Urodynamic changes of the lower urinary tracts in late pregnancy

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Symptoms of voiding dysfunction such as frequency, urgency, nocturia were common in pregnancy and increased towards the end of pregnancy.

However whether the high prevalence of symptoms in pregnancy would be reflected by urodynamic measurements???
To investigate the characteristics of the urinary continence mechanisms of the lower urinary tract in late pregnant women.
Seventy four women attending the antenatal clinics were included in this study.

- Forty-seventy women (range 22~42 years, mean age 29±4 years, duration of pregnancy from 32 to 42 weeks, mean 34.1±0.4 weeks) of them without urinary leakage in late pregnancy were selected as the Pregnancy Group (PG).

Exclusion criteria included pre-existing diabetes, a history of spinal surgery.
Twenty-seventy women (age from 20 to 35 years, mean 29 ± 6 years) with upper urinary tract diseases but having normal lower urinary tract function were included in Control Group (CG), and these women were married but not bore.

This study was approved by Ethical Committee of the hospital, and all women are voluntary to accept urodynamic study.
A urodynamic study was carried out in all women, using the Duet Logic urodynamic unit (Medtronic Corporation, Denmark).

**Free uroflometry:** Voiding volume (VV)
- Maximal flow rates (MFR)
- Post-void residual volume (PRV)

**Filling and voiding cystometries:**
- Maximum detrusor pressure (Pdet.max)
- Bladder compliance (BC)
- Normal desire (ND)
- Maximum voiding detrusor pressure (Pdet.void.max)
Urethral pressure profile: Maximal urethral pressure (MUP),
Maximal urethral closure pressure (MUCP)
Functional urethral length (FUL)

Filling cystometry and urethral pressure profile were performed with 37°C 0.9% normal room temperature saline with an infusion rate of 50 mL/min.

A micro transducer catheter at a withdrawal rate of 1 mm/s was used for the urethral pressure profile.
Study design
materials and methods

The equipments used in my study.
Results

- Compared to CG, the PG showed a significant decrease in MFR, VV and ND, and an increase in MUP, MUCP and FUL (p<0.05), where the difference in Pdet.max, BC and Pdet.void.max were not significant (p>0.05).

- In the PG, Post-void residual was detected in seven patients in late pregnancy but all less than 10ml.
Results

Table 1: the urodynamic parameters compared between the two groups

<table>
<thead>
<tr>
<th>Group</th>
<th>Qmax (ml/s)</th>
<th>VV (ml)</th>
<th>PVR (ml)</th>
<th>Pdet.max (cmH2O)</th>
<th>BC (ml)</th>
<th>ND (cmH2O/ml)</th>
<th>Pdet.void.max (cmH2O)</th>
<th>MUP (cmH2O)</th>
<th>MUCP (cmH2O)</th>
<th>SFL (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PG (n=47)</td>
<td>20 ± 13</td>
<td>163 ± 13</td>
<td>61.5 ± 0.3</td>
<td>60 ± 32</td>
<td>47 ± 29</td>
<td>226 ± 8.5</td>
<td>43 ± 20</td>
<td>146 ± 36</td>
<td>116 ± 34</td>
<td>31 ± 7</td>
</tr>
<tr>
<td>CG (n=27)</td>
<td>32 ± 7</td>
<td>436 ± 19</td>
<td>34.1 ± 1.5</td>
<td>52 ± 4</td>
<td>57 ± 17</td>
<td>338 ± 5.6</td>
<td>41 ± 9</td>
<td>87 ± 7</td>
<td>78 ± 8</td>
<td>26 ± 2</td>
</tr>
<tr>
<td>t</td>
<td>4.50</td>
<td>4.93</td>
<td>1.62</td>
<td>1.57</td>
<td>1.24</td>
<td>4.58</td>
<td>0.48</td>
<td>9.91</td>
<td>6.43</td>
<td>3.40</td>
</tr>
<tr>
<td>p</td>
<td>0.00</td>
<td>0.00</td>
<td>0.11</td>
<td>0.13</td>
<td>0.22</td>
<td>0.00</td>
<td>0.63</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>
Results

No changes of bladder function

Maintain the mechanisms of urinary continence.

Frequency and urgency
The sufficient increase of the static urethral pressure profile in later pregnancy could compensate for the progressive increase in bladder pressure during pregnancy, which was advantageous to maintain the urine continence mechanisms in pregnancy.

Although the ND and MFR were lower during late pregnancy, the Pdet.max, BC and PRV has no changed, indicating that the pregnancy doesn’t influence the bladder function.