A comparative study of non invasive and invasive urodynamic assessment of bladder dysfunction in Children

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Introduction: It is well known that invasive urodynamic Study (IUDS) is the gold standard for evaluation of bladder dysfunction. However, its side effects are pain, hematuria and discomfort, occasional difficult to perform, although sometimes the reason is fear and un-cooperation. Recently, non-invasive urodynamic Study (NIUDS) is more and more used to evaluation bladder dysfunction in children. The aim of present study is to evaluate its value in assessment of bladder dysfunction in Children.

Materials & Methods: This study included 155 cases (boys 106, girls 49, aged from 5 to 18 y, averaged 10.46±3.55 y) with bladder dysfunction. NIUDS and IUDS were performed in all cases according to the recommendations from International Children's Continence Society (ICCS) including uroflowmetry, PVR measured by ultrasound. The detrusor function was graded into 3 groups, overactivity, normal and underactivity according to NIUDS which compared to those from IUDS by using Chi-square test. The criteria of diagnosis: detrusor overactive indicated by Pdet >100cmH2O in IUD, Qmax ≥ 15 ml/s, PVR ≤ 20 ml; detrusor underactive indicated by Pdet < 40cmH2O in IUD, Qmax ≤ 15 ml/s, PVR > 20 ml.

Results: NIUDS shown 54 cases with detrusor overactivity, 74 normal and 27 under activity, while in IUDS, 26 overactivity, 98 normal and 31 under activity. There was a significant difference between the both methods (p<0.05). It had a statistical difference when detrusor was overactivity (p<0.05), while there was no difference when detrusor was underactivity (p>0.05).The sensitivity, specificity and accuracy of NIUDS were 77%, 74% and 65% in detrusor overactivity, 62%, 77% and 68% in normal, and 81%, 98%, 67% in underactivity, respectively.

Conclusions: The sensitivity and specificity of NIUDS is good in children with detrusor underactivity, but it cannot take the place of IUDS in evaluating bladder dysfunction in children. However, for screening the bladder dysfunction, the IUDS will show its advantage especially doubting the children with bladder under activity.