Home pressure and volume measurement as a screening instrument to identify patients with safe intravesical pressures: A prospective validation study.

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Purpose: We had clean intermittent catheterization (CIC) dependant patients use a simple ruler-based manometer to measure their intravesical home pressures prior to leakage or prior to scheduled drainage at home. These patients and their families generated a bladder pressure and volume diary (PVD). The aim of this study is to evaluate the ability of PVD to identify patients at low risk for having high bladder pressures measured during urodynamic study (UDS).

Methods: We prospectively collected clinical, urodynamic, and home PVD data in children with spina bifida. Patients were asked to use a ruler to measure the height of the column of urine within the CIC catheter, with the zero centimeter mark at the urethral meatus in females and at the penoscrotal angle in males. Measurements were taken in the supine position with relaxed abdominal muscles. We defined abnormal intravesical pressures as Pdet pressures above 30cmH2O as measured by UDS. ROC Curves were plotted to correlate different PVD variables with abnormal intravesical pressures.

Results: 30 children with spina bifida were included in the study. Mean age was 10 years (range 1-20 years). Home pressures measured at maximal CIC volume and mean PVD pressures were found to be the most reliable variables to predict UDS pressures above 30cmH2O [AUC 0.93($p=0.001$) and AUC 0.87 ($p=0.02$) respectively]. Home pressure measured at maximal CIC volume below 20cmH2O was associated with normal bladder pressures (UDS pressures below 30cmH2O) with sensitivity of 100% and specificity of 80%.

Conclusion: Home ruler pressure below 20 cmH2O provides a reliable measurement of safe bladder pressures. PVD is easy to perform, and is useful to monitor and screen bladder pressures of patients already performing CIC at home with no additional morbidity or cost. Patients with low pressures on PVD may be followed without multichannel UDS.