Prompt healing of erosive oral lichen planus lesion after combined corticosteroid treatment with locally injected triamcinolone acetonide plus oral prednisolone

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Received 16 December 2011; received in revised form 19 January 2012; accepted 29 January 2012

KEYWORDS
erosive oral lichen planus; local corticosteroid injection; treatment

Background/Purpose: Erosive oral lichen planus (EOLP) is a T-cell-mediated inflammatory disease that is refractory to treat. This study tested whether local injection of triamcinolone acetonide plus oral administration of low- or medium-dose prednisolone could hasten the healing of EOLP lesions.

Methods: In this study, 50 EOLP patients were treated with local injection of Kenacort A (40 mg triamcinolone acetonide once weekly for 3 and 2 weeks for 30 major and 20 minor EOLP patients, respectively) plus oral administration of prednisolone (25–30 mg and 15–20 mg of prednisolone once daily for 2 weeks for 30 major and 20 minor EOLP patients, respectively). The oral administration of prednisolone was tapered to 5 mg per day and stopped in 7 days. Then, the patients were treated with topical Dexaltin (0.1% dexamethasone, once or twice per day) and oral administration of vitamin Bc (one capsule twice daily) thereafter.

Results: After 3-week treatments, the 30 major EOLP patients showed complete response (lack of detectable erosive or ulcerative lesion with absence or regression of reticular or papular OLP) in 27 cases (90%) and partial response (reduction of erosive or ulcerative lesion by at least 30% in diameter with regression of reticular or papular OLP) in 3 cases (10%); and 20 minor EOLP patients demonstrated complete response in 18 cases (90%) and partial response in two cases (10%). However, all the 45 complete response major or minor EOLP patients showed recurrence of erosive or ulcerative lesion after 3–24 (mean 12) months of follow-up.

Conclusion: Prompt and complete healing of the EOLP lesions could be achieved in a relative short period of time after treatment with our protocol. Although complete response EOLP
Introduction

Oral lichen planus (OLP) is a chronic inflammatory oral mucosal disease. Both antigen-specific and nonspecific mechanisms are involved in the pathogenesis of OLP. Antigen-specific mechanisms include antigen presentation by basal keratinocytes and antigen-specific keratinocyte killing by CD8⁺ cytotoxic T lymphocytes. Nonspecific mechanisms include mast cell degranulation and matrix metalloproteinase activation in OLP lesions. An increase in histocompatibility leukocyte antigen (HLA)-DR-positive CD3⁺ cells in both the local lesional tissues and peripheral lymphocytes also indicates T-cell activation in OLP. The above findings suggest that OLP is a T-cell-mediated inflammatory disease.

Clinically, patients with the reticular, papular or plaque type of OLP usually have minor or no symptoms, but patients with erosive OLP (EOLP) often have significant symptoms of pain and a burning sensation at the oral mucosa. Therefore, the most important aim of EOLP treatment is to promote the healing of erosive or ulcerative oral mucosal lesions. This study tested whether local injection of 40 mg triamcinolone acetonide that was dissolved in 2 mL injection water and injected into the submucosa of the erosive or ulcerative OLP lesions at the bilateral posterior buccal or vestibular mucosa (1 mL for each side of lesion). The local injection was performed once weekly for 2 weeks (for major EOLP patients) or 3 weeks (for major EOLP patients). In addition, oral administration of 15–20 mg of prednisolone (for minor EOLP patients) or 25–30 mg of prednisolone (for major EOLP patients) once daily was given to each patient for 2 weeks. The oral administration of prednisolone was tapered to 5 mg per day and stopped in 7 days.

Materials and methods

Subjects

The study group consisted of 50 EOLP patients (seven men and 43 women, age range 29–78 years, mean 54.8 years) without LP of other mucosal or skin surfaces. All the patients were seen consecutively, diagnosed, and treated in the Department of Oral Diagnosis of National Taiwan University Hospital from July 2005 to June 2008. OLP patients with areca quid chewing habit, hypertension, and autoimmune diseases such as systemic lupus erythematosus, rheumatoid arthritis, Sjögren’s syndrome, pemphigus vulgaris, and cicatricial pemphigoid were excluded. In addition, none of the patients had taken any prescription medication for at least 3 months before entering the study. Patients were selected according to the following criteria: (1) a typical clinical presentation of radiating grayish-white Wickham striae or papules combined with erosion or ulceration on the bilateral posterior buccal or vestibular mucosa; and (2) biopsy specimens characteristic of OLP, that is, hyperkeratosis or parakeratosis, a slightly acanthotic epithelium with liquefaction degeneration of the basal epithelial cells, a pronounced band-like lymphocytic infiltrate in the lamina propria, and the absence of epithelial dysplasia.

In this study, 50 EOLP patients were treated with local injection of Kenacort A (40 mg triamcinolone acetonide) once weekly for 3 and 2 weeks for 30 major and 20 minor EOLP patients, respectively) plus oral prednisolone.

Results

In this study, 50 EOLP patients were treated with local injection of Kenacort A (40 mg triamcinolone acetonide) once weekly for 3 and 2 weeks for 30 major and 20 minor EOLP patients, respectively) plus oral prednisolone.
(25–30 mg and 15–20 mg prednisolone once daily for 2 weeks for 30 major and 20 minor EOLP patients, respectively). After the 3-week treatments, the 30 major EOLP patients showed complete response in 27 cases (90%) (Fig. 1) and partial response in three cases (10%); and the 20 minor EOLP patients demonstrated complete response in 18 cases (90%) (Fig. 2) and partial response in two cases (10%) (Table 1). The EOLP patients were then treated with topical Dexaltin once or twice daily and oral vitamin Bc (one capsule twice daily) 3 weeks later. All the 27 complete response major EOLP patients showed recurrence of erosive or ulcerative lesion after 3–24 (mean 12 ± 5) months of follow-up. In addition, all the 18 complete response minor EOLP patients demonstrated recurrence of erosive or ulcerative lesion after 3–24 (mean 12 ± 6) months of follow-up (Table 2). The recurrence EOLP patients were treated with the same protocol (local injection plus oral administration of corticosteroid) as before and the majority of the patients could achieve complete response after receiving the same treatment modality (data not shown).

**Discussion**

This study found that 90% of erosive or ulcerative OLP lesions could show complete regression after 2–3 weeks of treatment with local injection of triamcinolone acetonide plus oral administration of low- or medium-dose prednisolone for 2 weeks. This suggests that a prompt and complete healing of the erosive or ulcerative EOLP lesions can be achieved in a relative short period of 2–3 weeks after treatment with our protocol. However, the EOLP lesion did recur 3–24 (mean 12) months after complete response of the lesion had been achieved. By asking the patients, the recurrence of the EOLP lesions was usually elicited by episodes such as insomnia for a few days, a common cold, a great emotional disturbance, or a sudden disaster within the family.

![Figure 1](image-url) Clinical photographs of a patient with major-type erosive oral lichen planus (EOLP) on the bilateral posterior buccal mucosa. (A and B) Before treatment. (C and D) After one round of local injection of 40 mg triamcinolone acetonide once weekly plus oral administration of 25 mg prednisolone once daily for 1 week, showing partial response of the lesion. (E and F) After two rounds of local injection of 40 mg triamcinolone acetonide once weekly plus oral administration of 25 mg prednisolone once daily for 2 weeks, showing complete healing of the ulcerative lesion with residual reticular-type oral lichen planus.
Corticosteroids have well-documented anti-inflammatory and anti-immune effects. Glucocorticoids suppress the inflammatory response by inhibiting synthesis of the two main inflammatory products, prostaglandins and leukotrienes. Glucocorticoids can inhibit prostaglandin synthesis at the level of both phospholipase A2 and cyclooxygenase isomerase. Furthermore, glucocorticoids are able to prevent the transcription of pro-inflammatory genes, including interleukins (IL) IL-1B, IL-4, IL-5, and IL-8, chemokines, cytokines, granulocyte-macrophage colony-stimulating factor, and tumor necrosis factor-α genes. Glucocorticoids also suppress cell-mediated immunity. They act by inhibiting genes that code for the cytokines IL-1, IL-2, IL-3, IL-4, IL-5, IL-6, IL-8 and interferon-γ, the most important of which is IL-2 which is a potent T cell growth factor. Smaller cytokine production in turn reduces T-cell proliferation. As stated before, OLP is a T-cell-mediated chronic inflammatory oral mucosal disease and corticosteroids have both anti-inflammatory and anti-T cell-mediated immune functions. Therefore, it is easy to understand why local injection and systemic administration of corticosteroid can result in the accelerated healing of erosive and ulcerative oral lesions in EOLP patients.

Conventional EOLP therapies are primarily aimed at healing erosive and ulcerative EOLP lesion and relieving oral mucosal pain and burning sensation. The available treatments for EOLP consist of topical and systemic corticosteroids, retinoids, calcineurin inhibitors such as cyclosporine, tacrolimus and pimecrolimus, as well as...
extracorporeal photochemotherapy. Among these treat-
ment modalities, topical corticosteroids have been used as
the first-line drugs, while systemic corticosteroids are
usually reserved for widespread EOLP or acute exacerba-
tion.\(^1,2\) Topical application of corticosteroids could not
maintain a high local corticosteroid concentration for
a period long enough to promote the healing of erosive and
ulcerative oral lesion. Furthermore, in order to obtain
a high local corticosteroid concentration by oral adminis-
tration of corticosteroid, a large dose of corticosteroid
would need to be given to the patients. Therefore we used
local injection of triamcinolone acetonide to achieve a high
and relatively long-lasting local corticosteroid level in
a short period of time. We suggest that our EOLP treatment
protocol not only hastens the healing of erosive and
ulcerative oral lesion in a short period of 2–3 weeks, but
also frees the EOLP patients from long-term oral mucosal
discomfort and gives a relatively long symptom-free
remission period.

EOLP is a persistent, chronic inflammatory disease that
frequently causes oral mucosal discomfort and is resistant
to treatment. In this study, we used a local injection and
oral administration of corticosteroid treatment protocol to
treat 50 EOLP patients. We found that our treatment
protocol could accelerate the healing of EOLP lesion and
obtain a 90% complete response rate. Although complete
response EOLP lesions recurred after a follow-up period of
3–24 months, EOLP patients did have an average remission
period of 12 months after treatment with our protocol. In
addition, the recurrence EOLP lesion could acquire the
same clinical outcome as before when treated with the
same protocol. Therefore, we suggest that our newly
developed local injection and oral administration of
corticosteroid treatment protocol may be a promising
treatment modality for EOLP in the future.

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