAW, et al, Urology 2011

• Assessed the incontinence and urge complaints in adults who had inpatient uroTx during childhood

• 1987-1990 95 children hospitalized uroTx for LUTS (resistant to outpatient Tx for an average of 2 years)

• 75 analyzed (questionnaire) out of 92 traced:
  • number of wet incidence during the day
  • micturation frequency
  • urge complaints
  • flow pattern

• Long term follow-up (mean 17.9 yrs)
At 17.9 yrs - 84% good outcome, 5% poor outcome

Good outcome: ≤1 wet incident a week, 3 other variables normalized

Poor outcome: ≥2 wet incidents weekly, no improvement of 2 or 3 other variables

CONCLUSIONS:
- Urotherapy good long-term result
- Some patients with a good outcome develop relapse
- Some patients with poor training results recover spontaneously
- Average duration for improvement or deterioration to occur: approximately 2 years (in this study)
- ? factors predict outcome
Urotherapy-1st line of treatment in Dysfunctional Voiding - RCT

**Non-neuropathic underactive bladder**

Group A: 25 ch mean age 8.9 yo with BF+PFME+BM
Group B: 25 ch mean age 9.1 yo BM only
Follow-up at 6 mths and 1 year
Post Tx improvement both groups

Group A: Sign increased number of daily voids, and maximum urine flow, decreased PVR and voiding time
VUR resolution 3/6
UTI prevention 9/11

**DES**

Group A: 40 ch mean age 8.5 yo ABF+PFME+BM
Group B: 40 ch mean age 9 yo BM only
Follow up: 6 mths and 1 year

Group A: Sign increased max/average urine flow, decreased PVR and voiding time
BC and VV no sign improved
VUR resolution 8/9
UTI prevention 12/14
Constipation resolution 17/25
Encopresis resolution 15/15

**Ladi-Seyedian S, Urology 2014**

**Kajbafzadeh AM, J of Urol 2011**
<table>
<thead>
<tr>
<th>Ref</th>
<th>Study Design</th>
<th>N</th>
<th>Groups</th>
<th>Parameters studied</th>
<th>Outcome</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>[1]</td>
<td>Double-blind RCT</td>
<td>50</td>
<td>A: SU, AB, PFME (25) B: SU only (25)</td>
<td>Bladder capacity, urine flow, voiding volume &amp; time, PVR, mean voids/day</td>
<td>AB+PFME improves sensation of bladder fullness &amp; contractility</td>
<td>Small sample size, short follow-up, different treatment frequencies</td>
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<tr>
<td>[2]</td>
<td>Open, parallel RCT</td>
<td>80</td>
<td>A: AB, PFME, BM (40) B: BM only (40)</td>
<td>Daytime wetting &amp; symptoms, uroflow parameters, UTI, VUR</td>
<td>AB+PFME improved bowel &amp; voiding dysfunction, VUR, UTI</td>
<td>Small sample size, noncompliance, no validated bowel function questionnaire</td>
</tr>
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References:
Urotherapy in Detrusor Underactivity

• Aimed to optimize bladder emptying efficiency and improve sensation of bladder fullness and contractility

• Regular moderate drinking and voiding regimen

• Attention to good voiding posture to facilitate pelvic floor muscle relaxation and prevent flow obstruction

• Double voiding (several toilet visits in close succession) in children with increased post-void residuals, at least in the morning and at night, if not achievable during the school day

Chase J et al. J of Urol, 2010
Overactive bladder and DI

- 4 weeks standard uroTx before randomization
- Group A: N=30, 12 weeks of standard UroTx with a Timer watch
- Group A: N=28, 12 weeks of standard UroTx without a Timer watch
- Incontinence episodes, bladder diaries: before randomization and at weeks 1, 11, 12
- Long-term response evaluated at 7 months post intervention; When using timer watch, 60% children obtained complete, sustainable daytime continence; Only 18% in non-timer watch group achieved continence
- **Timer watch assisted uroTx is superior to standard uroTx**

Hagstroem S, J of Urol 2010

DV

- Group A: N=43, mean age 7.5 yo, BM + PFME
- Group B: N=32, mean age 6.7 yo, BM alone
- 1 year follow-up
- St significant improvement in DI, NE, uroflow parameters, constipation in group A vs B
- **PFME superior to standard Tx**

Zivkovic DV, Peds Urol 2011
Urotherapy in Overactive Bladder

- Active management of bowel dysfunction
- Implementation of age-appropriate regular fluid intake
- Regular visits to the toilet
- Charting facilities (for compliance and motivation)
- Timer watch to remind the child of toilet visits and routine hydration
Systematic review of the literature to assess the effects of biofeedback as adjunctive therapy for symptoms of nonneuropathic voiding disorders in children up to age 18 years.

Five eligible studies were included in the systematic review, of which 4 (382 participants) were pooled in the meta-analysis based on available outcomes data.

The overall proportion of cases with resolved incontinence at month 6 was similar in the biofeedback and control groups (OR 1.37 [95% CI 0.64 to 2.93], RD 0.07 [-0.09, 0.23]).

There was also no significant difference in mean maximum urinary flow rate (mean difference 0.50 ml, range -0.56 to 1.55) or likelihood of urinary tract infection (OR 1.30 [95% CI 0.65 to 2.58]).

Conclusions: Current evidence does not support the effectiveness of biofeedback in the management of children with nonneuropathic voiding disorders.
≤18 years children whose primary diagnosis was daytime urinary incontinence (the urge syndrome and/or dysfunctional voiding) with or without the presence of nocturnal enuresis.

Only studies that compared 2 or more interventions using a randomized controlled design were included. Any intervention was eligible for inclusion, either singly or in combination alarm systems, biofeedback, pharmacotherapy, bladder retraining and voiding reeducation.
Randomized trials of terodilene (2 studies), daytime alarms (1), imipramine (1) and biofeedback/oxybutynin (1) involving 383 children were reviewed.

Latter trial: after 9 months of treatment there was no difference in the proportions of children with unimproved daytime wetting with oxybutynin (RR 0.74, CI 0.26 to 2.13) and biofeedback (0.92, 0.59 to 1.43) compared with placebo.

Conclusions: No intervention tested in a trial to date has been proved to be of benefit to children with daytime urinary incontinence.
Urotherapy in Voiding Dysfunction

Fact

Tx of bowel dysfunction

89% resolution of daytime wetting
63% resolution of bedwetting and prevention of UTIs

Loening-Baucke V, Pediatrics 1997
Good boy!

Thank you!