

# Lichen Planopilaris: A Case Report and Therapeutic Management Review

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## Abstract

*Lichen planopilaris is a chronic lymphocytic cicatricial alopecia with an unknown pathophysiology. The therapeutic management of lichen planopilaris is challenging due to the high relapse rate and heavy psychological burden on the patient. Herein, we highlight a case of a 40-year-old female with a 20-year history of biopsy-proven lichen planopilaris, and we discuss her tortuous course of treatment regimens.*

## Introduction

Lichen planopilaris (LPP) is a chronic, scarring alopecia that predominantly affects females between the ages of 40 and 60 years.<sup>1</sup> Classically, the clinical presentation of LPP manifests with atrophic polygonal patches of alopecia with acuminate hyperkeratotic follicular papules and perifollicular erythema.<sup>2</sup> Histopathologic diagnosis is confirmed with an interface, lichenoid infiltrate involving the infundibulum and isthmus, in combination with a “squamatized” basal layer, Max Joseph spaces and interfollicular changes of lichen planus.<sup>3</sup> Due to the cicatricial and recalcitrant nature of LPP, an extensive therapeutic ladder has evolved in the literature.

## Case Report

A 40-year-old female presented to the clinic with a 20-year history of redness and flaking of the scalp. The patient reported previous biopsies, which revealed both lichen planopilaris and folliculitis. She had previously tried numerous topical corticosteroid solutions, suspensions and oils. In addition, her previous dermatologist had utilized intralesional triamcinolone 5 mg/cc injections, systemic corticosteroids, topical tacrolimus, oral plaquenil and oral cyclosporine, all without improvement. The patient complained



Figure 1

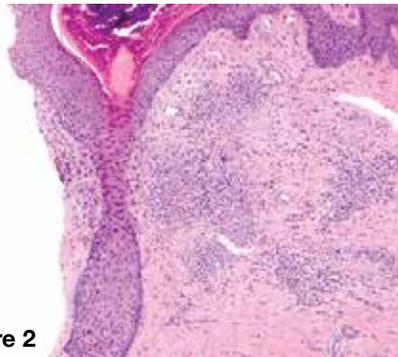


Figure 2

of chronic pruritus despite these numerous treatment regimens.

At the time of initial presentation, physical examination demonstrated diffuse erythema of the scalp with perifollicular scaling (Figure 1). Two 4 mm punch biopsies were obtained from the right vertex of the scalp, and the findings revealed scarring alopecia with mid isthmic fibroplasia consistent with lichen planopilaris (Figure 2). We initially started the patient on a taper of oral methylprednisolone in combination with intralesional triamcinolone 5 mg/cc without improvement. The patient was then started on methotrexate, which was incrementally increased up to 15 mg weekly, in combination with clobetasol scalp solution five days a week. The patient did not respond to a three-month trial of methotrexate 15 mg weekly, at which time we obtained blood work to initiate treatment with 1 gram of mycophenolate mofetil twice daily. After two months of mycophenolate mofetil treatment, she reported symptomatic improvement and cessation of further hair loss. However, after completing four months of mycophenolate mofetil therapy, the patient again started complaining of uncontrollable scalp pruritus. Upon re-biopsy of the mid scalp, the histopathology demonstrated changes consistent with lichen simplex chronicus and resolution of the lichen planopilaris.

## Discussion

Though the pathophysiology of LPP is unclear, it appears to be a lymphocyte-predominant inflammatory process. Proposed therapeutic management of LPP utilizes various medications

with and without inflammatory targets. Specific therapies aimed at reducing inflammation in the disease include corticosteroids, calcineurin inhibitors, antimalarials, immunosuppressants, antimetabolites, and antibiotics.<sup>4</sup> Other proposed therapies targeting non-inflammatory disease components include oral retinoids, peroxisome proliferator activated receptor-gamma (PPAR-gamma) agonists, and minoxidil.<sup>4,5</sup>

A therapeutic ladder for LPP has evolved within the literature due to the condition's recalcitrant nature. Opinions regarding the order of stepwise therapeutics vary somewhat from study to study. Similarly, treatment results differ significantly between studies, likely accounting for the variation in opinion regarding treatment order.

### First-line Therapy

Mid- to high-potency topical corticosteroids with or without concomitant use of intralesional corticosteroids is generally accepted as first-line therapy for LPP. Reported efficacy of topical corticosteroid treatment, though not statistically significant, varies from disease resolution in 66% of patients and improvement in 70% of patients to a fair-to-good response in 83% of patients.<sup>1,6,7</sup> The length of treatment and taper duration of topical corticosteroid ranged from fewer than 90 days to seven months within the various studies.<sup>1,4</sup> Unfortunately, relapse rates following topical steroid cessation were reported to be as high as 80%.<sup>4</sup> Concomitant monthly intralesional corticosteroid injections of triamcinolone acetonide up to 10 mg/mL are recommended to further decrease severe inflammation.<sup>4</sup> Even in light of the high relapse rate, topical and intralesional corticosteroids are an ideal first-line treatment because they have few adverse effects when used correctly. There is limited data regarding LPP treatment with other topical therapeutics including calcineurin inhibitors.

### Second-line Therapy

Recommended second-line therapy for LPP varies greatly in the literature and primarily includes systemic corticosteroids, immunosuppressants, and antimetabolites. Systemic corticosteroids have been widely recommended and used with good results as acute therapy or as a bridge to other immunosuppressive therapy. Megerhan et

al. reported improvement in 82% of patients with the use of oral corticosteroids.<sup>6</sup> As with topical steroids, a very high relapse rate is associated with systemic corticosteroid treatment taper and cessation.<sup>4</sup> Unfortunately, long-term use of systemic corticosteroids is limited by the associated side-effect profile.

Steroid-sparing immunosuppressants including cyclosporine and hydroxychloroquine have been suggested as second-line options for the treatment of LPP. Cyclosporine therapy is recommended in the literature as a second- or third-line treatment option, with reports of a 77% treatment success rate.<sup>4</sup> Optimal dosing of cyclosporine was reported as 4 mg/kg/day to 5 mg/kg/day for three to six months.<sup>4</sup> The associated side-effect profile may warrant exhaustion of other treatment options prior to initiation of cyclosporine treatment. Hydroxychloroquine 400 mg/day is also often used as a treatment for LPP that does not respond to topical corticosteroids.<sup>4</sup> In the literature, reported results achieved using hydroxychloroquine are inconsistent, varying dramatically between studies. Chiang et al. reported statistically significant ( $p < 0.001$ ) efficacy of hydroxychloroquine use after six and 12 months of treatment, whereas Assouly et al. reported little success following six months of hydroxychloroquine therapy in 12 patients.<sup>4,8</sup>

Antimetabolite therapy with mycophenolate mofetil has been shown to be effective in the treatment of LPP.<sup>9</sup> Cho et al. showed that six months of mycophenolate mofetil therapy significantly decreased ( $p < 0.005$ ) the signs and symptoms of LPP in 83% of patients who had previously failed other therapies.<sup>10</sup> Interestingly, of the 12 patients in the study, 11 had previously failed treatment with hydroxychloroquine.<sup>10</sup> These patients received 0.5 mg mycophenolate mofetil twice daily for four weeks and then 1 mg twice daily for 20 weeks or more.<sup>10</sup> Review of data has shown that mycophenolate mofetil is associated with fewer side effects, including lower risk of end-organ damage and cancer, as compared to cyclosporine, although further investigation is needed.<sup>10,11</sup> We believe that due to the relatively benign side-effect profile and general tolerability, mycophenolate mofetil should be considered the treatment of choice for recalcitrant LPP.

### Third-line Therapy

For recalcitrant LPP, other therapies may be considered, including oral retinoids, tetracycline, methotrexate, and 5-alpha reductase inhibitors. Oral retinoids have been utilized for treatment of LPP with varying success. Spencer et al. reported 67% improvement in patients taking acitretin, whereas Assouly et al. reported no improvement and worsening of the clinical disease.<sup>4,12</sup> Iatrogenic telogen effluvium has been reported as a side effect of acitretin, thus limiting its use in LPP treatment.<sup>4,13</sup> Oral tetracyclines have been utilized as early treatment in LPP by some practitioners because of its relatively benign side-effect profile. As with other LPP therapies, reports of treatment success vary, ranging from 27% to 90% of patient improvement.<sup>9,12</sup> Additionally,

Cevasco et al. reported statistically significant ( $p = 0.033$ ) improvement with tetracycline therapy.<sup>7</sup> LPP treatment with methotrexate has also been reported in the literature as a second- or third-line option with optimal dosing of 7.5 mg to 20 mg combined with 5 mg folic acid once weekly.<sup>13</sup> Treatment of frontal fibrosing alopecia (FFA), a subtype of LPP, with 5-alpha reductase inhibitors was successful in 44% to 47% of FFA patients.<sup>14,15</sup> It is unclear, though, whether 5-alpha reductase inhibitors are helpful in LPP, as some have postulated different pathogeneses between the diseases.<sup>15</sup>

### Adjunctive Therapy

Supplemental topical corticosteroids in conjunction with systemic therapies may help to reduce the symptoms of LPP.<sup>12</sup> Addition of minoxidil to first- and second-line therapies may be beneficial to regrow hair in telogen arrest and improve overall hair growth.<sup>2,4,9</sup> Also, an oral peroxisome proliferator-activated receptor  $\gamma$  (PPAR $\gamma$ ) agonist, specifically pioglitazone hydrochloride (15mg/day), may be considered for some refractile cases of LPP, as the inflammation associated with LPP is postulated to be due in part to abnormal PPAR $\gamma$  activity.<sup>16,17</sup>

Randomized, controlled prospective studies for the treatment of LPP are needed to further streamline clinical data for accurate classification of this disease entity and its optimal treatment recommendations. Additionally, the need for streamlining data between studies is imperative for better comparability.<sup>18</sup> Use of a standardized grading system, like the Lichen Planopilaris Activity Index scoring system (LPPAI), among studies will, ideally, remove some degree of subjectivity from grading results. Though not purely objective, the LPPAI will provide for some level of continuity between LPP studies.<sup>8,9</sup>

### Conclusion

Treatment of LPP remains a challenge due to its recalcitrant nature, unclear pathophysiology, and lack of prospective double-blinded studies. The clinical data regarding medication efficacy in LPP is inconsistent and difficult to compare between studies. Ideally, the most effective therapies with the safest side-effect profiles will be utilized as early treatment options in the LPP therapeutic ladder. Mycophenolate mofetil is a well-tolerated and generally safe medication that should be utilized as second-line therapy for the treatment of LPP following the failure of topical and intralesional corticosteroids. Ultimately, randomized and controlled prospective studies with streamlined data reporting are necessary to further the literature in regard to treatment of LPP.

### References

- Chieregato C, Zini A, Barba A, Magnanini M, Rosina P. Lichen planopilaris: report of 30 cases and review of the literature. *Int J Dermatol.* 2003;42:342-5.
- Whiting DA. Cicatricial alopecia: clinico-pathological findings and treatment. *Clin Dermatol.* 2001;19:211-25.

- Sperling LC. Scarring alopecia and the dermatopathologist. *J Cutan Pathol.* 2001;28:333-42.
- Assouly P, Reygagne P. Lichen Planopilaris: Update on Diagnosis and Treatment. *Semin Cutan Med Surg.* 2009;28:3-10.
- Spring P, Spanou Z, de Viragh PA. Lichen Planopilaris treated by the peroxisome proliferator activated receptor- $\gamma$  agonist pioglitazone: Lack of lasting improvement or cure in the majority of patients. *J Am Acad Dermatol.* 2013;69:830-2.
- Mehregan DA, Van Hale HM, Muller SA. Lichen planopilaris: clinical and pathologic study of forty-five patients. *J Am Acad Dermatol.* 1992;27:935-942.
- Cevasco NC, Bergfeld WF, Remzi BK, de Knott HR. A case-series of 29 patients with lichen planopilaris: The Cleveland Clinic Foundation experience on evaluation, diagnosis, and treatment. *J Am Acad Dermatol.* 2007;57:47-53.
- Chiang C, Sah D, Cho BK, Ochoa BE, Price VH. Hydroxychloroquine and Lichen Planopilaris: Efficacy and introduction of Lichen Planopilaris Activity Index scoring system. *L Am Acad Dermatol.* 2010;62:387-92.
- Sperling LC, Nguyen JV. Commentary: Treatment of lichen planopilaris; Some progress but a long way to go. *J Am Acad Dermatol.* 2010; 62:398-401.
- Cho BK, Sah D, Chwalek J, Roseborough I, Ochoa B, Chiang C, Price VH. Efficacy and safety of mycophenolate mofetil for lichen planopilaris. *J Am Acad Dermatol.* 2010;62:393-7.
- Buell C, Koo J. Long-term safety of mycophenolate mofetil and cyclosporine: a review. *J Drugs Dermatol.* 2008;7:741-8.
- Spencer LA, Hawryluk EB, English JC. Lichen Planopilaris: Retrospective Study and Stepwise Therapeutic Approach. *Arch Dermatol.* 2009;145:333-4.
- Manousaridis I, Manousaridis K, Peitsch W, Schneider S. Individualizing treatment and choice of medication in lichen planus: a step by step approach. *J Dtsch Dermatol Ges.* 2013;11:981-991.
- Vano-Galvan S, Molina-Ruiz AM, Serrano-Falcon C, Arias-Santiago S, Rodrigues-Barata AR, Garnacho-Saucedo G, Martorell-Calatayud A, Fernandez-Crehuet P, Grimalt R, Aranegui B, Grillo E, Diaz-Ley B, Salido R, Perez-Gala S, Serrano S, Moreno JC, Jaen P, Camacho FM. Frontal fibrosing alopecia: A multicenter review of 355 patients. *J Am Acad Dermatol.* 2014;70:670-8.
- Racz E, Gho C, Moorman PW, Noordhoek Hegt V, Neumann HAM. Treatment of frontal fibrosing alopecia and lichen planopilaris: a systematic review. *J Eur Acad Dermatol Venereol.* 2013;27:1461-1470.
- Mirmirani P, Karnik P. Lichen planopilaris treated with a peroxisome proliferator-activated receptor agonist. *Arch Dermatol.* 2009;145(12):1363-6.
- Spring P, Spanou Z, De Viragh PA. Lichen planopilaris treated by the peroxisome proliferator activated receptor- $\gamma$  agonist pioglitazone: Lack of lasting improvement or cure in the majority of patients. *J Am Acad Dermatol.* 2013;69(5):830-2.
- Meinhardt J, Stroux A, Lünemann L, Vogt A, Blume-Peytavi U. Lichen planopilaris: Epidemiology and prevalence of subtypes – a retrospective analysis in 104 patients. *J Dtsch Dermatol Ges.* 2014;12(3):229-35.

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