Histological Evidence of Urethral Involvement in Male Patients With Genital Lichen Sclerosus: A Preliminary Report

Guido Barbagli, Francesco Mirri, Michele Gallucci, Salvatore Sansalone, Giuseppe Romano and Massimo Lazzeri*

From the Center for Reconstructive Urethral Surgery (GB), Arezzo, Sezione di Anatomia Patologica, Ospedale Santa Maria alla Gruccia (FM), Montervarchi, Department of Urology, Istituto Nazionale Tumori "Regina Margerita" (MG) and Department of Urology, Tor Vergata University (SS), Rome, and Departments of Urology, San Donato Hospital (GR), Arezzo and Istituto Fiorentino di Cura e Assistenza S. P. A., Gruppo GIOMI (ML), Florence, Italy

Purpose: Using pathological examination we evaluated the involvement of lichen sclerosus in urethral strictures in men.

Materials and Methods: We performed an observational, descriptive, retrospective study of patients treated for genital lichen sclerosus who had at least 1 biopsy positive for lichen sclerosus. Study exclusion criteria were malignant penile lesions, incomplete data on personal charts and biopsies negative for lichen sclerosus. Preoperative evaluation included clinical history, physical examination, urine culture, post-void residual urine measurement, uroflowmetry and urethrography. Biopsies were taken from the foreskin, penile skin, glans, urethral meatus, mucosa of the navicularis, and penile and bulbar urethra to confirm the lichen sclerosus diagnosis and spread of the disease through the urethra. Patients were classified into 5 groups by surgical procedure.

Results: Included in the study were 99 patients with a median age of 46 years who were diagnosed with genital lichen sclerosus. Of 274 biopsies 234 (85.4%) were positive for lichen sclerosus. Group 1 included 39 patients who underwent circumcision, group 2 included 15 who underwent meatotomy, group 3 included 15 who underwent navicularis urethroplasty, group 4 included 17 who underwent penile urethroplasty and group 5 included 13 who underwent perineal urethrostomy. Lichen sclerosus was documented by histology in the meatus in 91.5% of cases, in the navicularis in 84.4% and in the penile urethra in 70.6%. All biopsies from the bulbar urethra were negative.

Conclusions: Involvement of lichen sclerosus through the navicularis and penile urethra was documented. No sign of lichen sclerosus was found in the bulbar urethra.

Key Words: urethra; urethral stricture; lichen sclerosus et atrophicus; genitalia, male; pathology

Abbreviations and Acronyms

BXO = balanitis xerotica obliterans

LS = lichen sclerosus

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* Correspondence: Department of Urology, IFCA, via del Pergolino 4/6, 50139 Florence, Italy (telephone: +39 055 4296222; FAX: +39 055 480676; e-mail: lazzeri.m@tiscali.it).

LICHEN sclerosus is a chronic inflammatory autoimmune skin disease that causes discomfort and morbidity.[1] In 1887 Hallopeau first reported LS and in the urological literature LS was initially reported as being BXO, which was first defined in 1928 by Stühmer.[1,2] Since then, many names have been used to refer to the disorder. In 1995 the American Academy of Dermatology recommended that the term LS be used in future reports.[1,3]

The exact prevalence of LS is unknown, and methods of diagnosis and treatment may differ.[1] LS may cause destructive scarring that can lead to

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urinary and sexual problems, and decreased quality of life. Symptoms are pruritus and soreness, difficulty in retracting the foreskin and a poor urinary stream.[1] Examination shows typical flat, atrophic, ivory to white papules that coalesce in plaques of varying sizes, commonly with a nonretractile prepuce and meatal stenosis.[1,4]

Controversy exists about the incidence of LS involving the anterior urethra in men. The dermatological literature fails to recognize involvement of the anterior urethra in male patients with genital LS.[1,2] In contrast, in 1970 the urological literature began to emphasize urethral involvement in BXO cases.[5] In 1971 Bainbridge et al reviewed the natural history and histological sections in 17 BXO cases, and first emphasized the diagnostic histological feature of the disease in urethral tissue.[6] In 1978 Mallo et al reported 5 cases of BXO, emphasizing urethral involvement with histological findings from the foreskin, meatus and penile urethra.[7] In 1979 Herschorn and Colopinto described a case of biopsy proven BXO that involved the usual areas as well as the anterior urethra.[8] In 1979 Khezri et al reviewed a series of 20 patients with histologically proven BXO.[9] They suggested that urethral involvement is limited to the squamous epithelium of the external urinary meatus and fossa navicularis, and stated that no evidence indicates that associated urethral strictures were also due to BXO.[9] In 1998 Venn and Mundy reported on 114 patients undergoing anterior urethroplasty for nontraumatic conditions.[10] A total of 28 cases (24.5%) of urethral stricture due to LS were identified and histological assessment of the urethra uniformly showed LS characteristics. In 1999 Barbagli et al reported that 31 of 106 patients (29%) who underwent urethroplasty for anterior urethral strictures had a specific pathological diagnosis of LS, which involved the meatus in 19%, navicularis urethra in 16%, penile urethra in 3% and the entire anterior urethra in 52%.[11] Barbagli et al also reported a high incidence of LS in patients with failed hypospadias repair.[12] However, the relationship between LS and anterior urethral stricture remains an open, controversial issue and further investigative studies are mandatory.

We studied male patients treated for genital LS, evaluating anterior urethral involvement by multiple histological biopsies. Our aim was to ascertain the exact site and extension of LS through the navicularis, penile and bulbar urethra.

MATERIALS AND METHODS

We performed an observational, descriptive, retrospective study in consecutive men who were evaluated and treated for genital LS. Study inclusion criteria were male gender, age 18 to 85 years, evaluation and treatment for genital LS, and at least 1 biopsy positive for LS. Exclusion criteria were malignant penile lesions, incomplete data on personal charts and biopsies negative for LS. All data since January 2002 to December 2009 were retrospectively collected.

The study design allowed us to evaluate the exact site and extension of LS through the navicularis, penile and bulbar urethra. Preoperative patient evaluation included clinical history, physical examination, urine culture, postvoid residual urine measurement and uroflowmetry. All patients with a clinical history of urethral manipulation, obstructive symptoms, meatal stenosis and maximum urine flow less than 10 ml per second on uroflowmetry underwent retrograde and voiding urethrography.

In each case multiple biopsies were taken from the genitalia (foreskin, penile skin and glans), urethral meatus and mucosa of the anterior urethra at preoperative investigation or surgical repair, including circumcision, meatotomy or anterior urethroplasty, to confirm the LS diagnosis according to strict pathological criteria, as suggested in the literature.[1,3] Meatal biopsies were taken from the lateral edges, including the urethral mucosa and the glans epithelium. Biopsies of the navicularis, penile and bulbar urethra were taken from the white area of the mucosa, excluding the spongiosum tissue. All biopsies were evaluated by the same pathologist (FM).

LS was defined as an epithelial-stromal lesion characterized by orthokeratotic hyperkeratosis, thinned epithelium with blunting or loss of rete ridges, basal vacuolar change, subepithelial edema and homogenization of collagen with diffuse perivascular lymphocyte infiltrate. Biopsies were fixed in 10% buffered neutral formalin, entirely embedded in paraffin, sectioned on at least 3 levels and colored with hematoxylin and eosin.

Patients were classified into 5 groups by disease site and surgical repair type. Due to the study design, which was nonanalytical and did not include a control group, only descriptive statistical analysis was performed.

RESULTS

A total of 99 men with a median age of 46 years (range 18 to 85) with genital LS were treated. In the 99 patients a total of 274 biopsies were taken from the foreskin, penile skin, glans, urethral meatus, and navicularis, penile and bulbar urethral mucosa at preoperative investigation or surgical repair to confirm the LS diagnosis. Of 274 biopsies 234 (85.4%) were positive for LS and 40 (14.6%) were negative (table 1). Biopsies were positive in the foreskin in 93.2% of cases, penile skin in 91.2%, glans in 91.4%, meatus in 91.5%, navicularis urethra in 84.4%, penile urethra in 70.6% and bulbar urethra in 0% (table 1 and fig. 1). Of the 99 patients 69 (69.7%) had undergone prior surgery of the genitalia and/or urethra.

Group 1

Of the patients 39 (39.3%) with a median age of 42 years underwent a total of 54 biopsies (table 2). The incidence of LS positive biopsies was 96.6% in the