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ORIGINAL ARTICLE / ОРИГИНАЛНИ РАД

Can pre-treatment dysfunctional voiding and incontinence scoring system score predict treatment outcome in children with dysfunctional voiding – a randomized trial

Vesna D. Živković[1], Hristina Čolović[1], Dragan Zlatanović[1], Marina Vlajković[2]

[1]University of Niš, Faculty of Medicine, Physical and Rehabilitation Medicine Clinic, Niš University Clinical Center, Niš, Serbia;
[2]University of Niš, Faculty of Medicine, Nuclear Medicine Department, Niš University Clinical Center, Niš, Serbia

SUMMARY

Introduction/Objective Dysfunctional Voiding and Incontinence Scoring System (DVISS) was created to help diagnose functional voiding disorders in children based on their clinical symptoms. However, its role in prognosticating treatment outcome in dysfunctional voiding (DV) was not explored.
The aim was to analyze the pre-treatment DVISS score's ability to predict treatment outcomes in a pediatric population with DV.

Methods A total of 86 patients were divided into two groups at random. In addition to standard urotherapy, group A also received pelvic floor and diaphragmatic breathing exercises, while group B only received standard urotherapy. Initial and final DVISS scores for the 12-month treatment period were recorded. Both before and after the treatment, uroflowmetry with pelvic floor electromyography were performed together with residual urine volumes measurement. The treatment outcome (non-, partial and full response) was defined according to the objective improvement in daytime and nighttime wetting, constipation, urinary infections and uroflowmetry findings. The cut-off values, sensitivity, and specificity of the pre-treatment DVISS score in predicting non/partial and full response in group A and B were determined using Receiver Operating Characteristic (ROC) curve analysis.

Results Pre-treatment DVISS score could not predict full response in both groups (the area under the ROC curve < 0.50) nor non-/ partial response in A group ($p = 0.127$). In B group, sensitivity and specificity of the initial DVISS score (cut-off value 9.5) in prediction of non-/partial response was 73.1% and 33.3%, respectively ($p = 0.043$).

Conclusion DVISS cannot be used in the treatment result prediction in DV.

Keywords: dysfunctional voiding; children; urotherapy; The Dysfunctional Voiding and Incontinence Scoring System; diaphragmatic breathing exercises; pelvic floor exercises

INTRODUCTION

Neurologically healthy children with dysfunctional voiding (DV) are described as having "an intermittent and/or fluctuating uroflow rate due to involuntary intermittent contractions of the striated muscle of the external urethral sphincter or pelvic floor during voiding" [1]. These patients have urination difficulties, and some of them may show urgent, frequent urination, daytime and nighttime wetting because of insufficient bladder emptying and the existence of residual urine (RU) after voiding [2]. Recurrent urinary tract infections (UTI), persistent constipation and vesicoureteral reflux (VUR) are strongly linked to DV [3].

In order to assess lower urinary tract symptoms (LUTS), bowel disorders, quality of life issues and behavioral problems in children with functional voiding problems, several scoring systems and questionnaires have been created [4–8]. Akbal et al. [6] examined the validity of the Dysfunctional Voiding and Incontinence Scoring System (DVISS), and found that a median score was significantly different in children with functional voiding problems in relation to the healthy population.

To our knowledge, there are no published studies that have explored the accuracy of the DVISS in children with DV. The purpose of this research was, therefore, to determine the accuracy of pre-treatment DVISS score in prediction of treatment results of two different urotherapy programs. Our hypothesis was that children who continued to manifest LUTS and abnormal voiding pattern after treatment (non- and partial responders) would have pre-treatment DVISS ≥ 9.5 (a cut-off score indicating the presence of voiding dysfunction).

METHODS

Study design

A prospective, controlled, and randomized clinical trial in children with DV was conducted at the Physical and Rehabilitation Medicine Clinic of the University Clinical Center. This study includes secondary analysis of data from

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Correspondence to:
Vesna D. ŽIVKOVIĆ
University of Niš
Faculty of Medicine
Physical and Rehabilitation Medicine Clinic
Niš University Clinical Center
Bulevar Zorana Đinđića 81
18 000 Niš
Serbia
petvesna67@gmail.com

1. Da li je Vaše dete mokro u toku dana?	Ne	Ponekad	1–2 puta dnevno	Uvek
	0	1	3	5
2. Koliko se Vaše dete umokri u toku dana?	Vlaži donji veš	Malo navlaži pantalone	Dosta navlaži pantalone	
	1	3	5	
3. Da li je Vaše dete mokro tokom noći?	Ne	1–2 noći nedeljno	3–5 noći nedeljno	6–7 noći nedeljno
	0	1	3	5
4. Koliko se Vaše dete umokri u toku noći?	Malo navlaži posteljinu kreveta		Dosta navlaži posteljinu kreveta	
	1		4	
5. Koliko puta Vaše dete mokri?	Manje od 7 puta dnevno		Više od 7 puta dnevno	
	0		1	
6. Moje dete se napreže tokom mokrenja.	Ne		Da	
	0		4	
7. Moje dete oseća bol prilikom mokrenja.	Ne		Da	
	0		1	
8. Moje dete mokri isprekidano.	Ne		Da	
	0		2	
9. Moje dete ima potrebu da ide da mokri ubrzo po završetku prethodnog mokrenja.	Ne		Da	
	0		2	
10. Moje dete ima iznenadan osećaj za potrebom da odmah mokri.	Ne		Da	
	0		1	
11. Moje dete zadržava mokrenje tako što prekrsti noge.	Ne		Da	
	0		2	
12. Moje dete se umokrava na putu ka toaletu.	Ne		Da	
	0		2	
13. Moje dete nema pražnjenje creva svaki dan.	Ne		Da	
	0		1	
14. Pitanje o kvalitetu života	Ne	Ponekad	Malo utiče	Mnogo utiče
Ukoliko Vaše dete ima neki od gore navedenih simptoma, da li to utiče na njegov porodični, socijalni i školski život?	0	1	2	3

Figure 1. Serbian version of the Dysfunctional Voiding and Incontinence Scoring System

a previously published randomized controlled clinical trial (registered with CinicalTrials.gov under the code NCT04981340).

After the inclusion criteria were met, parents were asked to complete the translated and culturally adapted DVISS [8] in the presence of their child at the Clinic (Figure 1). Randomization was carried out by a child drawing an envelope containing an assignment. All children (group A and B) received standard urotherapy, while group A additionally received pelvic floor muscle (PFM) retraining and diaphragmatic breathing exercises. Therapy in both groups was conducted at the Clinic during the first week (four visits); it was then continued at home until the subjective and objective improvements were accomplished.

All the children were followed 12 months after the beginning of the treatment, after which the DVISS was again completed at the Clinic. Scheduled clinic visits were arranged once a month.

Participants

Inclusion criteria were: age 5–18 years, met DV criteria established by the International Children's Continence Society (ICCS) [1] as well as unsuccessful prior therapy by primary care pediatricians for three months. All children were toilet trained with dry period lasting for six months. Parents provided written informed consent on study entrance. Exclusion criteria included neurological disorders, monosymptomatic nocturnal enuresis, cognitive disorders, the lower urinary tract structural anomalies and UTI verified four weeks before the study entry.

Interventions

Baseline evaluation included medical history, the DVISS, physical examination, a two day-daytime frequency and volume chart, a seven day-bladder and defecation diary, urine culture and urinalysis, ultrasonography of kidneys and bladder and uroflowmetry with pelvic floor electromyography and measurement of post-void RU. Uroflowmetry was performed twice when the child felt the need to urinate. Maximal flow rate (Qmax), average flow rate (Qavg), estimated Qmax, flow index (FI) Qmax, voided volume (VV), RU and total bladder capacity (TBC) (TBC = VV + RU) were obtained for every patient. Normal void included VV > 50 ml, TBC < 115% of age estimated bladder capacity (EBC) and RU < 20 ml [9]. EBC was calculated in milliliters using the following equation till the age of 12: 30 + (age in years × 30) [1]. After that age, it was assumed to be 390 ml. FI was calculated using the formula actual Qmax/estimated Qmax [9]. Male (plateau 0.659, bell 0.659–1.253, and tower > 1.253) and female (plateau 0.683, bell 0.683–1.071, and tower > 1.071) flow shapes were defined using the Qmax FI [9]. Fractionated uroflowmetry curves (staccato/interrupted) were determined according to the ICCS criteria [1].

Using the Rome IV criteria, functional constipation was identified [10]. All males underwent X-ray voiding cystourethrography to rule out structural abnormalities of the lower urinary tract, and all patients with recurrent UTIs underwent the procedure to detect VUR.

The research interventions (diaphragmatic breathing, PFM exercises, urotherapy, chronic constipation and recurrent UTIs management) have been previously described in detail [11]. The goal of diaphragmatic breathing exercises, relaxation of lower abdominal muscles, was explained to group A, after which exercises were performed in supine and sitting positions under the supervision of a physiotherapist. Following diaphragmatic breathing, pelvic floor exercises were introduced after a child learned how to recruit the PFM correctly without activating the accessory muscles. The emphasis was placed on a longer relaxation phase following a brief PFM contraction. Children were required to exercise every day during the course of the treatment under the supervision of their parents.

In both groups, standard urotherapy consisted of child's and parental education, regular voiding and fluid intake, as well as an optimal voiding position and pattern.

Constipation management

Child and parental education, toilet training, proper defecation position and pattern, and nutritional and drinking adjustments were all part of the treatment in both groups. During the treatment, laxatives (lactulose 1 ml/kg bodyweight daily in 1–3 doses) were given to achieve 1–2 milkshake-like stools per day.

Pharmacotherapy

Oxybutynin chloride (0.3 mg per kg body weight daily) was provided to all patients with reduced bladder capacity (maximum VV on a daytime frequency and volume chart < 65% of age EBC) [1] without RU. Desmopressin 0.2 mg oral formulation was prescribed in all patients with nocturnal urine production exceeding 130% of age EBC [1].

Antibiotic prophylaxis (nitrofurantoin in a nightly dose of 1ml per kg bodyweight) was given to children with symptomatic UTIs who had positive urine cultures on monthly assessments for three months.

The dysfunctional voiding and incontinence scoring system

This questionnaire consisted of 14 questions (Figure 1). Parents were asked to rate the frequency and severity of nighttime and daytime wetting while their child was present in the first four questions, and the subsequent eight questions required a yes or no response. With the exception of the final question regarding quality of life, each response was given a score. Total score ranged from 0 to 35. The Receiver Operating Characteristic (ROC) curve analysis was used in both groups to establish a cut-off score indicating the presence of voiding dysfunction (excluding quality of life score).

Follow-up

All children were re-evaluated on a monthly basis during the 12-month period at the Clinic by clinicians. With each clinic appointment, changes in LUTS were noted and the diaries and charts were analyzed. Both groups underwent uroflowmetry with pelvic floor electromyography and RU measurement.

On the last visit and one year after the start of the program, all the patients were re-evaluated. Their parents were asked to complete the final DVISS in the presence of their child at the Clinic. After that, uroflowmetry was performed twice and RU was measured immediately after urination using ultrasonography.

Treatment result evaluation

Treatment result was defined as full, partial and non-response according to the ICCS propositions [1]. The treatment outcome was determined as "full response" in children who were cured of daytime and nighttime wetting as well as UTIs; "partial response" when wetness and UTIs improved by more than 50%, and "non-response" when wetting and UTIs did not change. The term "full response" was used to refer to children who had constipation and had more than three defecations per week, two episodes of fecal soiling per month, and no abdominal cramps for more than a month.

Depending on whether a patient had a full, partial, or no response to treatment, each patient group was separated into three subgroups. For each subgroup of patients, the mean pre- and post-treatment score was determined and the values were compared in each group and between the A and B groups. Children in each group were divided into two subgroups in order to assess the sensitivity and

specificity of the baseline DVISS score in predicting treatment outcome. One subgroup consisted of children with full response (children who were cured), while the second consisted of children with partial and non-response (children who continued to manifest LUTS). The results of the treatment were contrasted with each patient's pre-treatment total scores.

Statistical methods

SPSS Statistics for Windows, Version 20.0. (IBM Corp., Armonk, NY, USA) was used for all statistical research. While categorical variables are represented by absolute numbers and percentages, continuous variables are given as means and SD. The initial DVISS score's sensitivity and specificity in predicting non-/partial and full response in groups A and B were all determined using ROC curve analysis. To determine the significance of differences in continuous variables between the two independent groups, the Student's t-test for normally distributed data was applied. The Mann–Whitney U-test was used for non-normally distributed data. The significance of differences in continuous variables between two dependent groups was examined using paired sample t-test statistics for normally distributed data and a Wilcoxon signed-rank test for non-normally distributed data. To compare categorical variables between groups, Fisher's exact test and Pearson's χ^2 test were also used. In order to evaluate statistical significance, a p value < 0.05 was utilized.

This study was done in accord with standards of the institutional committee on ethics.

RESULTS

This trial included 86 children between 5 and 15 years old, with a 7.17 ± 2.52-year average. Due to non-attendance at scheduled appointments, 11 children in group B withdrew from the study. Treatment compliance was 100% in A group, and 66% in B group. There were 51 (68%) female patients among 75 children remained for the final analysis (Table 1). Out of 43 patients in group A, 65.12% were female, while in group B (32 patients), 71.88% were girls. Age and gender did not significantly differ between the groups. Children in group A had higher percentage of full responses (60.46%) than patients in group B (18.80%). Just one patient was a non-responder in group A compared to 17 (53.1%) in group B.

No statistically marked difference in mean scores between groups A and B for non-responders, partial responders, and complete responders were noticed at the beginning of the study (Table 2). Children with non-response in both groups had higher initial mean score compared to children with full response. This difference was statistically significant in group B (20.29 ± 10.51 *vs.* 10.00 ± 3.40) (p < 0.05). In both groups, post-treatment mean score as well as scores in group A children with full and partial response and group B children with non- and partial response were significantly lower compared to pre-treatment values.

Table 3 represents ROC curve analysis results. Initial DVISS score could not predict full response in both groups (AUC < 0.5). Using a cut-off value of 9.5 of the initial DVISS score, sensitivity was 88.2% and specificity 11.5% in prediction of non-/ partial response in A group (p = 0.127). Sensitivity and specificity of the initial DVISS score (cut-off value 9.5) in prediction of non-/partial response was 73.1% and 33.3%, respectively in group B patients (p = 0.043).

Table 1. The patients' characteristics

Patients' characteristics	Group A	Group B	p	Total
No. of patients	43	32		75
Mean age years (SD)	7.51 (2.49)	6.72 (2.53)	0.152	7.17 (2.52)
Gender female (%)	28 (65.12)	23 (71.88)	0.535	51 (68)
Pharmacotherapy				
Anticholinergics (No. of patients, %)	11 (25.58)	7 (21.87)	0.711	18 (24)
Desmopressin (No. of patients, %)	11 (25.58)	8 (25)	0.955	19 (25.33)
Antibiotic prophylaxis (No. of patients, %)	15 (34.88)	13 (40.62)	0.611	28 (37.33)
Vesicoureteral reflux (No. of patients, %)	4 (9.3)	5 (15.62)	0.484	9 (12)
Treatment outcome				
Non-response (No. of patients, %)	1 (2.33)	17 (53.1)	< 0.001	18 (24)
Partial response (No. of patients, %)	16 (37.21)	9 (28.19)		25 (33.33)
Full response (No. of patients, %)	26 (60.46)	6 (18.80)		32 (42.66)

Continuous variables are given as means and standard deviation and categorical variables as absolute number and in %; χ^2 test, Mann–Whitney test

Table 2. Comparison between treatment outcome and mean Dysfunctional Voiding and Incontinence Scoring System score

Outcome	Group A			Group B		
	Before therapy	After therapy	p	Before therapy	After therapy	p
Non-response	31	17	-	20.29 (10.51)*f	18.41 (10.80)	< 0.05
Partial response	18.25 (7.35)	6.87 (3.81)	< 0.001	16.77 (7.88)	11.88 (5.30)	< 0.05
Full response	14.80 (5.60)	1.96 (2.32)	< 0.001	10 (3.40)	6.50 (1.76)	0.083
Mean score	16.46 (6.78)	4.14 (4.26)	< 0.001	17.37 (9.50)	14.53 (9.45)	< 0.01

Data are given as mean value and standard deviation, paired sample t-test /Wilcoxon signed-rank test
* – p < 0.05 (Mann–Whitney test), ^{f} – *vs.* full response in Group B

Table 3. Receiver operating characteristic curve analysis results of the initial Dysfunctional Voiding and Incontinence Scoring System (DVISS) score and treatment outcome

Treatment outcome	AUC	Standard error	95% CI	Sensitivity	Specificity	p
GROUP A						
Initial DVISS score (cut-off value 9.5)						
Non-/partial response	0.639	0.090	0.462–0.816	0.882	0.115	0.127
Full response	0.361	0.090	0.184–0.538	0.885	0.118	0.127
GROUP B						
Initial DVISS score (cut-off value 9.5)						
Non-/partial response	0.768	0.087	0.598–0.940	0.731	0.333	0.043
Full response	0.231	0.087	0.060–0.402	0.667	0.269	0.043

AUC – area under the curve

Table 4. Clinical manifestations and uroflowmetry findings in 7/26 (26.92%) patients with pre-treatment score < 9.5 in Group B with partial and non-response to the treatment

Group B	Before treatment	After treatment	p
Patients No. (%)	7 (100)	7 (100)	1.000
Daily urinary incontinence	0 (0)	0 (0)	1.000
Nocturnal enuresis	0 (0)	0 (0)	1.000
Urinary tract infections	3 (42.9)	3 (42.9)	1.000
Constipation	2 (28.6)	1 (14.3)	0.515
Vesicoureteral reflux	2 (28.6)	2 (28.6)	1.000
Uroflowmetry parameters (mean ± SD)			
Voided volume (ml)	347.14 ± 127.28	298.71 ± 157.24	0.195
Qavg (ml/s)	10.51 ± 3.63	9.30 ± 7.02	0.416
Qmax (ml/s)	22.95 ± 14.68	23.58 ± 15.50	0.816
Estimated Qmax (ml/s)	21.48 ± 1.93	19.43 ± 1.75	0.058
Flow index Qmax	1.07 ± 0.72	1.18 ± 0.73	0.406
Post-void residual urine (ml)	24.14 ± 13.56	22.78 ± 16.60	0.655
Total bladder capacity (%/EBC)	168.91 ± 32.73	130.45 ± 29.93	0.029*
Fractionated uroflowmetry curve (No., %)	7 (100)	6 (85.71)	1.000
Bell-shaped (No., %)	0 (0)	0 (0)	1.000
Plateau-shaped (No., %)	0 (0)	1 (14.29)	1.000
Tower-shaped (No., %)	0 (0)	0 (0)	1.000

Fisher's exact test, paired sample t-test;
*p < 0.05;
Qavg – average flow rate; Qmax – maximal flow rate; EBC – estimated bladder capacity

In group B, 7/26 (26.92%) partial and non-responders with pre-treatment total score of less than 9.5 were evaluated (Table 4). These children did not manifest daytime and nighttime incontinence, 3/7 (42.90%) had UTIs, and 2/7 (28.60%) were constipated. They all had fractionated uroflowmetry curve, increased RU and TBC. Two children had VUR. After the treatment, only TBC was improved ($p < 0.05$).

DISCUSSION

This study has shown that only in 73.1% of group B patients with the initial DVISS score ≥ 9.5, non-/partial response could be correctly predicted.

In children with functional voiding disorders several scoring systems were developed to enable to establish a diagnosis based on clinical symptoms, as well as an assessment of the effectiveness of various therapeutic modalities [6, 12, 13, 14]. The first was published in 2000 by researchers in Toronto [12]. The Dysfunctional Voiding Scoring System (DVSS) is a modification of the scoring system used in adults with benign prostatic hyperplasia (International Prostate Symptom Score). In order to use the ICCS terminology, its name was changed to The Pediatric Lower Urinary Tract Scoring System [13]. Akbal et al. [6] examined the validity of the DVISS which was based on the scoring system used in 1992 in The International Reflux Study in Children. It has been shown that it can be used in everyday clinical practice as an objective scoring system in the diagnosis, treatment and monitoring of children with functional voiding disorders. The DVSS and the DVISS have been translated and adapted to Serbian language and their validity and reliability have been tested in Serbian children with voiding dysfunction [7, 8]. It has been shown that these scoring systems have high reliability and concurrent validity for assessing voiding dysfunction in Serbian pediatric population.

Altan et al. [15] investigated the diagnostic properties of three scoring systems (the DVSS, the DVISS and the Incontinence Symptom Index-Pediatric for children older than 11 years) and found that the DVISS had the highest accuracy in distinguishing the patients with various LUTS from healthy controls with an 81% sensitivity, 97.6% specificity and 89% accuracy.

Before the children entered the trial, oxybutynin and desmopressin were prescribed in nearly 50% of patients in both groups. In total, 11/43 (25.5%) children in group A and 8/32 (25%) children in group B were taking desmopressin due to nocturnal polyuria. The ratio of treated children did not differ significantly between the groups which goes to say that its impact on the treatment result in each group was almost the same. In a study by Hoebeke et al. [16], 50% of children with DV wet during the night while Jacobsen et al. [17] noticed nocturnal enuresis in 22/46 (48%) of children. In the last study, of eight children who became dry, three had taken desmopressin. It can be hypothesized that nocturnal polyuria, which is one of the main reasons for nocturnal enuresis, is linked to DV.

To our knowledge, there have been no data about DVISS accuracy in the evaluation of children with DV. Mean initial DVISS in our study was 17.01 which is comparable with the score in children with functional voiding disorders in other studies [6, 14, 18]. In both groups with children with non-response, mean pre-treatment score was higher than initial mean score in children with full and partial response although significantly only in group B. However, as we had only 18 patients with non-response, we cannot draw any final conclusion whether initial higher score would predict poorer treatment outcome.

After therapy, mean total score in group A as well as in the full response subgroup was significantly lower compared to initial values. Children with partial response had also significantly lower post-treatment DVISS score. These children improved daytime and nighttime wetting and therefore scored less on DVISS, but they continued to manifest UTIs and abnormal voiding pattern. In group B, mean post-treatment score, as well as scores in partial and non-responders were significantly lower compared to initial values although these children continued to have UTIs, increased RU and fractionated uroflowmetry curve. These findings can be partly explained by the subjective nature of the questionnaire. Children and their parents were receiving more attention by the clinicians as clinical visits were arranged once a month in both groups, and perhaps scored better on DVISS.

The role of the DVISS in prognosticating treatment effect in children with voiding disorders was explored by

Tuygun et al. [19]. A total score ≥ 9 marked the presence of voiding dysfunction. In the group with children who were wetting, the DVISS specificity in the full response prediction was 80%, while in the group of children with UTIs and wetting, it was 88%. In both groups the sensitivity was 100%. The authors concluded that in children with voiding disorders, the DVISS could be an additional diagnostic tool.

In our study, in group B, the sensitivity of 73.1% of the initial DVISS score ≥ 9.5 was achieved in the non-/partial response subgroup. This implies that only 73.1% of children who continued to manifest LUTS after treatment, had initial DVISS score ≥ 9.5. Almost 27% of children had initial DVISS score < 9.5. Therefore, we suggest the DVISS be used in the assessment of the treatment result and follow-up of children with DV only as an adjunct to more objective diagnostic procedures such are voiding and defecation diaries and charts, uroflowmetry and RU measurement.

We further analyzed initial LUTS and uroflowmetry parameters of 7/26 (26.9%) children in group B with non- and partial response who had initial score < 9.5. These children did not demonstrate wetting problems (daily urinary incontinence and nocturnal enuresis) and therefore scored less on questions regarding daytime and nighttime wetting (they scored zero points on first four questions). Their frequency of voiding during the day was low (less than four times but scored zero points on that question) and they complained of intermittency and/or straining during voiding (scored six points on questions six and eight). They were also postponing voiding (scored two points on question 11). Although their pre-treatment score was < 9.5, they had severe DV. They demonstrated staccato or interrupted uroflowmetry voiding pattern with increased PFM activity during voiding. This implies that some questions of the present DVISS should be differently scored, particularly the question five regarding the number of voiding per day (the score is zero if the frequency of voiding is less than seven times per day). Infrequent voiding is a relevant clinical finding which should be adequately scored. Besides, there was only one question on constipation but its severity and fecal incontinence were not assessed [20]. There is a need for re-evaluation of existing DVISS in children with DV.

The study's main restriction is the low number of participants in the subgroups which could have negative impact on statistical results. In this context, our findings should be supported by prospective, randomized, multicenter studies with larger study population.

CONCLUSIONS

In addition to traditional urotherapy, dysfunctional voiders whose regimen included diaphragmatic breathing and PFM exercises, had significantly more full response patients compared to children who had standard urotherapy as monotherapy. However, in both groups, mean post-treatment DVISS score as well as scores in group A children with full and partial response and group B children with non- and partial response were significantly lower compared to pre-treatment values.

Initial DVISS could not predict full response in both groups. Only in group B, initial DVISS score ≥ 9.5 could predict in 73.1% of patients non-/partial response to the treatment. Therefore, the DVISS cannot be used in the treatment outcome prediction in DV.

Conflict of interest: None declared.

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Да ли се Упитник о дисфункционалном мокрењу и уринарној инконтиненцији може користити у предвиђању резултата лечења деце са дисфункционалним мокрењем – рандомизовано испитивање

Весна Д. Живковић[1], Христина Чоловић[1], Драган Златановић[1], Марина Влајковић[2]

[1]Универзитет у Нишу, Медицински факултет, Клиника за физикалну и рехабилитациону медицину, Универзитетски клинички центар Ниш, Србија;
[2]Универзитет у Нишу, Медицински факултет, Центар за нуклеарну медицину, Универзитетски клинички центар Ниш, Србија

САЖЕТАК

Увод/Циљ Упитник о дисфункционалном мокрењу и уринарној инконтиненцији креиран је да помогне у постављању дијагнозе функционалних поремећаја мокрења код деце на основу њихових клиничких симптома.
Међутим, његова улога у предвиђању исхода лечења код деце са дисфункционалним мокрењем није истражена.
Циљ рада је био да анализира да ли се на основу иницијалног Упитника о дисфункционалном мокрењу и уринарној инконтиненцији може предвидети резултат лечења у педијатријској популацији са дисфункционалним мокрењем.
Методе У једну од две групе насумично је распоређено 86 пацијената. Поред стандардне уротерапије, у групи А су примењиване вежбе релаксације мишића карличне пречаге и дијафрагмалног дисања, док је група Б имала само стандардну уротерапију. Упитник је попуњен на почетку (иницијални резултат) и на крају 12-месечног периода лечења. Урофлоуметрија са електромиографијом мишића карличне пречаге и ултразвучно мерење постмикционог урина вршени су пре и на крају третмана. Исход лечења (без одговора, парцијални и пун одговор) дефинисан је према објективном побољшању дневног и ноћног влажења веша, опстипације, уринарних инфекција и налаза урофлоуметрије. Анализом *ROC* криве одређиване су граничне вредности, сензитивност и специфичност иницијалног резултата Упитника о дисфункционалном мокрењу и уринарној инконтиненцији у предвиђању терапијског одговора у групи А и Б.
Резултати Иницијалним резултатом Упитника нису се могли предвидети риспондери у обе групе (површина испод криве < 0,50), као ни нон/парцијални риспондери у групи А (p = 0,127). У групи Б, сензитивност и специфичност иницијалног резултата Упитника (гранична вредност 9,5) у предвиђању нон/парцијалних риспондера износила је 73,1% и 33,3%, респективно (p = 0,043).
Закључак Упитник о дисфункционалном мокрењу и уринарној инконтиненцији не може се користити у предвиђању исхода лечења деце са дисфункционалним мокрењем.

Кључне речи: дисфункционално мокрење; деца; уротерапија; Упитник о дисфункционалном мокрењу и уринарној инконтиненцији; вежбе дијафрагмалног дисања; вежбе карличне пречаге