614

Capitanucci M L[1], Mosiello G[1], Di Ciommo V[2], Ferro F[1], Silveri M[1], De Gennaro M[1], Gatti C[3]
1. Department of Nephrourology - Ospedale Bambino Gesù - Roma, 2. Epidemiology Unit - Ospedale Pediatrico Bambino Gesù - Roma, 3. Ospedale Pediatrico Bambino Gesù (research fellow)

CAN "SINGLE VOIDING" UROFLOWMETRY BE USED TO SCREEN BLADDER OUTLET OBSTRUCTION IN BOYS?

Aims of Study

Uroflowmetry (FLW) is currently widely used in children to screen bladder outlet obstruction, although it has been shown to be not reproducible and although definitive normal values had been stated for paediatric ages. Aiming to evaluate the usefulness and diagnostic accuracy of FLW in children, we analysed the influence of different voided volume (Vvol) on maximum flow rate (Qmax), flow time (Qt) and detrusor contraction velocity (Vdet) recorded in normal boys and we compared those data in 3 different groups of male children: normal subjects, functionally obstructed and after urethral surgery.

Methods

Uroflowmetry (FLW) is currently widely used in children to screen bladder outlet obstruction, although it has been shown to be not reproducible and although definitive normal values had been stated for paediatric ages. Aiming to evaluate the usefulness and diagnostic accuracy of FLW in children, we analysed the influence of different voided volume (Vvol) on maximum flow rate (Qmax), flow time (Qt) and detrusor contraction velocity (Vdet) recorded in normal boys and we compared those data in 3 different groups of male children: normal subjects, functionally obstructed and after urethral surgery.

Results

Initially, a statistically significant difference has been found between normal subjects with Vvol ≥ and < 50% of expected bladder capacity (EBC) for age [(30 x age in years) + 30] (Tab.1).
Secundarly, only FLW with Vvol ≥ 50% of EBC have been considered to compare normal (n=55), functionally (n=69) and structurally (n=91) obstructed boys (Tab.2). The multivariate statistical analysis showed highly significant difference between normal subjects and structurally obstructed children (Vdet: p= 0.0001; Qmax: p= 0.001; Qt: p= 0.01) and between functionally and structurally obstructed boys (Vdet: p= 0.03; Qmax: p= 0.001; Qt: p= 0.03).
Curve morphology in a single flowmetry showed a sensitivity of 62,5% and specificity of 63.6 % with a likelihood ratio of 1.7.

Table 1: Flowmetry parameters in volunteer subjects with voided volume ≥ 50% and < 50% of expected bladder capacity (EBC): average values, standard deviation and results on statistical comparison

	N =	**Age years**	**Vvol ml**	**Vdet mm/sec**	**Qmax ml/sec**	**Qt sec**
Normal Group						
≥50% EBC	55	8.6 ± 3.9	256.8 ± 126.6	18.4 ± 8.6	18.2 ± 7.5	25.6 ± 12
< 50% EBC	17	9.3 ± 3.5	78.7 ± 33.8	19.3 ± 4.9	14.1 ± 4.2	10.6 ± 3.6
p-value		*NS*	*< 0.0001*	*NS*	*0.03*	*< 0.0001*

NS: Not Significant

Table 2: One-way analysis of variance (ANOVA) between flowmetry parameters of normal subjects (NL), children with idiopathic detrusor sphincter dyssynergia (IDSD) and outlet obstruction (OO)

Groups	Age (years)	Vvol° (ml)	Vdet (mm/sec)	p	Qmax (ml/sec)	p	Qt (sec)	p
Normal	8.6 ± 3.9	256.8 ± 126	18.4 ± 8.6		18.2 ± 7.5		25.6 ± 12	
IDSD	8.4 ± 2.9	242.3 ± 108	16.2 ± 7.7	NL vs IDSD **NS**	17.6 ± 7.2	NL vs IDSD **NS**	26.8 ± 14.1	NL vs IDSD **NS**
OO	6.6 ± 3.4	224.6 ± 122	12.5 ± 8.5	NL vs OO **0.001**	12.4 ± 7.4	NL vs OO **0.001**	34.2 ± 23.2	NL vs OO **0.01**

NS: Not Significant; Vvol°: No significant difference

Conclusions

Our results confirm the usefulness and efficacy of flowmetry in children as a screening test. Moreover, even if it is known that flow rates are not reproducible, we showed that a “single voiding” flowmetry can be used as a screener, in regard to flow rate, maximum flow rate and also detrusor velocity. On the contrary, the sensitivity and specificity of curve morphology could be confirmed with repeated flowmetries.