

Lichen sclerosis of the oral cavity. Case report and review of literature.

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Abstract

Background: Lichen sclerosis is a chronic muco-cutaneous inflammatory disorder of uncertain etiology. The prevalence of lichen sclerosis affecting only the oral mucosa is extremely rare and only 26 cases with histologically verified oral lichen sclerosis have been reported.

Main observations: A 60-year-old man was referred to our hospital for complaints of white lesions in the oral cavity, which was otherwise asymptomatic and did not have any cutaneous or anogenital lesions. Clinical examination revealed white patches with reddish areas on the buccal mucosa bilaterally and on the maxillary posterior gingiva. Microscopic analysis of the lesion showed atrophied epithelium with basal cell degeneration, hyalinized connective tissue stroma with minimal chronic inflammatory cell infiltrate. Verhoeff's staining revealed scantiness of elastic fibers in the connective tissue stroma. On the basis of these histological findings, the final diagnosis was given as Lichen Sclerosis. LS is rare in the oral cavity, particularly in the absence of simultaneous cutaneous and anogenital lesions.

Conclusions: Only 7 cases of oral LS have been reported involving the gingiva. To our knowledge, this is the eighth case to be reported with gingival involvement and the first case to be reported with bilateral involvement of buccal mucosa and gingiva.

Introduction

Lichen sclerosis (LS) is a chronic muco-cutaneous inflammatory disorder, preferentially affecting the skin and the genitals.¹ LS may occur in adults of all races and is five to ten times more common in females than in males.² The underlying etiology remains obscure, although various infections, trauma, genetic factors, hormonal and auto-immune related disorders have been theorized.²

Skin lesions of LS are clinically characterized by flat, stiff, shiny, porcelain white, polygonal papules that coalesce to form plaques. Most of the skin lesions are generally confined to the neck and trunk and are usually asymptomatic, although pruritus may occur.³

LS tends to affect the skin of the anogenital region and are characterized by areas of pallor. In contrast to LS of the skin, which rarely itches, there is often severe pruritus in the lesions involving vulvar region, which may lead to erosions and

purpura. In men, the foreskin and glans penis are usually affected and often result in phimosis.³

Oral lesions of LS are rare and occur with or without lesions of the skin or vulva. Oral mucosal lesions appear as well demarcated, ivory or whitish, flat lesions similar to those seen in vulva but striae, erosions and ulcers clinically indistinguishable from lichen planus are also seen. The buccal, labial and palatal mucosa are the most common intra-oral sites affected and the sex distribution is almost equal with no racial preferences.⁴⁻¹⁰

Histopathology of oral LS is characterized by gradual atrophic epithelium, subepithelial homogenization and hyalinization of the collagen fibers with an underlying band like lymphocytic inflammatory infiltrate. Hyperkeratosis may be absent in oral lesions but is always present in skin lesions.³

Treatment of oral LS consists of topical corticosteroids or excision. Treatment is unnecessary, if the patient is asymptomatic.³

The present report describes a case of LS manifesting only as lesions of oral mucosa, without any simultaneous involvement of cutaneous and anogenital region.

Case report

A 60-year-old man presented with asymptomatic, white, non-scrapable patches and reddish areas in the right and left buccal mucosa and gingiva of upper and lower molar region. The duration was 6 months. The patient was otherwise well and not under any medication. No history of alcoholism, smoking and familial occurrence of similar disease were reported.

Clinical examination revealed white patches with reddish areas on the buccal mucosa bilaterally. The lesions were well delineated and approximately 2x2 cm in size. The gingiva in relation to 14, 15 and 16 (Fig. 1A) revealed similar lesions, approximately 2x3 cm in size. The gingiva and vestibular mucosa in relation to 35, 36 and 37 (Fig. 1B) also showed white patches with reddish areas. The teeth present in the involved region did not show any tooth mobility and the overall oral hygiene was poor. The clinical diagnosis was given as lichen planus. The patient was referred to a dermatologist and ruled out cutaneous and ano-genital manifestations.

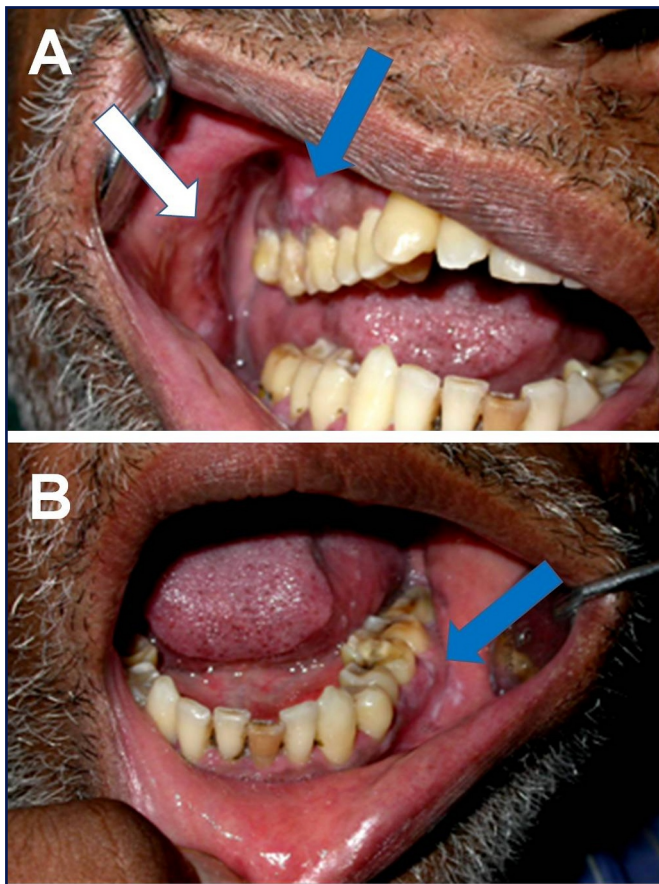


Figure 1

Clinical picture showing whitish patches with reddish areas involving the gingiva extending from right maxillary first pre-molar to maxillary molar (A). Whitish patches with reddish areas involving the gingiva and vestibular mucosa extending from left mandibular second premolar to second molar (B).

The incisional biopsy of the lesions from the left gingiva and buccal mucosa were submitted for histopathological evaluation. Microscopic examination of hematoxylin and eosin stained sections showed hyperplastic stratified squamous epithelium with areas of progressive atrophy, along with evidence of hydropic degeneration of basal cells in few areas. The subjacent connective tissue showed dense and evenly hyalinized band of fibrosis along with patchy areas of inflammatory cell infiltrate. Scantiness of elastic fibers in the connective tissue stroma was revealed by Verhoeff elastic stain. Based on the clinical and histopathological features, a diagnosis was given as LS. Subsequently, incisional biopsies from other affected intra-oral regions were also consistent with LS.

The patient underwent complete oral prophylaxis and was given instructions for oral hygiene maintenance. As the lesions were asymptomatic, no treatment instituted and the patient was under follow-up. Cutaneous and anogenital lesions did not develop during the follow-up period of 2 years.

Discussion

According to the reports in literature, LS affecting only the oral mucosa is extremely rare. Only 26 cases have been reported with verified histopathology (Table 1). No cutaneous or genital lesions developed after the follow-up period in any of the reported cases or in our case. This suggests that oral LS may appear without accompanying skin or genital lesions.¹⁰

Oral LS has been described on labial and buccal mucosa, lip, gingiva, palate, tongue and anterior tonsillar pillar. These lesions manifest as white macules or plaques^{3,9} with reticular striations^{2,11} and superficial ulceration.^{7,12} LS is usually asymptomatic,¹⁰ as in our case. Only seven cases of oral LS have been reported involving the gingiva (Table 1). To our knowledge, this is the eighth case to be reported with gingival involvement and the first case to be reported with bilateral involvement of buccal mucosa and gingiva.

Clinically, it may be difficult to distinguish oral LS from other oral white lesions, especially lichen planus, leukoplakia and localized scleroderma.¹³ Oral lichen planus usually presents as white reticular striations and only a minority of patients present with dense white homogenous plaques. Oral leukoplakias shows a variety of appearances, ranging from fine white flecks to dense thick plaques and are commonly seen in smokers and users of smokeless tobacco. Distinguishing oral LS from localized scleroderma clinically is difficult and histopathology may be helpful in establishing the correct diagnosis.¹⁰

The histologic features of cutaneous LS are characteristic, including follicular plugging, atrophy of epidermis with vacuolar degeneration of the basal layer, edema, homogenization of the collagen and scantiness or loss of elastic fibers in the upper dermis, and an inflammatory infiltrate in the mid dermis.¹⁴ The histologic features of oral LS are sufficiently similar to those of LS in the skin.¹⁰

De Araujo *et al.* have concluded that the characteristic features of oral LS are pronounced edema and homogenization of the collagen fibers within the lamina propria, together

with hydropic degeneration of the basal cells⁶ which was also evident in our case. Direct immunofluorescent studies may reveal immunoglobulin G, C3 and fibrinogen at the basement membrane level.^{15,16}

The cause of LS is unknown. Over the years, a number of etiologies have been proposed. Several studies have linked borrelial or other infections with LS, yet other studies have disputed this and the current reports along this line are few. Genetic and autoimmune factors have been explored without identification of consistent, reproducible patterns. Local irritation seems to play a role in some cases. But the sequence of events that leads to the altered fibroblast function, micro-vascular changes, and hyaluronic acid accumulation in the upper dermis continues to be researched. Inflammation and altered fibroblast function in the papillary dermis leads to fibrosis of the upper dermis. Several studies have recently identified the presence of autoantibodies to the glycoprotein extracellular matrix protein 1 (ECM1).¹⁷

Moreover, other recent studies have identified circulating autoantibodies against the ECM1 protein in most patients with lichen sclerosis. ECM1 thus serves as a target antigen such disorders. Within the epidermis, ECM1 has a role in the

control of keratinocyte differentiation. Within the dermis, ECM1 binds to the major heparan sulphate proteoglycan, perlecan. In this way, ECM1 may act as "biological glue" in the dermis, helping to regulate basement membrane and interstitial collagen fibril macro-assembly and growth factor binding.¹⁸

The onset and persistence of cutaneous lichen sclerosis (LS) are linked to the presence of an inflammatory infiltrate of CD3+ T cells that includes CD4+ and CD8+ cells. Furthermore, a notable number of Granzyme B+ activated Cytotoxic lymphocytes associated with hydropic degeneration of the basal cell layer were found within the dermal infiltrate and at the dermoepidermal interface. A cell-mediated immune response may play an important role in the pathogenesis of the disease.¹⁹

Interleukin-6 (IL-6) is a multifunctional cytokine that participates in the inflammatory and immune responses. In human skin, keratinocytes produce IL-6 and the presence of IL-6 was demonstrated in normal epidermis and atrophic skin diseases like LSA. In normal skin, there was moderate intercellular and intracellular reactivity detected using a high antibody concentration. In specimens with epidermal atrophy, intense cytoplasmic and intercellular immunostaining was

Table 1. Reported cases of isolated oral lichen sclerosis.

S. No	Author(s)	Year of publication	Patient's age & sex	Oral site(s)	Extra oral lesions
1	Miller <i>et al.</i> ⁴	1957	48 F	Buccal mucosa	Genital, perineal, trunk, neck and extremities
2	Ravits <i>et al.</i> ⁵	1957	24 M 42 M	Buccal mucosa, Gingiva Buccal mucosa, palate, anterior tonsillar pillar	None Genital
3	Kaminsky <i>et al.</i> ²⁹	1974	26 F	Upper lip w/extension intraorally onto labial mucosa and gingiva	Skin of lower lid and lateral nasal area
4	de Araujo <i>et al.</i> ⁶	1985	26 F	Maxillary gingiva midline extending into vestibular mucosa	None for 1 year follow-up period
5	Siar <i>et al.</i> ¹¹	1985	25 M	Buccal mucosa	No comment
6	Macleod <i>et al.</i> ⁷	1991	57 F	Tongue and palate	None
7	Schulten <i>et al.</i> ⁸	1993	59 F 12 M	Labial mucosa, commissure and tongue Labial mucosa	None None
8	Brown <i>et al.</i> ⁹	1997	44 M 18 M	Soft palate midline Lower lip mucosa and vermillion	None None for 10 month follow-up period

S. No	Author(s)	Year of publication	Patient's age & sex	Oral site(s)	Extra oral lesions
9	Buajeeb <i>et al.</i> ¹⁰	1999	22 F	Gingiva, oral mucosa	None
10	Kaur <i>et al.</i> ³³	2002	16 M	Upper lip and Gingiva	Present
11	Jensen <i>et al.</i> ³	2002	10 F	Buccal mucosa	None
12	Jimenez <i>et al.</i> ¹³	2002	19 F	Gingiva, buccal sulcus and lip	None
13	Mendonca <i>et al.</i> ²⁸	2004	20 F	Lower lip, labial mucosa	None
14	Rajlawat <i>et al.</i> ³⁴	2004	14 F	Lower lip	None
15	Chaudhry <i>et al.</i> ³¹	2006	60 F	Dorsum of the tongue	Present
16	Kelly <i>et al.</i> ³⁰	2006	10 F	Lower lip, labial mucosa	None
17	Walsh <i>et al.</i> ³⁵	2008	16 M	Vermillion border of lip and labial mucosa	Present
18	Jimenez <i>et al.</i> ³²	2008	31 F	Gingiva, buccal mucosa and labial mucosa	Present
19	Azevedo <i>et al.</i> ³⁶	2009	19 M	Buccal and labial mucosa	None
			34 F	Upper lip and labial mucosa	None
			11 F	Vermillion upper lip and labial mucosa	None
			38 F	Buccal mucosa and labial mucosa	Present
			31 F	Lower labial mucosa extending to lateral border of tongue	Present
			28 F	Dorsum of tongue, buccal and labial mucosa	None
20	Present case	2009	60 M	Gingiva and buccal mucosa	None

detected using a lower antibody concentration. Increased IL-6 in the epidermis suggests that IL-6 may be related to the pathophysiology of cutaneous LS characterized by epidermal atrophy.²⁰

The use of a potent topical corticosteroid in the treatment of genital LS is now commonly recognized as effective, with minimal adverse effects.²¹ Topical corticosteroids, especially in the super-potent class, have been found to be useful in genital lichen sclerosis in both sexes and in all age groups.²² A variety of destructive procedures have been reported to be of benefit, although follow-up studies often do not show the same efficacy as original pilot reports. Cryotherapy of affected genital lesions is also reported to reduce the area involved after one or a series of treatments.²³ Narrow-band UVB, psoralen plus UVA (PUVA), and photodynamic therapy using a photosensitizer with laser light activation are also reported to be anecdotally beneficial by various authors.^{24,25}

Treatment of Oral Lichen sclerosis is usually unnecessary because of its asymptomatic nature, benign behavior, few cosmetic concerns and no evidence of recurrence.³ Topical application of corticosteroids has been reported, the outcome being variable.¹⁰ Literature shows successful treatment of refractory generalized extragenital lichen sclerosis with pulsed high-dose corticosteroids combined with methotrexate.²⁶ Histopathological confirmation of oral LS is necessary to rule out other whitish lesions such as lichen planus and localized scleroderma which require different management.

The association between genital SCC and genital LS is well known. On the vulva, this risk has been evaluated at 14.8% with a relative risk of 246.6.²⁷ Although no cases of malignant change associated with oral LS have been reported, regular long term follow-up is indicated.²⁸

Conclusion

LS is rare in the oral cavity, particularly in the absence of simultaneous cutaneous and genital lesions. Only 7 cases of oral LS have been reported exclusively involving the gingiva. To our knowledge, this is the eighth case to be reported with gingival involvement and the first case to be reported with bilateral involvement of buccal mucosa and gingiva.

References

- Powell JJ, Wojnarowsky F. Lichen sclerosis. *Lancet*. 1999; 353: 1777-1783.
- Meffert JJ, Davis BM, Grimwood RE. Lichen sclerosis. *Journal of Am Acad Dermatol*. 1995; 32: 393-416.
- Jensen T, Worsaae N, Melgaard B. Oral Lichen sclerosis et atrophicus: A case report. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod*. 2002; 94: 702-706.
- Miller RA. Lichen sclerosis et atrophicus with oral involvement. *Arch Dermatol*. 1957; 76: 43-55.
- Ravits HG, Welsh AL. Lichen sclerosis et atrophicus of the mouth. *Arch Dermatol*. 1957; 76: 56-58.
- de Araujo VC, Orsini SC, Marucci G, de Araujo NS. Lichen sclerosis et atrophicus. *Oral Surg Oral Med Oral Pathol*. 1985; 60: 655-657.
- Macleod RI, Soames JV. Lichen sclerosis et atrophicus of oral mucosa. *Br J Oral & Maxillofac Surg*. 1991; 29: 64-65.
- Schulten EA, Starink TM, van der Waal I. Lichen sclerosis et atrophicus involving the oral mucosa: report of two cases. *J Oral Pathol Med*. 1993; 22: 374-377.
- Brown AR, Dunlap CL, Bussard DA, Lask JT. C Lichen sclerosis et atrophicus of the oral cavity: report of two cases. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod*. 1993; 84: 165-170.
- Buajeeb W, Kraivaphan P, Punyasingh J, Laohapand P. Oral lichen sclerosis et atrophicus: a case report. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod*. 1999; 88: 702-706.
- Siar CH, Ng KH. Oral lichen sclerosis et atrophicus: report of case. *J Oral Med*. 1985; 40: 148-150.
- Dalziel K, Reynolds AJ, Holt PJA. Lichen sclerosis et atrophicus with ocular and maxillary complications. *Br J Dermatol*. 1987; 116: 735-737.
- Jimenez Y, Bagan JV, Milian MA, Gavalda C, Scully C. Lichen sclerosis et atrophicus manifesting with localized loss of periodontal attachment. *Oral Diseases*. 2002; 8: 310-313.
- Jaworsky C. Connective tissue diseases. In: Lever's Histopathology of Skin (Elder DE ed), 9th edn. Philadelphia: Lippincott Williams & Wilkins. 2005; 317-319.
- Bushkell LL, Friedrich EG, Jordan RE. An appraisal of routine direct immunofluorescence in vulvar disorders. *Acta Derm Venereol (Stockh)*. 1981; 61: 157-161.
- Dickie RJ, Horne CH, Sutherland HW, Bewsher PD, Stankler L. Direct evidence of localized immunological damage in vulvar lichen sclerosis et atrophicus. *J Clin Pathol*. 1982; 35: 1395-1397.
- Oyama N, Chan I, Neill SM, Hamada T, South AP, Wessagowit V, Wojnarowska F, D'Cruz D, Hughes GJ, Black MM, McGrath JA. Autoantibodies to extracellular matrix protein 1 in lichen sclerosis. *Lancet*. 2003; 362: 118-123.
- Chan, I. The role of extracellular matrix protein 1 in human skin. *Clin Exp Dermatol*. 2004; 29: 52-56.
- Gross T, Wagner A, Ugurel S, Tilgen W, Reinhold U. Identification of TIA-1+ and granzyme B+ cytotoxic T cells in lichen sclerosis et atrophicus. *Dermatology*. 2001; 202: 198-202.
- Romero LI, Pincus SH. In situ localization of interleukin-6 in normal skin and atrophic cutaneous disease. *Int Arch Allergy Immunol*. 1992; 99: 44-49.
- Renaud-Vilmer C, Cavelier-Balloy B, Porcher R, Dubertret L. Vulvar Lichen Sclerosis: Effect of Long-term Topical Application of a Potent Steroid on the Course of the Disease. *Arch Dermatol*. 2004; 140: 709-712.
- Fischer G, Rogers M. Treatment of childhood vulvar lichen sclerosis with potent topical corticosteroid. *Pediatr Dermatol*. 1997; 14: 235-258.
- Stucker M, Grape J, Bechara FG, Hoffmann K, Altmeyer P. The outcome after cryosurgery and intralesional steroid injection in vulvar lichen sclerosis corresponds to postoperative histopathological findings. *Dermatology*. 2005; 210: 218-222.
- Kreuter A, Gambichler T. Narrowband UV-B phototherapy for extragenital lichen sclerosis. *Arch Dermatol*. 2007; 143: 1213.

25. Romero A, Hernandez-Nunez A, Cordoba-Guijarro S, Arias-Palomo D, Borbujo-Martinez J. Treatment of recalcitrant erosive vulvar lichen sclerosis with photodynamic therapy. *J Am Acad Dermatol.* 2007; 57(2 Suppl): S46-47.
26. Kreuter A, Tigges C, Gaifullina R, Kirschke J, Altmeyer P, Gambichler T. Pulsed high-dose corticosteroids combined with low-dose methotrexate treatment in patients with refractory generalized extragenital lichen sclerosis. *Arch Dermatol.* 2009; 145: 1303-1308.
27. Carli P, Cataneo A, De Magnis A, Biggeri A, Taddei G, Giannotti B. Squamous cell carcinoma arising in vulval lichen sclerosis: a longitudinal cohort study. *Eur J Cancer Prev.* 1995; 4: 491-495.
28. Mendonca EF, Ribeiro-Rotta RF, Silva MAGS, Batista AC. Lichen sclerosus et atrophicus of the oral mucosa. *J Oral Pathol Med.* 2004; 33: 637-640.
29. Kaminsky CA, Kaminsky AR, Abulafia J. Liquen escleroso y atrofico de piel y mucosa buccal. *Medicina Cutanea Ibero-Latino-Americana.* 1974; 2: 87-92.
30. Kelly SC, Helm KF, Zaenglein AL. Lichen sclerosis of the lip. *Pediatr Dermatol.* 2006; 23: 500-502.
31. Chaudhry SI, Morgan PR, Neill SM. An unusual tongue, *Clin Exp Dermatol.* 2006; 31: 831-832.
32. Jiménez Y, Gavalda C, Carbonell E, Margarix M, Sarrión G. Lichen sclerosis of the oral mucosa: a case report. *Med Oral Patol Oral Cir Bucal.* 2008; 13: 403-406.
33. Kaur S, Thami GP, Kanwar AJ, Mohan H. Linear oro-facial lichen sclerosis, *Clin Exp Dermatol.* 2002; 27: 467-470.
34. Rajlawat BP, Triantafyllou A, Field EA, Parslew R. Lichen sclerosis of the lip and buccal mucosa. *Clin Exp Dermatol.* 2004; 29: 684-685.
35. Walsh SN, Jorizzo JL, Haverstock C, Sangüeza OP. A linear orofacial macule, *Am J Dermatopathol.* 2008; 30: 194-195.
36. Azevedo RS, Romañach MJ, de Almeida OP, Mosqueda-Taylor A, Vega-Memije ME, Carlos-Bregni R, Contreras-Vidaurre E, López-Jornet P, Saura-Inglés A, Jorge J. Lichen sclerosis of the oral mucosa: clinicopathological features of six cases, *International Journal of Oral and Maxillofacial Surgery.* 2009; 38: 855-860.