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Kajiwara M[1], Inoue K[1], Usui A[2], Usui T[1]
1. Department of Urology, Graduate School of Biomedical Sciences, Hiroshima, Japan, 2. Prefectural Hiroshima rehabilitation hospital, Japan

TIMED VOIDING THERAPY FOR CHILDREN WITH DAYTIME URINARY INCONTINENCE ATTRIBUTABLE TO OVERACTIVE BLADDER

Aims of Study

The aetiology of daytime urinary incontinence (DUI) in children is assumed to be multifactorial, but mainly attributable to overactive bladder (OAB). The aim of this study is to examine the efficacy of timed voiding therapy for children with DUI attributable to OAB.

Methods

Children with DUI due to OAB treated with timed voiding therapy between 1998 and 2001 were included in this study. To investigate the urological and neurological conditions in these children, all of them underwent voiding cystourethrography and pressure flow study (PFS). The inclusion criteria were; children over 6 years old, without neurological abnormalities and without urethral obstruction such as posterior urethral valves and urethral strictures. First, the mechanism of normal micturition and urge urinary incontinence was explained to the children and their parents. To obtain stabilization and relaxation of the lower urinary tract and pelvic-floor muscles, they were instructed (1) to go to the toilet frequently, within regular intervals before feeling the urge, (2) not to postpone their desire to void with a characteristic holding maneuver and (3) to avoid constipation leading to anal and simultaneous urethral sphincter contraction. The efficacy of this behavioral modification was assessed by a questionnaire about micturition symptoms and by frequency/volume charts, according to the definition of the clinical outcome conformed to the International Children's Continence Society. To examine the differences in response to the treatment, we compared the PFS findings for responders (Complete cure and Improvement) with those for non-responders, before and after treatment. The data were analysed statistically using non-parametric tests (Mann-Whitney U test and the chi-squared test).

Results

Twenty-eight children (12 boys and 16 girls aged between 6 and 11 years, mean age 8.4 years) were included. The mean follow-up time was 17.3 months (6–29 months).

Clinical outcome; DUI was cured completely in 12 children (42.9%) and improved in 11 (39.3%). No adverse reaction was detected.

PFS findings; Before treatment, there were no apparent differences in the mean maximum flow rate (Qmax), mean detrusor pressure at maximum flow rate (Pdet Qmax) and mean maximum detrusor pressure during the filling phase (Max Pdet) between the two groups. However, in non-responders before treatment, the mean voided volume (VV) was significantly lower and the incidence of involuntary detrusor contraction (IDC) during the filling phase was higher, compared with those in responders.

In both groups after treatment, the mean Qmax and mean VV were not changed compared with those before treatment. In responders, the mean Pdet Qmax and mean Max Pdet were decreased significantly, whereas they were not reduced significantly in non-responders after treatment. In responders, the incidence of IDC, 82.6% (19/23) before treatment, was reduced to 39.1% (9/23) after treatment, while all of the non-responders had IDC before and after treatment (Table).

Conclusions

Timed voiding therapy was effective in 78.6% of children with DUI. Children with a small functional bladder capacity responded poorly. Timed voiding therapy was helpful for avoiding the IDC and for decreasing the detrusor pressure during the filling and voiding phases, thus stabilizing and relaxing the lower urinary tract and pelvic-floor muscles. Timed voiding therapy might be a simple, safe and effective strategy for children with DUI attributable to OAB.

Table

Comparison of pressure flow study findings before and after treatment in responders and non-responders * $p<0.05$

		Responders		Non-Responders	
		Before	After	Before	After
VV	(ml)	198±106	194± 90 *	101±34	118±71
Pdet Qmax	mean±SD(cmH_2O)	69.0±46.3	43.5±18.7 *	61.8±19.0	40.4± 9.5
Max Pdet	mean±SD(cmH_2O)	97.5±50.2	54.6±24.3 *	93.4±29.7	50.5± 6.7
IDC	N (%)	19/23 (82.6%)	9/23 (39.1%)	5/5 (100 %)	5/5 (100 %)