

Authors: EF Wahl, TT Lahdes-Vasama\*,

Clark Morrison Children's Urological Clinic, Dept. Of Urology, UCLA School of Medicine,  
Los Angeles, CA, USA

\* Hospital for Children and Adolescents, Helsinki University Central Hospital, Finland

QUANTIFICATION OF INSTABILITY/HYPERREFLEXIVITY USING POWER AND WORK FACTORS,  
NUMBER OF PULSES, AND PULSE AMPLITUDE

#### Aims of Study

To show that the severity of the instability/hyperreflexivity can be quantified with parameters.

#### Methods

The cmgs of 20 patients (9 non-neurogenic, 11 neurogenic disorders) with unstable/hyperreflexive bladders were analyzed to determine the power and work factors, the number of detrusor pressure pulses less than 15 cmw, more than 15 cmw, and the average amplitude in each using the method previously described (1,2). The compliance was also determined by dimensionless number  $N_{wahl}$  (2,3). This data was then organized in table in order of increasing severity of detrusor overactivity.

#### Results

As would be expected myelomeningocele (mmc) patients have high normalized power factors (NPF). But as known not all mmc patients have same problems; 1-year old girl (case 8) has both good bladder compliance and stability; 4-months old boy (case 20) has excellent compliance and but the bladder is very hyperreflexive, the bladders of cases 6 and 12 have poor compliance without any significant detrusor overactivity; 12-year old boy's bladder (case 17) has extremely poor compliance but only slightly overactive detrusor. Patients with augmented bladders (cases 11 and 13) presented mainly low amplitude pulsations on cmg. Amount of instability varied significantly between the patients with wetting problems. Only minimal instability was seen in poorly compliant bladders of patients with urethral valve, bladder extrophy and Hinman bladder (cases 10, 7, and 5).

#### Conclusions

This method is a useful tool for assessing the severity of the condition and choosing a right treatment for a patient. Also, in serial testing the method can be used for estimating efficacy of a treatment or following a natural course of certain condition.

#### References

1. Quantification of detrusor compliance and contractility. Society for Urological Engineering, AUA annual meeting, 1998.
2. Quantification of detrusor compliance and contractility. Submitted to Neurourology and Urodynamics, March 2000.
3. Quantification of bladder compliance by a dimensionless number. Submitted to Neurourology and Urodynamics, February 2000.