

# Adalimumab in the Management of Cutaneous and Oral Lichen Planus

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*Lichen planus (LP) is a common, chronic, inflammatory dermatosis that may involve the skin as well as oral and genital mucosa. Characterized by distinctive purplish papules often featuring white reticular scale, LP commonly is resistant to treatment. My patient presented with extensive, violaceous, and lacelike whitish lesions on the distal extremities, including the hands and feet, and the vulva. Approximately 10% to 12% of her body surface area (BSA) was involved, and her condition became progressively worse over time, with thick plaques developing on the buccal mucosa and tongue. After several conventional therapies failed, the patient underwent treatment with adalimumab, a tumor necrosis factor (TNF) antagonist. An almost clear response was noted by week 6, and the patient's lesions remained almost fully resolved after week 22. Additional studies are warranted to investigate the efficacy and safety of adalimumab for the treatment of LP.*

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**L**ichen planus (LP) is a relatively common inflammatory disease of the skin and mucous membranes that displays a heterogeneous clinical presentation. Cutaneous lesions of LP typically present as flat, pruritic, reddish purple papules often covered by a white reticular scale.<sup>1</sup> Oral LP is manifested by asymptomatic, white, reticular lesions that may be accompanied by erythematous, erosive, and

ulcerated lesions that can be extremely painful. The most frequent sites of oral LP involvement are the posterior aspect of the buccal mucosa, tongue, and gingiva.<sup>2</sup> There is no standard therapeutic approach to the management of LP, though a number of treatment options are available.

Although the cause of LP is unknown, it has been suggested that tumor necrosis factor (TNF), a proinflammatory cytokine, may mediate the pathogenesis of LP.<sup>3</sup> Adalimumab, a fully human IgG1 anti-TNF monoclonal antibody, binds to soluble and membrane-bound TNF, thereby blocking TNF activity. We describe a patient with moderate to severe LP who was successfully treated with adalimumab after conventional therapy did not result in disease clearance.

## Case Report

A 52-year-old black woman presented at another dermatology clinic in December 2002 with violaceous papules on the hands and feet, and then developed oral and vaginal lesions approximately 2 months later. She did not report notable pruritus of the cutaneous or oral lesions; however, the lesions in the vaginal area did cause itching. The most aggravating symptoms included thick, violaceous, white plaques on the proximal aspect of the tongue that made swallowing difficult, often triggering a pharyngeal reflex. Furthermore, stress exacerbated the lesions. The estimated body surface area (BSA) involved was 10% to 12%. Skin biopsy results confirmed the diagnosis of LP.

The patient was treated at the other dermatology clinic for the next 4 years before coming to my office. During that time, she frequently received systemic corticosteroids (prednisone 40 mg once daily), which was the only treatment that improved the severity of the thick LP lesions on the tongue that caused dysphagia and triggered the pharyngeal reflex. On many occasions she was given

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betamethasone suspension intramuscular injections with 15-day steroid tapers or triamcinolone acetonide intramuscular injections to quickly resolve flares of the oral lesions. Triamcinolone acetonide in dental paste proved partially effective in treating the vaginal lesions and the ulcerated lesions on the buccal mucosa. The cutaneous lesions on the distal extremities were treated with several different Class I and Class II topical steroids and intralesional injections of triamcinolone acetonide (5 mg/mL). These lesions responded favorably but would quickly reflare, making treatment frustrating and difficult for the patient. Oral methotrexate therapy also was attempted, beginning with tablets of 7.5 mg weekly. Only slight improvement in the cutaneous lesions was observed and methotrexate treatment was discontinued after 5 months of use (3 months on a 22.5-mg weekly dosage).

When the patient presented at my clinic in August 2006, she had steroid facies and truncal obesity, classic symptoms of chronic systemic steroid use. She was concerned about the sequelae of long-term systemic steroid use and wanted to explore other treatment options.

The patient's concurrent medical conditions included hypercholesterolemia, type 2 diabetes mellitus, and depression treated with atorvastatin calcium, metformin hydrochloride, and venlafaxine hydrochloride, respectively. Results of laboratory evaluations including complete blood cell count, comprehensive metabolic panel, thyrotropin, free thyroxine (FT<sub>4</sub>), C-reactive protein, and erythrocyte sedimentation rate were within reference range. An antinuclear antibody titer was negative.

Use of systemic steroids was tapered and then discontinued, followed by treatment with acitretin (25 mg once daily) for 2 months, but the LP lesions did not respond. Treatment was then initiated with isotretinoin (40 mg once daily) along with topical steroids, triamcinolone acetonide intralesional injections for the cutaneous lesions, and triamcinolone acetonide dental paste for the lesions of the oral and genital mucosa. No systemic steroids were administered during this time. After 2 months at 40 mg once daily, the isotretinoin dosage was increased to 80 mg once daily. During 5 months of this regimen, the patient noted a progressive improvement in the LP lesions but not full resolution. Importantly, she was able to swallow without difficulty during this time and had no problems with pharyngeal reflex. However, on developing elevated concentrations of liver enzymes, the patient was discontinued from isotretinoin treatment and remained solely on topical therapies. Within 2 or 3 weeks, the patient experienced flares of LP lesions on her

distal extremities and in her oral cavity and vaginal area. After 4 to 5 weeks, the severe lesion on the proximal aspect of the tongue reappeared and required systemic steroid treatment (triamcinolone acetonide intramuscular injections and oral prednisone [40 mg once daily]), which proved effective.

Desiring an alternative, steroid-sparing therapy, I initiated adalimumab subcutaneous injections at 40 mg every other week. Because no standardized methods exist for evaluation of severity and improvement of LP,<sup>4</sup> I measured my patient's progress using the physician global assessment, a tool used in psoriasis to measure the severity of disease on a scale ranging from clear (no disease) to very severe.

The patient noticed improvement of her LP after 2 weeks of adalimumab treatment. Lesions on the extremities and the buccal mucosa improved in appearance, and the pruritic vulvar lesions resolved. The severe lesions on the proximal aspect of the tongue began to thin and clear, making it easier for her to swallow without a gagging sensation. By week 4, the patient demonstrated a 50% reduction in BSA involvement as well as oral lesions. An almost clear response was noted by week 6, and complete clearance including lesions of the oral mucosa was observed at week 8.

The patient experienced 3 minor mucocutaneous flares (weeks 14, 18, and 22) that were stabilized with low-dosage oral steroids, betamethasone suspension intramuscular injections, and topical medications. The flares occurred during times of severe mental and emotional stress and once when she cut her tongue. In these instances, the number of lesions on the distal extremities increased and the lesions on the proximal aspect of the tongue re-emerged. However, the lesions resolved and the patient achieved an almost clear response after each flare. Adalimumab treatment helped to maintain control of her LP better than any prior therapy.

The treatment benefit of adalimumab reached a plateau with an almost clear response at week 22. The patient's LP had almost fully cleared and affected BSA was 2% to 3%. The vulvar lesions completely resolved and the number of lesions on the distal extremities had substantially decreased. The lesions on the oral mucosa resolved almost completely and at times were fully resolved. The patient maintained an almost clear response of both cutaneous and oral LP lesions through and beyond week 50 of adalimumab therapy.

No adverse events were noted during adalimumab treatment. The patient has not experienced serious infections, tuberculosis, congestive heart failure, lymphomas, skin cancers, or solid tumors.

Adalimumab therapy has led to a substantial reduction in her oral and topical steroid use. Her blood glucose concentration is now well-controlled with metformin hydrochloride, and her steroid facies and truncal obesity have lessened. Furthermore, control of LP with adalimumab has permitted her to resume normal activities of daily living, and she has begun an exercise program that has helped with weight loss.

### Comment

Lichen planus is a common inflammatory disorder affecting 1% to 2% of the adult population, with an incidence approximately equal to diseases such as psoriasis.<sup>5,6</sup> Usually occurring in middle-aged adults, LP affects women more frequently than men. As many as two-thirds of patients who present with cutaneous LP are noted to have oral LP lesions.<sup>1</sup> A study by Eisen<sup>2</sup> found that 20% of women with oral LP also had lesions of the genital mucosa.

Lichen planus can be extremely difficult to treat, and therapies for LP often are not curative; rather the primary goal is to alleviate symptoms.<sup>2,4</sup> Recommended therapies for cutaneous LP are topical antipruritics and corticosteroids administered topically, intralesionally, or systemically. Retinoids and immunosuppressive agents such as cyclosporine and methotrexate also have been reported to help clear cutaneous LP.<sup>4,7</sup> Topical and systemic therapies used for oral LP include corticosteroids and a variety of immunosuppressive agents.<sup>2,4,7</sup> Treatment of cutaneous LP can succeed in resolving lesions. Unfortunately, therapies for oral LP yield variable results, often with only transient improvement.<sup>1</sup>

Although the cause of LP is unknown, current data support a T cell-mediated autoimmune mechanism in the pathogenesis of this disease.<sup>6</sup> There is a growing body of evidence implicating TNF as a cytokine that plays a critical role in triggering LP. Increased serum concentrations of TNF have been found in patients with LP compared with healthy volunteers.<sup>3</sup> In a separate study involving immunohistochemical evaluation, 17 of 22 oral LP biopsy specimens showed strong TNF protein expression.<sup>8</sup> Several methods also have demonstrated significantly increased concentrations of TNF receptors in patients with cutaneous LP compared with healthy volunteers ( $P < .02$ ).<sup>9</sup> Taken together, these data support the hypothesis that TNF ligand-receptor interactions play an important role in the induction or perpetuation of the pathogenesis of LP.

Adalimumab is a fully human IgG1 monoclonal antibody targeted against TNF. It binds to soluble and membrane-bound TNF, thereby blocking TNF activity. Adalimumab is approved for the treatment of rheumatoid arthritis, juvenile idiopathic arthritis,

psoriatic arthritis, ankylosing spondylitis, Crohn disease, and plaque psoriasis in the United States, Europe, and elsewhere. Small case studies have reported the off-label use of other TNF antagonists or T cell-modulatory biologics in the treatment of LP.<sup>10,11</sup>

Patients with moderate to severe psoriasis who underwent treatment with adalimumab for 16 weeks reported significantly greater improvements in pain, quality of life, vitality, social functioning, and mental health than those receiving placebo ( $P < .001$ ).<sup>12,13</sup> Prior to adalimumab treatment, our patient with LP had depression and frequently experienced dysphagia and pharyngeal reflex because of the thick extensive lesions on the buccal mucosa and the proximal aspect of the tongue. Patients with oral LP are known to exhibit greater degrees of anxiety and a greater incidence of depression than the general population.<sup>14</sup>

This case demonstrates that adalimumab was effective for this patient with moderate to severe LP. Her symptoms remained almost fully resolved following more than 1 year of this TNF antagonist therapy. Importantly, adalimumab has substantially reduced her exposure to systemic steroids.

Adalimumab may be a promising biologic treatment option for patients with LP who have failed conventional therapies. I recognize that my patient's response is anecdotal and that her LP may have improved spontaneously or because of prior therapies she received. Additional studies involving multiple patients are necessary to investigate the efficacy and safety of adalimumab for the treatment of patients with cutaneous, oral, and genital forms of LP.

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### REFERENCES

1. Rogers RS 3rd, Eisen D. Erosive oral lichen planus with genital lesions: the vulvovaginal-gingival syndrome and the peno-gingival syndrome. *Dermatol Clin*. 2003;21:91-98.
2. Eisen D. The clinical manifestations and treatment of oral lichen planus. *Dermatol Clin*. 2003;21:79-89.
3. Erdem MT, Gulec AI, Kiziltunc A, et al. Increased serum levels of tumor necrosis factor  $\alpha$  in lichen planus. *Dermatology*. 2003;207:367-370.
4. Cribier B, Frances C, Chosidow O. Treatment of lichen planus. an evidence-based medicine analysis of efficacy. *Arch Dermatol*. 1998;134:1521-1530.
5. Eisen D, Carozzo M, Bagan Sebastian JV, et al. Number V oral lichen planus: clinical features and management. *Oral Dis*. 2005;11:338-349.

6. Sugerman PB, Savage NW. Oral lichen planus: causes, diagnosis and management. *Aust Dent J.* 2002;47:290-297.
7. Goldblum OM. Lichen planus. *Skinmed.* 2002;1:52-53.
8. Sklavounou A, Chrysomali E, Scorilas A, et al. TNF- $\alpha$  expression and apoptosis-regulating proteins in oral lichen planus: a comparative immunohistochemical evaluation. *J Oral Pathol Med.* 2000;29:370-375.
9. Simon M Jr, Gruschwitz MS. In situ expression and serum levels of tumour necrosis factor  $\alpha$  receptors in patients with lichen planus. *Acta Derm Venereol.* 1997;77:191-193.
10. Sheth N, Bull R, Cerio R, et al. Fatal erosive lichen planus. *Br J Dermatol.* 2006;155:1075-1076.
11. Böhm M, Luger TA. Lichen planus responding to efalizumab. *J Am Acad Dermatol.* 2007;56(suppl 5):S92-S93.
12. Revicki DA, Willian MK, Menter A, et al. Impact of adalimumab treatment on patient-reported outcomes: results from a phase III clinical trial in patients with moderate to severe plaque psoriasis. *J Dermatolog Treat.* 2007;18:341-350.
13. Revicki D, Willian MK, Saurat JH, et al. Impact of adalimumab treatment on health-related quality of life and other patient-reported outcomes: results from a 16-week randomized controlled trial in patients with moderate to severe plaque psoriasis. *Br J Dermatol.* 2008;158:549-557.
14. Allen CM, Beck FM, Rossie KM, et al. Relation of stress and anxiety to oral lichen planus. *Oral Surg Oral Med Oral Pathol.* 1986;61:44-46.