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Lower urinary tract symptoms after feminizing genitoplasty

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Abstract *Objective:* To investigate the prevalence of lower urinary tract symptoms (LUTS) in a Finnish cohort of patients who had undergone feminizing genitoplasty in childhood.
Patients and methods: Information on LUTS was assessed using the Danish Prostatic Symptom Score questionnaire: 24 out of 45 females (53%) returned the questionnaire; 16 patients with prenatal androgen exposure (congenital adrenal hyperplasia = CAH group) and eight with androgen insensitivity (AIS group).
Results: Urge urinary incontinence was reported by 13% of the patients in both the CAH and AIS groups and by 15% of the controls. Stress urinary incontinence was reported by 31% of the patients in the CAH group, 13% of the patients in the AIS group and 22% of the controls. Distressing voiding symptoms were reported by 19% of the patients in the CAH group, 13% of the patients in the AIS group and 28% of the controls, and of these straining and incomplete emptying were the most prevalent.
Conclusions: LUTS are as common in female DSD patients with feminizing genitoplasty as they are in controls. Some degree of distressing incontinence occurred in 13%—25% of the young female patients and the controls.
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Introduction

In females with disorders of sexual differentiation (DSD), the lower urinary tract can also be affected. In patients with complete androgen insensitivity the urethra is usually normal, while patients with prenatal androgen exposure often have a common urogenital sinus of variable length [1,2] Congenital adrenal hyperplasia (CAH) is the most common reason for prenatal androgen exposure [2]. Urogenital sinus in CAH patients has traditionally been treated with a dorsal split with or without an inverted U-shaped flap. Today a common approach is the en-bloc urogenital sinus mobilization [3—5]. Stenosis of the vaginal introitus is reported to be common after the dorsal flap procedure [6], but the urethra itself should be

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unaffected in U-flap operations. However, increased prevalence of lower urinary tract symptoms (LUTS) in CAH patients has been reported in some [7,8], but not in all studies [9]. Major feminizing surgery is not often needed in patients with androgen insensitivity syndrome (AIS), but there may be a need for vaginal reconstruction or vaginal dilatations. We have not found previous published studies on LUTS in AIS patients.

In our clinical practice we have not noted especially severe LUTS in female DSD patients. Because of previous contradictory results, we aimed to evaluate the prevalence of LUTS in adult females who had undergone surgery either because of CAH or AIS in comparison with healthy females.

Patients and methods

The hospital database of the Hospital for Children and Adolescents, University of Helsinki, was retrospectively reviewed for CAH and AIS patients from1980 to 2000. Forty-five post-pubertal patients older than 15 years were identified and were mailed a questionnaire up to three times to assess the prevalence of LUTS. Twenty-four patients (53%) returned the questionnaire. Sixteen of the 24 patients had prenatal androgen exposure and 46, XX karyotype (CAH group), and eight patients had 46, XY karyotype (AIS group). In the CAH group, 15 patients had CAH and three of these patients had the simple virilizing form and 12 the salt-losing form. One patient was affected by virilization from a maternal virilizing tumor and was included in the CAH group. In the AIS group three patients had the complete form of AIS and five patients had clinically the partial form. Forty-six healthy female students served as controls.

The median age of the patients was 23 years (range 15—30) in the CAH group, 29 years (range 16—36) in the AIS group and 24 years (range 17—28) in the control group. Clitoral reduction was performed for 14 out of the 16 patients in the CAH group and five out of the eight patients in the AIS group. All 16 patients of the CAH group and five of the eight AIS patients had undergone reconstruction for the vaginal introitus or merely the common urogenital sinus. Fourteen patients had an inverted U-flap to the base of the hymen and seven had longitudinal incision(s). The median age at the first introitoplasty was 4.5 years (range 0.4—19.2). Nine patients (43%) needed later surgery for narrowed vagina. A sigmoid vagina had been constructed in one CAH patient with very high confluence and in four AIS patients with severe vaginal hypoplasia at the age of 7, 14, 15, 19 and 21 years. The other CAH patient with high confluence had a pull-through vaginoplasty [10].

LUTS were evaluated using the validated Finnish version of the Danish Prostatic Symptom Score (DAN-PSS) questionnaire [11], which assesses the occurrence and severity (in terms of degree of distress caused) of 12 different LUTS: hesitancy, weak stream, incomplete emptying, straining, post-micturition dribble, pain/burning, increased daytime frequency, nocturia, urinary urgency, urge urinary incontinence, stress urinary incontinence and overflow/seeping incontinence. Both the occurrence and severity of LUTS are classified on a four-point scale: occurrence as 'never' – 'rarely'– 'often'– 'always' for most symptoms; and severity/distress as 'none'– 'small' – 'moderate' – 'major' for all symptoms. Symptoms were considered to occur frequently if options 'often' or 'always' were selected. The prevalence of any distressing symptoms was also recorded. In addition, the patients were asked how many times a day they voided, if they felt they needed treatment for LUTS (yes, no), and if they had had urinary tract infections (UTI) during the last 2 years (yes, no, and if yes how many times and was the infection with or without fever).

Fisher's exact test was used to compare the prevalence of symptoms (Statview® 5.0.1, SAS Institute Inc.). A P-value < 0.05 was considered significant.

Results

Distressing LUTS were reported by six of the 16 (38%) patients in the CAH group, by one of the eight (13%) patients in the AIS group and by 22 of the 46 (48%) controls. In the CAH group the distress caused by any LUTS was small in four patients (25%), moderate in two patients (13%), and major in none. The only AIS patient with distressing LUTS reported moderate degree of symptoms. In the controls the distress caused by any LUTS was small in 15 (33%), moderate in six (13%) and major in one (2%).

Distressing emptying symptoms (incomplete emptying, straining, post-micturation dribble or dysuria) were reported by 19% of the CAH patients, 13% of the AIS patients and 28% of the controls (Table 1). Distressing storage symptoms (urgency, urge incontinence, stress incontinence or nocturia) were reported by 25% of the CAH patients, 13% of the AIS patients and 41% of the controls (Table 2). There was no statistical difference between groups. The median daytime voiding frequency was five times (range 3—9) in both the CAH and AIS group.

There was a tendency toward more frequent LUTS in the CAH group and the controls than in the AIS group. However, the sample size did not allow definitive statistically significant inferences. There was no difference in LUTS between the patients who had or had not undergone clitoral surgery or sigmoid vagina. Neither of the two CAH patients who had been operated because of high confluence had distressing LUTS. However, three of the six CAH patients with distressing LUTS had undergone repeat operations. The only AIS patient with distressing LUTS had not had any vaginal operations, only dilatations. Only one of the 10 patients who had not started intercoital relationships had distressing LUTS. Despite distressing LUTS, no patient reported a need for treatment because of voiding symptoms. Four patients (18%) reported having had cystitis during the last 2 years (two patients once and two patients twice).

Discussion

In this study, occasional LUTS were common both in the patients and in the controls and we did not find significant differences between the groups. In previous studies with DSD patients the occurrence of LUTS has been variable. In a study where the Bristol female incontinence questionnaire was used, 68% of the patients with CAH had urge urinary incontinence and 47% had stress incontinence compared to controls with 16% of urge incontinence and 26% of stress incontinence [7,12]. In that study many

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