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Topic: Topical and systemic therapy

Current and emerging treatment strategies in Lichen Planopilaris- Recent clinical evidence

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Introduction

Lichen planopilaris (LPP) is the most common primary cicatricial alopecia, predominantly affecting middle-aged women, and often leads to permanent, patchy hair loss with perifollicular erythema and hyperkeratosis. The disease is immune-mediated, likely driven by T-cell targeting of hair follicles, and commonly presents with pruritus, burning or scalp tenderness. Current first-line therapies include high-potency topical corticosteroids and systemic agents such as hydroxychloroquine, yet many patients remain refractory or intolerant. Recent studies have investigated novel pharmacologic approaches and procedural therapies aiming to reduce inflammation, halt progression, and preserve hair.

Materials and Methods

A systematic literature search was conducted in PubMed for studies published between 2021 and 2025 using the terms “lichen planopilaris” AND “treatment” in titles or abstracts. Eligible studies were limited to English-language human studies and included randomized controlled trials, systematic reviews, meta-analyses, and case series reporting extractable efficacy or safety outcomes in LPP. Of 282 records initially identified, 39 studies were screened in full text and 18 met inclusion criteria for qualitative synthesis.

Results

Across the included studies, the majority of participants were women, consistently representing approximately 70–90% of study populations, reflecting the well-established female predominance of LPP in clinical practice. The analyzed studies evaluated a broad spectrum of systemic, topical and procedural therapies. Among systemic treatments, a triple-arm randomized controlled trial demonstrated that adjunctive N-acetylcysteine and pentoxifylline added to topical clobetasol significantly reduced the Lichen Planopilaris Activity Index (LPPAI), with N-acetylcysteine showing the greatest benefit and excellent tolerability. A meta-analysis of six studies comprising 94 patients reported a pooled response rate of 69% with mycophenolate mofetil, predominantly partial responses and mild adverse events in 16.9% of cases. Oral pioglitazone showed LPPAI reductions comparable to clobetasol in a randomized clinical trial and was well tolerated. Janus kinase inhibitors, particularly tofacitinib (as monotherapy or adjunctive therapy), assessed in a randomized placebo-controlled trial and multiple case series, achieved LPPAI improvements ranging from 30% to 94% with minimal transient adverse effects. Interleukin inhibitors demonstrated variable efficacy: ixekizumab, brodalumab, tildrakizumab, and ustekinumab produced partial or complete responses in small series, whereas secukinumab showed limited benefit.Topical therapies, including high-potency corticosteroids, isotretinoin and low-dose oral minoxidil also yielded favorable outcomes. Oral isotretinoin provided greater aesthetic improvement than topical formulations in facial LPP, while low-dose oral minoxidil increased hair shaft thickness in 20 patients and stabilized disease in 27, with manageable side effects. Procedural interventions also showed promise: platelet-rich plasma significantly reduced LPPAI compared with clobetasol in a randomized trial. Light-based therapies improved inflammatory signs and symptoms in small cohorts and autologous adipose tissue injections led to improvements in hair density and disease activity after a single session.

Conclusions

Current evidence supports multiple systemic, topical and procedural treatment options for lichen planopilaris, most of which provide partial disease control with acceptable safety profiles. The marked predominance of female participants across studies further supports the higher prevalence of LPP in women. These findings underscore the need for individualized, multimodal therapeutic strategies in LPP management, while highlighting the necessity for larger, high-quality randomized trials to define optimal treatment algorithms and long-term outcomes.