Home Bladder Manometry Predicts Urodynamic Intravesical Pressure and Hydronephrosis

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Disclosures

- CHOC Children’s Foundation Grant Program
Introduction

- Patients with neurogenic bladder are at risk for elevated bladder pressures and renal deterioration

- Objective: to evaluate the ability of home bladder manometry to help identify patients with an elevated bladder pressure and progressive hydronephrosis
Home Bladder Manometry

Bladder Pressure

Bladder Volume

Pressure/Volume Diary

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Pressure (cm)</th>
<th>Amount voided (ml)</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 1</td>
<td>8:00 am</td>
<td>6 cm</td>
<td>250 ml</td>
</tr>
<tr>
<td>July 1</td>
<td>11:30 am</td>
<td>12 cm</td>
<td>360 ml</td>
</tr>
<tr>
<td>July 1</td>
<td>4:00 pm</td>
<td>10 cm</td>
<td>250 ml</td>
</tr>
<tr>
<td>July 2</td>
<td>8:30 am</td>
<td>14 cm</td>
<td>360 ml</td>
</tr>
<tr>
<td>July 2</td>
<td>12:00 pm</td>
<td>15 cm</td>
<td>350 ml</td>
</tr>
<tr>
<td>July 2</td>
<td>5:00 pm</td>
<td>12 cm</td>
<td>250 ml</td>
</tr>
</tbody>
</table>
Methods

•Prospective collected home manometry (n = 50)
•Children with spina bifida/neurogenic bladder on CIC
•Compared to UDS and RBUS
  • Detrusor pressure at 50% and 85% of maximum cystometric capacity (MCC)
  • Progression of hydronephrosis

•VUR IV/V excluded
Methods

• ROC curves and AUC used to correlate home bladder manometry pressures with UDS intravesical pressures and hydronephrosis

• Safe UDS findings:
  • $P_{det}$ at 50% MCC < 20 cm H$_2$O
  • $P_{det}$ at 85% MCC < 40 cm H$_2$O

• Safe RBUS findings:
  • Absence of high grade hydronephrosis (SFU grade III/IV)
Home Manometry Predicts UDS Detrusor Pressure

Home manometry
< 20 cm H$_2$O predicts safe UDS pressures

<p>| | |</p>
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Sensitivity</td>
<td>86%</td>
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<tr>
<td>Specificity</td>
<td>81%</td>
</tr>
</tbody>
</table>
Home Manometry Predicts High Grade Hydronephrosis

Sensitivity 100%
Specificity 76%

Home manometry < 20 cm H$_2$O predicts no hydronephrosis progression
Conclusions

- Elevated home manometry strongly correlates with increased urodynamic intravesical pressures and high-grade hydronephrosis

- Home manometry may be used as a screening tool for NGB on CIC to identify the need for more aggressive management and evaluation