

Lichen sclerosus: Role of occlusion of the genital skin in the pathogenesis

Somesh Gupta, Amit Kumar Malhotra, Ajith C¹

Department of Dermatology
and Venereology, All India
Institute of Medical Sciences
New Delhi - 110 029,
¹Postgraduate Institute
of Medical Education and
Research, Chandigarh, India

Address for correspondence:
Dr. Somesh Gupta,
Department of Dermatology
and Venereology, All India
Institute of Medical Sciences,
New Delhi - 110 029, India.
E-mail: someshgupta@
hotmail.com

DOI: 10.4103/0378-6323.58681
PMID: 20061733

ABSTRACT

Lichen sclerosus (LS) is a chronic inflammatory skin disease, which most commonly involves the anogenital region. The etiology of LS is obscure, but genetic susceptibility, autoimmune mechanisms, infective agents like human papillomavirus and spirochaetes, and Koebner phenomenon has been postulated as causative factors. We report our observation in 6 patients (3 males and 3 females) with histologically proven lichen sclerosus that showed relative sparing of the uncovered areas of the genitals, thereby suggesting that the occlusion of the genital skin may be playing a greater role in the causation of LS than is currently thought, in both sexes.

Key words: Lichen sclerosus, role of occlusion, genitalia

INTRODUCTION

Lichen sclerosus (LS) is a chronic inflammatory skin disease, which most commonly involves the anogenital region. It is characterized by depigmentation and fibrosis leading to the intractable soreness, progressing eventually to destructive scarring.^[1] The commonly involved sites on the male genitalia are meatus followed by prepuce, penile shaft and the glans penis.^[2] A few experts consider LS of penis synonymous with balanitis xerotica obliterans (BXO),^[3] but BXO may also be a consequence of other dermatoses that lead to fibrosis, such as cicatricial pemphigoid and lichen planus.^[4]

The etiology of LS is obscure, but genetic susceptibility including HLA A1, B8, DR3 association,^[5] autoimmune mechanisms,^[4,6] infective agents like human papillomavirus^[7] and spirochaetes,^[8] and Koebner phenomenon^[1,4] have been postulated as causative factors. We report our observation in 6 patients (3 males and 3 females) with histologically proven lichen sclerosus that showed relative sparing of the uncovered areas of the genitals, thereby suggesting that the occlusion of the genital skin may be playing a greater role in the causation of LS than is currently thought, in both sexes.

CASE REPORT

Table 1 shows the demographic and clinical characteristics of the patients. In males, the disease predominantly involved the inner aspect of the prepuce and the areas of the glans covered by the prepuce up to the preputial ring, with almost complete sparing of the exposed areas of the glans [Figures 1a and b]. In females only the opposed surfaces of the vulva were predominantly affected [Figures 2a and b], in such a way that no abnormalities were visible unless the labia were separated manually.

DISCUSSION

The prepuce is a penta-laminar specialized junctional tissue with mucosa on the inner surface covering the glans and the skin on the outer surface,^[2] with preputial ring demarcating the two. This observation of involvement of the genital mucosa restricted to the opposing surfaces of the glans and the vulva suggests the role of occlusion in the development of genital LS. This hypothesis is further supported by the fact that in most cases of early LS of the penis, the preputial involvement is restricted to its mucosal side and the

How to cite this article: Gupta S, Malhotra AK, Ajith C. Lichen sclerosus: Role of occlusion of the genital skin in the pathogenesis. Indian J Dermatol Venereol Leprol 2010;76:56-8.

Received: April, 2007. **Accepted:** March, 2008. **Source of Support:** Nil. **Conflict of Interest:** None declared.

Table 1: The demographic and clinical characteristics of the patients

Age (years)/Sex	Disease duration (months)	Site	Symptoms	Treatment given; response
42/M	9	Glans	Itching and depigmentation	Potent topical steroids and circumcision; good
38/M	8	Glans and undersurface of prepuce	Depigmentation and difficulty in retraction of prepuce	Potent topical steroids and circumcision; good
65/M	4	Glans and undersurface of prepuce	Itching, erosions and depigmentation	Potent topical steroids and circumcision; good
27/F	12	Opposing mucosal surfaces of upper half of labia majora	Itching, burning and depigmentation	Topical tacrolimus; good
52/F	16	Opposing mucosal surfaces of whole of labia majora	Itching, burning, dysperunia and depigmentation	Potent topical steroids; good
34/F	12	Opposing mucosal surfaces of whole of labia majora	Itching, burning, dysperunia and depigmentation	Potent topical steroids; good

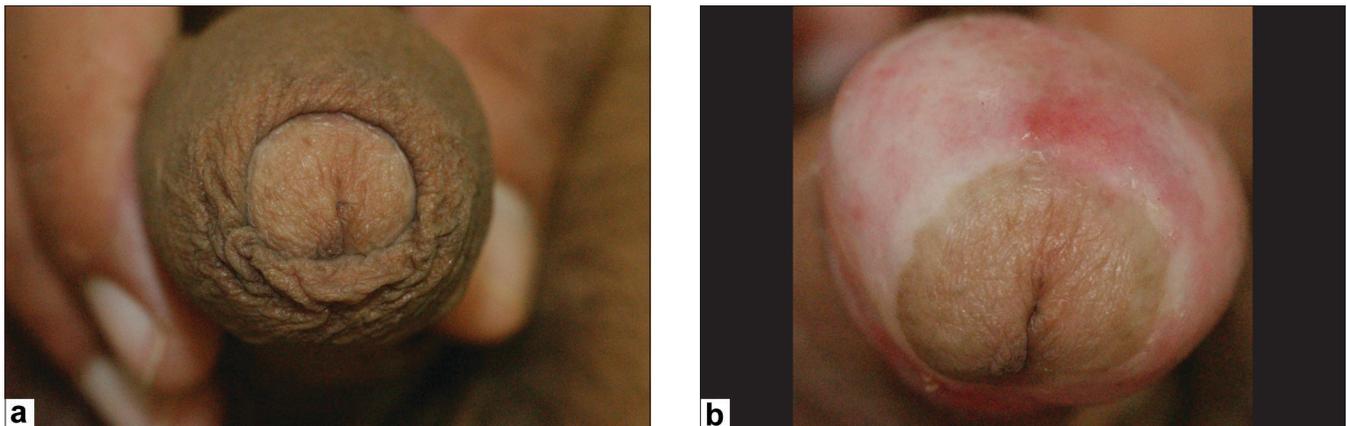


Figure 1: Patient 1 (a) Clinically no abnormality visible in the normal unretreated position of the prepuce (b) Depigmented erythematous sclerosed plaque restricted to the area of the glans covered with prepuce

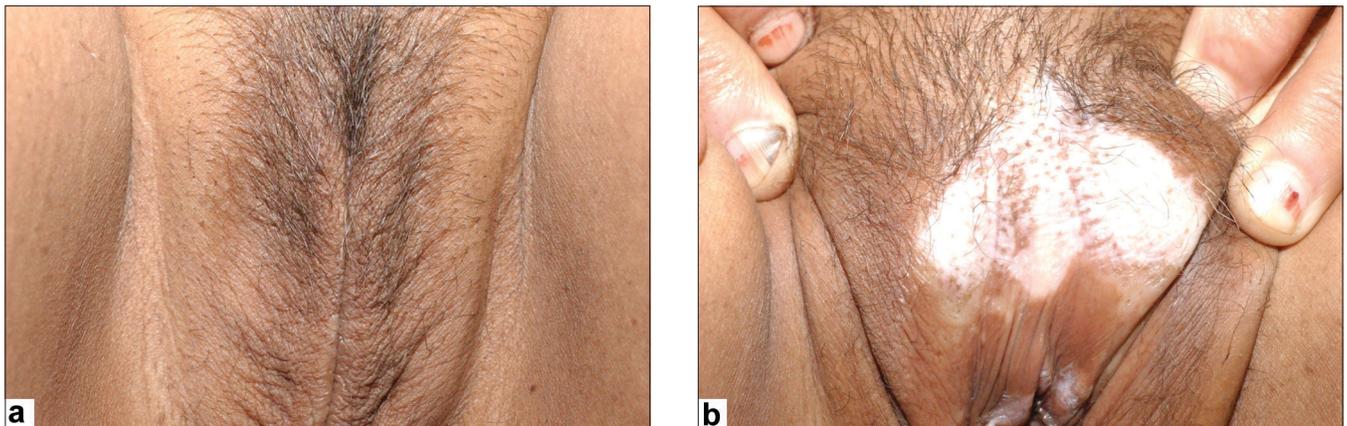


Figure 2: Patient 4 (a) Clinically no abnormality visible in the normal opposed position of the vulva (b) Patient depigmentation and sclerosis visible only on separation of the vulva

external surface of the prepuce is spared until later stages.^[2] Similarly, in women with early genital LS, often the sclerosed depigmented area remains sharply confined to the opposing mucosal surfaces.^[2]

There are several possible mechanisms that may either alone or collectively, explain the effect of

occlusion of the genital skin in the pathogenesis of LS. Studies have shown that LS is very rare in circumcised males.^[4] The minor trauma induced by the foreskin in the uncircumcised males may be important in the initiation of the pathological process of LS due to koebnerization. Besides LS, many other inflammatory skin diseases such as psoriasis and

lichen planus that manifest Koebner phenomenon are less common in the circumcised individuals.^[4] Though the extent to which the minor trauma plays role in the pathogenesis of LS is not known. Also the presence of foreskin and poor hygiene facilitates the accumulation of smegma at the inner aspect of prepuce. The role of smegma as a predisposing factor in the development of carcinoma of the penis in the uncircumcised males has already been emphasized.^[9] The same factor may also be contributing to the development of LS in uncircumcised males, since LS predisposes to malignancy^[1,9,10] and both LS as well as carcinoma of penis are more common in uncircumcised males.

Many cases of LS in the males remain undiagnosed as LS has been shown to be a frequent histological finding in males who have undergone circumcision for other indications.^[4,11,12] In boys who are circumcised for phimosis and the histopathology shows features of LS, it is presumed that LS precedes and leads to phimosis. However, our observation raises a possibility that in some patients, opposite may hold true, where occlusion caused by longstanding phimosis may be leading to the development of LS.

This pilot observation suggests that occlusion of the genital skin may be playing a greater role in the causation of LS than is currently thought. More studies on the causative factors of LS with emphasis on the role of preputial skin in males and vulval skin in females are necessary.

REFERENCES

1. Powell JJ, Wojnarowska F. Lichen sclerosus. *Lancet* 1999; 353:1777-83.
2. Riddell L, Edwards A, Sherrard J. Clinical features of lichen sclerosus in men attending a department of genitourinary medicine. *Sex Transm Infect* 2000;76:311-3.
3. Laymon CW, Freeman C. Relationship of balanitis xerotica obliterans to lichen sclerosus et atrophicus. *Arch Dermatol Syphilol* 1944;49:57-9.
4. Mallon E, Hawkins D, Dinneen M, Francics N, Fearfield L, Newson R, et al. Circumcision and genital dermatoses. *Arch Dermatol* 2000;136:350-4.
5. Cox NH, Mitchell JN, Morley WN. Lichen sclerosus et atrophicus in non- identical female twins. *Br J Dermatol* 1986;115:743-6.
6. Lipscombe T, Wayte J, Wojnarowska F. A study of clinical and aetiological factors and possible association of lichen sclerosus in males. *Australas J Dermatol* 1997;38:123-36.
7. Drut RM, Gómez MA, Drut R, Lojo MM. Human papillomavirus is present in some cases of childhood penile lichen sclerosus: An *in situ* hybridization and SP-PCR study. *Pediatr Dermatol* 1998;15:85-90.
8. Schempp C, Bocklage H, Lange R, Kölmel HW, Orfanos CE, Gollnick H. Further evidence for *Borrelia burgdorferi* infection in morphea and lichen sclerosus et atrophicus confirmed by DNA amplification. *J Invest Dermatol* 1993;100:717-20.
9. Maden C, Sherman KJ, Beckmann AM, Hislop TG, Teh CZ, Ashley RL, et al. History of circumcision, medical conditions, and sexual activity and risk of penile cancer. *J Natl Cancer Inst* 1993;85:19-24.
10. Velazquez EF, Cubilla AL. Lichen sclerosus in 68 patients with squamous cell carcinoma of the penis: frequent atypias and correlation with special carcinoma variants suggests a precancerous role. *Am J Surg Pathol* 2003;27:1448-53.
11. Schinella RA, Miranda D. Posthitis xerotica obliterans in circumcision specimens. *Urology* 1974; 3:348-51.
12. Aynaud O, Piron D, Casanova JM. Incidence of preputial lichen sclerosus in adults: Histologic study of circumcision specimens. *J Am Acad Dermatol* 1999;41:923-6.

Author Help: Reference checking facility

The manuscript system (www.journalonweb.com) allows the authors to check and verify the accuracy and style of references. The tool checks the references with PubMed as per a predefined style. Authors are encouraged to use this facility, before submitting articles to the journal.

- The style as well as bibliographic elements should be 100% accurate, to help get the references verified from the system. Even a single spelling error or addition of issue number/month of publication will lead to an error when verifying the reference.
- Example of a correct style
Sheahan P, O'leary G, Lee G, Fitzgibbon J. Cystic cervical metastases: Incidence and diagnosis using fine needle aspiration biopsy. *Otolaryngol Head Neck Surg* 2002;127:294-8.
- Only the references from journals indexed in PubMed will be checked.
- Enter each reference in new line, without a serial number.
- Add up to a maximum of 15 references at a time.
- If the reference is correct for its bibliographic elements and punctuations, it will be shown as CORRECT and a link to the correct article in PubMed will be given.
- If any of the bibliographic elements are missing, incorrect or extra (such as issue number), it will be shown as INCORRECT and link to possible articles in PubMed will be given.