Case Report

Successful Treatment of Disseminated Tattoo-induced Lichen Planus with Topical Tacrolimus 0.1% Ointment

John Benjamin B. Gochoco

Centro Medico De Santisimo Rosario, Balanga City, Bataan, Philippines

Abstract

Lichen planus (LP) is a chronic, immune-mediated dermatosis, clinically characterized by the classic "5 P's": pruritic, purplish, polygonal, planar papules, and plaques. While typically LP is idiopathic, the Koebner phenomenon may trigger LP by trauma, infections, medications, or foreign substances such as, in this case, tattoo pigments. A 27-year-old Filipino male presented with a 10-month history of intensely pruritic papules and plaques involving both tattooed and adjacent nontattooed regions of the forearms. Lesions initially appeared as papules along the tattoo margins approximately 1 year after tattoo placement and subsequently, spreading to form confluent plaques. Despite multiple courses of high-potency topical corticosteroids, symptoms persisted with progressive lesion thickening. Dermoscopy was performed, but the findings did not conclusively indicate LP; therefore, a biopsy was done to confirm LP. Owing to the extent of involvement and lack of steroid response, the therapy was transitioned to tacrolimus 0.1% ointment applied twice daily. The patient experienced a marked reduction in pruritus, flattening of papules, residual postinflammatory erythema, and no reported adverse effects within 2 weeks. This case highlights the therapeutic potential of topical calcineurin inhibitors in managing LP, particularly in cases where there is resistance to corticosteroids. Tacrolimus 0.1% ointment may present a safe and effective alternative for disseminated or steroid-refractory LP, warranting consideration in clinical practice.

Keywords: Corticosteroids, inflammation, lichen planus, recalcitrant, tacrolimus, tattoo, tattoo pigment, treatment

Address for correspondence: Dr. John Benjamin B. Gochoco, 28 Vatican St., Merville Park Paranaque, Parañaque 1709, Philippines.
E-mail: benjo_g12@yahoo.com

Submitted: 19-08-2025, **Revised:** 15-10-2025, **Accepted:** 22-10-2025, **Published:** 20-12-2025.

Introduction

Lichen planus (LP) is a persistent, immune-mediated dermatosis, typified by pruritic, purplish, polygonal papules and plaques (the "5 P's"). LP can be caused by trauma, drugs, infections, or foreign substances like tattoo inks, which may spread through the Koebner phenomenon.[1,2] Tattoo-induced LP is usually localized; however, rare disseminated presentations affecting large skin areas have also been reported.[3] Topical corticosteroids are the first-line therapy, but in cases of steroid resistance or when large areas are involved, other immunomodulatory treatments may be warranted. Tacrolimus is a topical calcineurin inhibitor and has shown promise in treating mucocutaneous LP.[4] This report describes a case of disseminated tattoo-induced LP refractory to potent topical corticosteroids successfully managed with tacrolimus 0.1% ointment.

Access this article online	
Quick Response Code:	Website: https://journals.lww.com/jpds
	DOI: 10.4103/JPDS.JPDS_33_25

How to cite this article: Gochoco JB. Successful treatment of disseminated tattoo-induced lichen planus with topical tacrolimus 0.1% ointment. J Philipp Dermatol Soc 2025;34:97-100.

Case Report

A 27-year-old Filipino male presented with a 10-month history of pruritic, skin-colored papules and plaques distributed bilaterally across the tattooed and nontattooed regions of both forearms [Figure 1]. The patient recalled having the tattoos approximately 1 year before the onset of the papules and plaques. Lesions began at the tattoo borders and gradually disseminated, involving large contiguous areas within and around the inked skin.

The patient reported intense pruritus and thickening despite using multiple high-potency topical corticosteroids, including clobetasol propionate 0.05% ointment and mometasone furoate 0.1% cream, for a total duration of 2 months. There were no systemic symptoms or mucosal involvement reported. Family and personal histories were noncontributory.

Dermoscopy revealed white intersecting lines and brown dots on a background of pink erythema [Figure 2]; however, these findings were not diagnostic of LP. A 3-mm punch biopsy from the left forearm revealed a very thin layer of sparsely nucleated keratin beneath basket-weave orthokeratosis. The epidermis was acanthotic with basal layer vacuolization, scattered necrotic keratinocytes, and pigment incontinence. Red blood cell exocytosis and prominent extravasation were noted at the dermoepidermal junction [Figure 3a and b]. There was no wedge-shaped hypergranulosis typically seen in classic LP; however, the clinical features were consistent with LP. The final histopathologic impression was interface dermatitis.

Given the disseminated extent and poor response to steroids, the treatment was switched to topical tacrolimus 0.1% ointment applied twice daily. After 2 weeks, the patient reported a marked reduction in pruritus and visible flattening of the lesions. By week four, the papules and plaques had almost completely resolved, leaving only mild postinflammatory erythema [Figure 4]. The

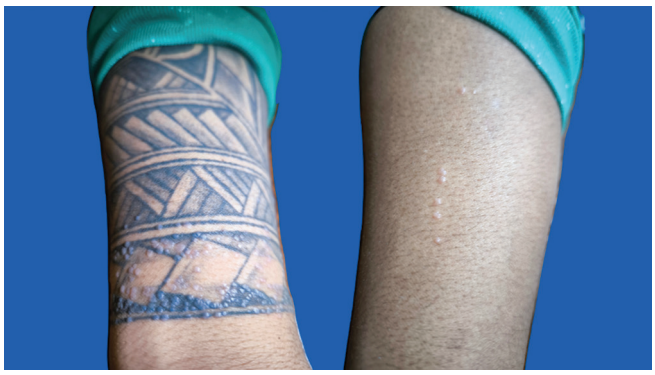

Figure 1: Multiple skin-colored papules and plaques are distributed bilaterally across the tattooed and nontattooed regions of both forearms

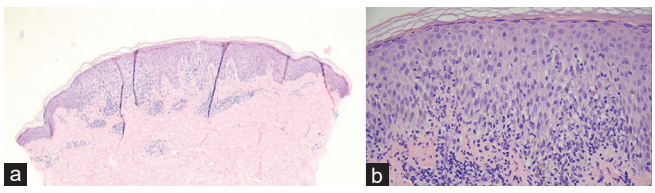

Figure 3: (a) Histopathologic picture with dense dermal infiltrate showing interface dermatitis (H and E, ×10). (b) The epidermis is acanthotic with basal layer vacuolization associated with scattered necrotic keratinocytes and pigment incontinence. There are red cells in exocytosis, and extravasation is prominent in the junction of the epidermis and dermis. (H and E, ×100)

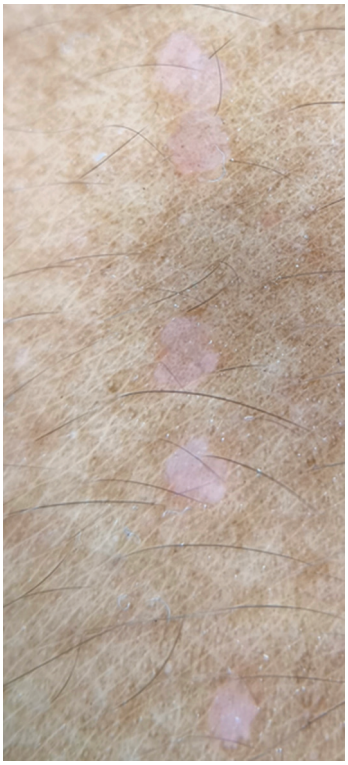

Figure 2: Polarized light dermoscopy of lesions showing white intersection lines and brown dots on a background of pink erythema (original magnification ×10)

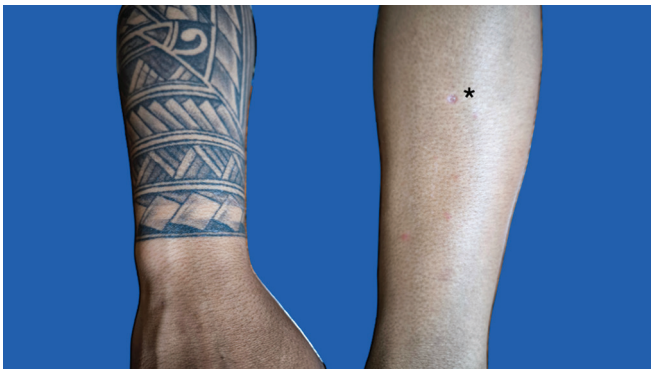

Figure 4: By week 4, the papules and plaques had almost completely resolved, leaving only mild postinflammatory erythema. (*biopsy site)

treatment was well tolerated, and no adverse effects were reported.

Discussion

LP is a chronic, immune-mediated dermatosis clinically characterized by the classic "5 P's": pruritic, purplish, polygonal, planar papules, and plaques.

Tattoo-induced LP is a cutaneous reaction that may arise as a delayed-type hypersensitivity response to tattoo pigments.[5] Black ink, typically contains carbon-based or metal oxide components, has been frequently implicated in lichenoid and granulomatous reactions, while the red pigment is considered the most common.[6,7] Although most tattoo-induced LP cases are localized, dissemination beyond the tattoo margins has been documented, albeit rarely.[3] The pathogenesis of LP involves CD8+ T-cell-mediated cytotoxicity targeting basal keratinocytes, potentially triggered by exogenous antigens in genetically predisposed individuals. The Koebner phenomenon is thought to contribute to LP initiation in tattooed or traumatized skin.[5]

Dermoscopy can aid in the diagnosis of LP. While Wickham striae are the single most important clue, other dermoscopic features of LP are less consistent; thus, clinicopathologic correlation remains essential.[8,9]

The lichenoid reaction was considered as a differential in this case, as it is usually caused by external factors such as tattoo pigments. Clinically and histologically, LP and lichenoid drug or contact reactions may be indistinguishable in many cases.[10] However, the clinical history and presentation were more consistent with LP in this patient.

Topical corticosteroids remain the gold standard for cutaneous LP; however, treatment resistance, risk of skin atrophy, and impracticality over large surface areas limit their use in disseminated cases. Tacrolimus, a macrolide immunosuppressant, inhibits calcineurin-dependent T-cell activation and has been shown to be effective in LP involving both skin and mucous membranes.[4,11] This case demonstrates the efficacy of topical tacrolimus in a rare presentation of disseminated tattoo-induced LP resistant to corticosteroids.[12,13]

Tacrolimus offers a well-tolerated alternative for extensive LP and for other chronic dermatoses, particularly in areas prone to steroid-induced side effects or requiring prolonged therapy. Studies on oral LP recommend tacrolimus 0.1% ointment or cream applied twice daily for 8 weeks, with most patients showing improvement within 1 month,[14,15] similar to our patient, who experienced only postinflammatory erythema. Topical tacrolimus has been shown to carry a low malignancy risk, with only short-term adverse events (e.g., burning, stinging, and transient increase in skin infection) reported during up to 4 years of intermittent use.[16]

Conclusion

Topical tacrolimus 0.1% ointment may offer a safe and effective alternative to corticosteroids in managing disseminated tattoo-induced LP, particularly when topical corticosteroids fail or are contraindicated. Clinicians should consider topical calcineurin inhibitors in challenging cases of LP unresponsive to standard therapy.

Acknowledgment

Special thanks to Dr. Kara Melissa T. Torres-Culala, MD, FPDS, FDSP-PDS, for processing and reading the histopathology of this patient.

Declaration of patient consent

The author certify that he has obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that name and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Arnold DL, Krishnamurthy K. Lichen Planus. StatPearls Publishing. Available from: https://www.ncbi.nlm.nih.gov/books/NBK526126/. [Last accessed on 2019 Mar 21].
2. Hsu HT, Wang SH, Chen YC. Tattoo-associated lichen nitidus. Dermatol Sin 2022;40:249-50.
3. Jacks SK, Zirwas MJ, Mosser JL. A case of a generalized lichenoid tattoo reaction. J Clin Aesthet Dermatol 2014;7:48-50.
4. Lodi G, Manfredi M, Mercadante V, Murphy R, Carrozzo M. Interventions for treating oral lichen planus: Corticosteroid therapies. Cochrane Database Syst Rev 2020;2:CD001168.
5. Rees JL, Matthews JN, Friedmann PS. Delayed type hypersensitivity is abnormal in patients with lichen planus. Arch Dermatol Res 1992;284:132-4.
6. Mathis AK, Johnson BA. An impressive finding of sarcoid-like reaction to tattooing. Cureus 2023;15:e35401.
7. Taaffe A, Wyatt EH. The red tattoo and lichen planus. Int J Dermatol 1980;19:394-6.

8. Szykut-Badaczewska A, Sikora M, Rudnicka L, Kittler H. Dermatoscopy of cutaneous lichen planus – Attempt to translate metaphoric terminology into descriptive terminology. Dermatol Pract Concept 2023;13:e2023174.
9. Weston G, Payette M. Update on lichen planus and its clinical variants. Int J Womens Dermatol 2015;1:140-9.
10. Lukács J, Schliemann S, Elsner P. Lichen planus and lichenoid reactions as a systemic disease. Clin Dermatol 2015;33:512-9.
11. Utz S, Suter VG, Cazzaniga S, Borradori L, Feldmeyer L. Outcome and long-term treatment protocol for topical tacrolimus in oral lichen planus. J Eur Acad Dermatol Venereol 2022;36:2459-65.
12. Campbell FA, Gupta G. Lichenoid tattoo reaction responding to topical tacrolimus ointment. Clin Exp Dermatol 2006;31:293-4.
13. Evans AV. The expanding role of topical tacrolimus in dermatology. Clin Exp Dermatol 2005;30:111-5.
14. Resende JP, Chaves Md, Aarestrup FM, Aarestrup BV, Olate S, Netto HD. Oral lichen planus treated with tacrolimus 0.1%. Int J Clin Exp Med 2013;6:917-21.
15. Byrd JA, Davis MD, Bruce AJ, Drage LA, Rogers RS 3rd. Response of oral lichen planus to topical tacrolimus in 37 patients. Arch Dermatol 2004;140:1508-12.
16. Remitz A, Reitamo S. Long-term safety of tacrolimus ointment in atopic dermatitis. Expert Opin Drug Saf 2009;8:501-6.