

## OUTCOME AFTER UROTHERAPY IN CHILDREN WITH DYSFUNCTIONAL VOIDING ON SYMPTOMS AND QUALITY-OF-LIFE.

### Hypothesis / aims of study

Urotherapy can be a successful treatment for children with dysfunctional voiding (DV). Administering patient reported outcome measurements as the Vancouver Symptom Score for Dysfunctional Elimination Syndrome (VSSDES) and the Pediatric urinary Incontinence Quality of life (PinQ) questionnaires can be useful to evaluate the effect of the treatment on lower urinary tract symptoms (LUTS) and the quality of life. [1] The Dutch VSDESS and the Dutch PinQ questionnaires are valid and reliable. We evaluated the outcome of urotherapy for children with DV and sought to establish the responsiveness of the VSSDES and the PinQ questionnaires.

### Study design, materials and methods

This cross-sectional multicenter study was done in one tertiary and two community hospitals. The children and their parents completed the questionnaires before and after treatment. A measure of the responsiveness is the area under the receiver operating characteristic curve (AUC), according to an external criterion. [2] After urotherapy parents and children were asked to compare the voiding dysfunction to one year earlier (much better, somewhat better, about the same, somewhat worse, much worse). This question was derived from the RAND-36-Item Health Survey and used as an external criterion. An AUC of at least 0.70 was considered to be adequate. [2] LUTS were retrospectively collected before and after urotherapy. Outcome was defined by the definition initial success of the International Children's Continence Society (ICCS): no response (<50% reduction of LUTS), partial response (50 - 99% reduction of LUTS) and complete response (100% reduction of LUTS). [1] The paired t-test and McNemar test were used to analyze the LUTS before and after treatment (significance  $p < 0.05$ ).

### Results

Between June 2014 and May 2016 64 children with DV (median age 7 years, IQR 6-10 years) received urotherapy (median duration 18 weeks, IQR 11-31 weeks). The number of girls was 35 (55%). Seventeen children were refractory to a previous urotherapeutic treatment. After treatment symptoms such as daytime and nighttime incontinence, urge, and abdominal pain all improved significantly (table 1). The initial success of treatment was in 55 (85.9%) children complete or partial and in 9 (14.1%) no response (table 2). In both, there was no difference in this regard between children who were refractory to a previous urotherapeutic treatment and who had a urotherapeutic treatment for the first time ( $p=0.19$ ). In the group refractory to a previous urotherapeutic treatment the initial success after a new treatment was complete or partial in 13/17 (76.5%). The total scores (SD) of the VSSDES and PINQ questionnaires are shown in table 3. The AUC for the PinQ was 0.79 ( $p=0.01$ ) for children and 0.72 ( $p=0.03$ ) for parents. The AUC for the VSSDES was 0.50 ( $p=0.98$ ) and 0.55 ( $p=0.62$ ) for children and parents, respectively.

### Interpretation of results

The children in our study showed a good initial success rate after urotherapy. In contrast to the VSSDES, the PinQ showed good responsiveness. The children and parents who answered the RAND-36-HTI question with much or somewhat better had mean lower scores on the PinQ after treatment. A lower total score corresponds with a higher quality-of-life. Using questionnaires as the PinQ and the VSSDES makes symptoms and feelings transparent and negotiable with the health professional and family-members. This could lead to increased empathy, support and treatment compliance. Furthermore, the questionnaires provide an objective score and thus are helpful in clinical research.

### Concluding message

Urotherapy is a successful treatment for children with DV, even when they have received previous treatment. The PinQ is able to detect clinically important change in quality of life after treatment.

Symptoms n = 64 <sup>a</sup>	Before treatment n (%)	After treatment n (%)	p-value
<b>Daytime incontinence</b>	<b>54 (84.4)</b>	<b>28 (43.7)</b>	< 0.001 <sup>b</sup>
- Partial response (50-99%)		- 18 (28.1)	
- No response (< 50%)		- 10 (15.6)	
<b>Dry</b>	<b>10 (15.6)</b>	<b>36 (56.3)</b>	
<b>Nighttime incontinence</b>	<b>40 (62.5)</b>	<b>23 (35.9)</b>	< 0.001 <sup>b</sup>
- Partial response (50-99%)		- 7 (10.9)	
- No response (< 50%)		- 16 (25.0)	
<b>Dry</b>	<b>24 (37.5)</b>	<b>41 (64.1)</b>	
<b>Urge (n=56)</b>	<b>27 (48.2)</b>	<b>6 (10.7)</b>	< 0.001 <sup>b</sup>
<b>Abdominal pain</b>	<b>16 (25.0)</b>	<b>2 (3.1)</b>	< 0.001 <sup>b</sup>

**Table 1.** Symptoms before and after urotherapy presented in number (%)

<sup>a</sup> Unless stated otherwise

<sup>b</sup> McNemar test

Initial success following the three ICCS basic principles of treatment outcomes, n (%)	Total n = 64	Refractory to previous treatment n = 17
- No response	9 (14.1)	4 (23.5)
- Partial response	25 (39.1)	9 (53.0)
- Complete response	30 (46.8)	4 (23.5)

**Table 2.** Initial success following the three ICCS basics principles of treatment outcomes presented as number (%).

Total score of the questionnaire	Before treatment	After treatment	Difference	p-value
<b>VSSDES</b> <sup>b</sup>				
- Child n= 50	17.89 ± 6.9	11.6 ± 5.9	-6.3 ± 6.7	<0.001 <sup>a</sup>
- Parent n= 49	17.8 ± 6.5	11.5 ± 6.3	-6.4 ± 6.6	<0.001 <sup>a</sup>
<b>PinQ</b> <sup>c</sup>				
- Child n= 45	23.7 ± 14.8	17.0 ± 15.0	-6.7 ± 10.9	<0.001 <sup>a</sup>
- Parent n= 48	21.5 ± 11.3	17.1 ± 12.9	-4.4 ± 12.0	0.015 <sup>a</sup>

**Table 3.** Total mean score (SD) of the VSSDES or PinQ questionnaire.

<sup>a</sup> Paired t-test

<sup>b</sup> A higher total score indicate more severe symptoms.

<sup>c</sup> A higher total score indicates a lower quality-of-life.

#### References

1. Austin, P. F., Bauer, S. B., Bower, W. et al.: The standardization of terminology of lower urinary tract function in children and adolescents: Update report from the standardization committee of the International Children's Continence Society. *Neurourol Urodyn*, 35: 471, 2016
2. Terwee, C. B., Bot, S. D., de Boer, M. R. et al.: Quality criteria were proposed for measurement properties of health status questionnaires. *J Clin Epidemiol*, 60: 34, 2007

#### Disclosures

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