Lower urinary tract symptoms in men treated for posterior urethral valves in childhood: matched cohort study

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Introduction and Objectives

• Although posterior urethral valves (PUV) are rare, they are the most common congenital obstructive lesion of the urethra
• Affecting 1 per 3000 to 8000 live births
• Problems with bladder function are well recognized in childhood1, however, there is a dire lack of studies assessing lower urinary tract symptoms (LUTS) in these patients in later life
• We aimed to explore the prevalence and bother of LUTS between adult men treated for PUV in childhood and compare these with age- and sex-matched controls

Methods

• The PUV database of the Hospital for Children and Adolescents (Helsinki University Central Hospital) was reviewed (Fig. 1)
• Out of 106 PUV patients available, 68 (64.2%) returned the questionnaire after three mailing rounds in 2009 (Fig. 1)
• 5 out of 68 patients had antenatal diagnosis. For the rest 63 patients, the diagnosis was made at the median age of 0.8 yrs
• More information on PUV patient sample has been published6, and is available in Table 1

• As a control group, we used an age- and sex-matched random sample (272 controls; four for each PUV patient; Table 1) from the population-based Finnish National Nociuria and Overactive Bladder (FINNO) Study8,9.
• Briefly, questionnaires were mailed to 6,000 subjects aged 18-79 yrs (62.4% response proportion after three mailing rounds 2003-2004) identified from the Population Register (Fig. 1)
• We used the DAN-PSS questionnaire for the assessment of occurrence and bother of 12 different LUTS10:
  • Hesitancy, weak stream, incomplete emptying, straining, increased daytime frequency, nocturia, urinary urgency, urgency urinary incontinence, pain/burning, post-micturition dribble, stress urinary incontinence and overflow/seeping incontinence (reported by only 1 patient and three controls, hence overflow incontinence not analyzed)
• In the DAN-PSS, both occurrence and bother of LUTS are classified on a four-point scale: occurrence on a scale “never”–“rarely”–“often”–“always” for most symptoms; and bother on a scale; “none”–“small”–“moderate”–“major” for all symptoms.
• Regarding occurrence of all symptoms, we classified subjects having either “mild” (those with mildest symptomatic option) or “moderate or severe” (those with either of the two most severe symptom options)10.
• Similarly for bother assessment, we classified those with “small” bother and those with “moderate or major” bother7,10.
• Chi-square test was used for the analyses stratified by PUV patient/control status, with the four-point ordinal scale (occurrence or bother of symptom) as the outcome

Table 1. Characteristics of the study population

<table>
<thead>
<tr>
<th>Age groups (years)</th>
<th>PUV patients</th>
<th>Controls</th>
<th>p (%)</th>
<th>p (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-19</td>
<td>2 (2.9)</td>
<td>8 (2.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-29</td>
<td>15 (22.1)</td>
<td>60 (22.1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30-39</td>
<td>21 (30.9)</td>
<td>49 (30.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40-49</td>
<td>22 (32.4)</td>
<td>88 (22.4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50-57</td>
<td>8 (11.8)</td>
<td>32 (11.8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kidney transplantation</td>
<td>7 (10.3)</td>
<td>7 (10.3)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

• Chi-square test was used for the analyses stratified by PUV patient/control status, with the four-point ordinal scale (occurrence or bother of symptom) as the outcome

Results

• The mean (median) age of both the 68 patients and the 272 controls was 37.5 (38.5) years (range 18 to 57)
• For more characteristics of the respondents see Table 1
• On average, occurrence and bother of most LUTS was approximately 2-fold in PUV patients compared to controls (Figs. 2-5)
• At least one “moderate or severe” LUTS was reported by 32.4% of PUV patients and 15.8% of controls (p=0.02)
• “Moderate or major” bother from at least one LUTS was reported by 14.7% of PUV patients and 9.2% of controls (p=0.18)
• The occurrence or bother of any symptom was not associated with vesicoureteral reflux at the time of diagnosis or kidney transplantation (p=0.05 for all) (Table 1). However, these subgroup analyses had limited statistical power

Discussion and Conclusions

• In our study of a large amount of material of PUV patients and matched population-representative6,11 controls:
  • ≥1 moderately severe LUTS was reported by 1 in 3 PUV patients and 1 in 6 controls
  • At least moderate bother from LUTS was reported by 1 in 7 PUV patients and 1 in 11 controls
• Although most LUTS are mild in these young and middle aged men, occurrence and bother of most symptoms in adulthood are 2-fold in PUV patients compared to general population
• These results suggest that PUV in childhood is a clear risk factor for LUTS in adulthood which may not have been addressed properly in adult urology

Table 2. Occurrence (A) and bother (B) of voiding symptoms, post-micturition dribble and pain/burning among PUV patients and controls. P values calculated for the trend of symptom occurrence severity between PUV patients and controls

Table 3. Occurrence (A) and bother (B) of storage symptoms among PUV patients and controls. P values calculated for the trend of symptom occurrence severity between PUV patients and controls

References

1. Johanssen & Harris. Urology 2002
3. De Gennaro et al. BJU Int 2000
4. Schober et al. BJU Int 2004
8. Taskinen et al. J Ped 2004