Oral tofacitinib effectively treating eruptive and hypertrophic cutaneous lichen planus

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Key words: CLP; cutaneous lichen planus; JAKi; JAK inhibitor; Janus kinase inhibitor; lichen planus; LP; oral tofacitinib.

INTRODUCTION

Cutaneous lichen planus (CLP) is a chronic inflammatory disease typically involving flexor surfaces of the extremities. It is proposed to be a CD8+ T cell-mediated immune mechanism targeting basal keratinocytes.[1] LP epidemiology remains unsettled. It is estimated to occur in less than 1% of the population.[2] CLP manifests as small, itchy, violaceous papules in middle-aged adults, with no strong gender or ethnic predilections.[2-4] It poses a therapeutic challenge due to its relapsing-remitting course.[5] Mounting evidence goes in favor of the therapeutic efficacy of oral tofacitinib, a Janus kinase inhibitor (JAKi), in autoimmune skin diseases,[6,7] including LP.[8,9] Herein, we retrospectively report intractable cases of LP seen in clinic that responded to off-label oral tofacitinib 10 milligrams (mgs) twice daily In light of the adverse effects of JAKis, laboratory monitoring was done at baseline and follow-up (complete blood count (CBC), complete metabolic panel (CMP), glucose, lipid panel, and tuberculosis screening). Patient photographs (clinical images) were obtained via chart review (Figs 1-4).

Abbreviations used:

CLP: cutaneous lichen planus
LP: lichen planus
JAK: Janus kinase

Case 1

A 28-year-old woman presented for a 2-month history of itchy bumps all over her body. They initially erupted on her abdomen as a few patches, then spread everywhere. The patient used topical fluocinonide 0.05% external solution, with some amelioration. A 6-day course of 4 mg methylprednisolone, prescribed by another physician in a dose pack, helped significantly. She denied having any recent viral infection. The patient had a history of polycystic ovarian syndrome treated with spironolactone 100 mg orally daily (OD) and metformin 1000 mg OD, and a 4-year history of scalp psoriasis vulgaris treated with fluocinonide (0.05% external solution) as needed. On physical examination, the patient's entire trunk and arms displayed numerous small erythematous patches with overlying trailing edge of scale. She was diagnosed with pityriasis rosea and instructed to apply triamcinolone (0.1 % cream) twice daily to the affected areas.

A month later, the patient presented with deteriorating pruritic body rash. Physical examination revealed flat-topped erythematous papules and plaques with overlying scale on bilateral wrists (Fig 1, *A*) and thighs (Fig 1, *B*). Her abdomen exhibited many small, erythematous papules (Fig 1, *C*). A shave biopsy of one of the lesions on her right lateral thigh was determined to be consistent with eruptive CLP.

The patient presented for a 2-month follow-up of her diffuse CLP. It was still itchy. She had been on hydroxychloroquine 200 mg OD without significant improvement. Topical and oral steroids weren't helping. Multiple erythematous to violaceous flat-topped papules and plaques were noted on her

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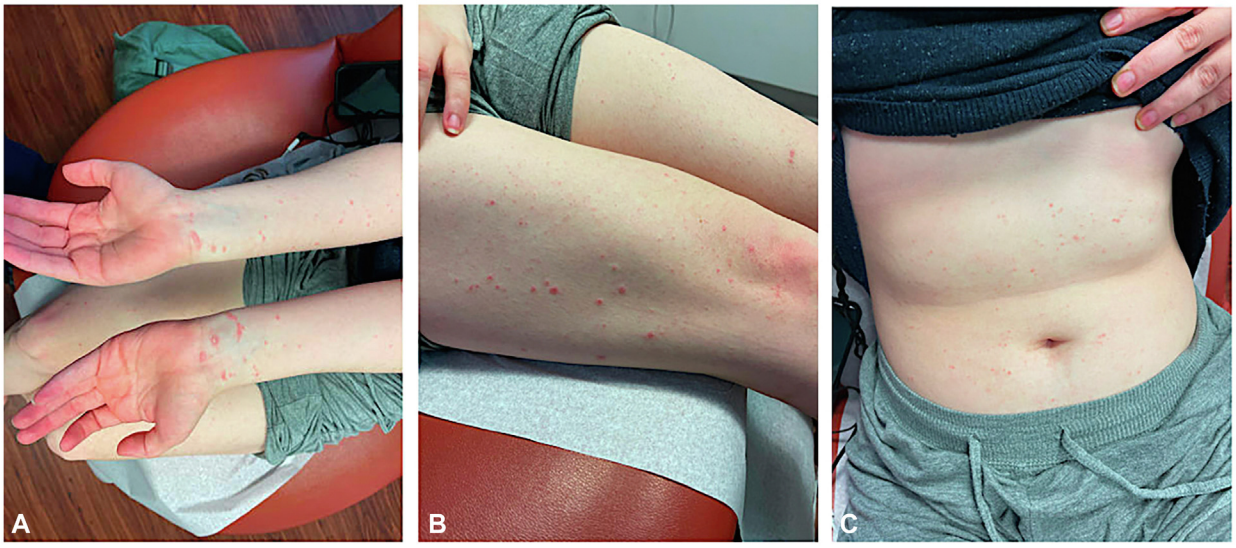

Fig 1. Clinical images of case 1 showing eruptive lichen planus over bilateral wrists (**A**), thighs (**B**), and abdomen (**C**).

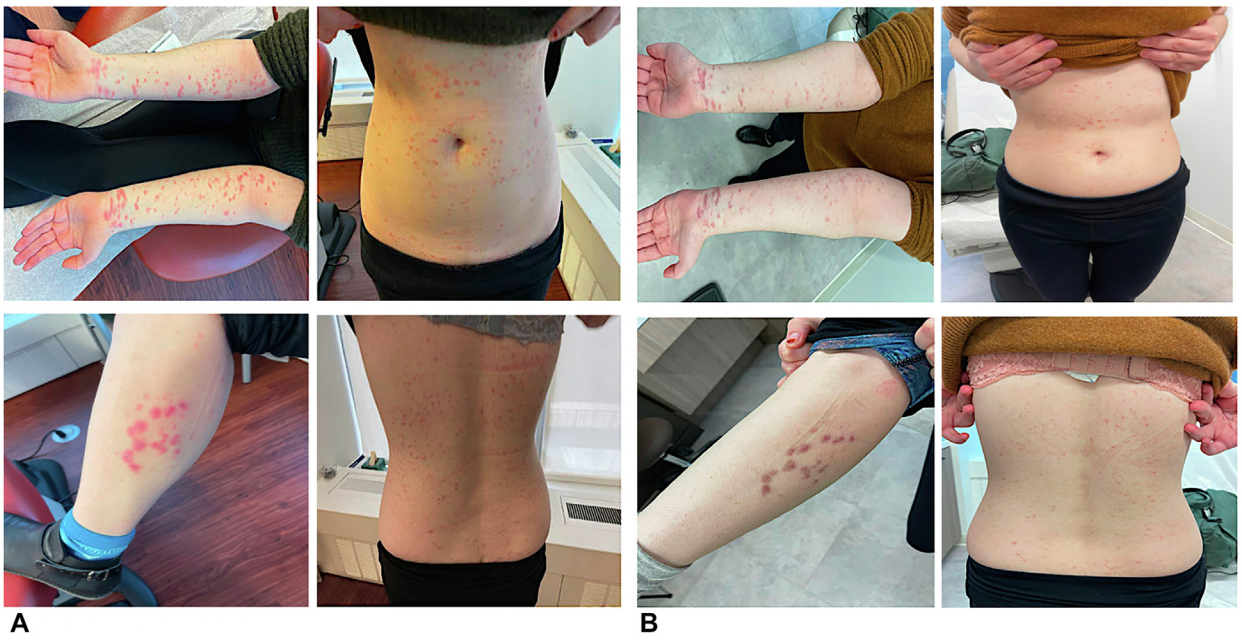

Fig 2. Clinical images of case 1 depicting her *left lower leg*, bilateral flexor forearms, abdomen, and back before (**A**) and after 1 month (**B**) of 10 mg oral tofacitinib twice daily.

bilateral arms and legs, back, abdomen, and chest (Fig 2, *A*). Hence, the patient was started on 10 mg oral tofacitinib BID. After 1 month, her pruritus resolved and her patches significantly improved. There were nonerythematous, scattered, hyperpigmented patches, with fine overlying scale and no active lesions on her left lateral lower leg, bilateral flexor forearms, abdomen, and back (Fig 2, *B*). Treatment response and tolerability are surveilled during follow-up visits. She has been on tofacitinib for 3 months so far, without side effects.

Case 2

A 50-year-old man presented with a 5-year history of biopsy-confirmed diffuse, hypertrophic, pruritic CLP with recurrent flares. He denied any history of hepatitis C virus. He was on rosuvastatin 5 mg OD for hyperlipidemia. Physical examination showed

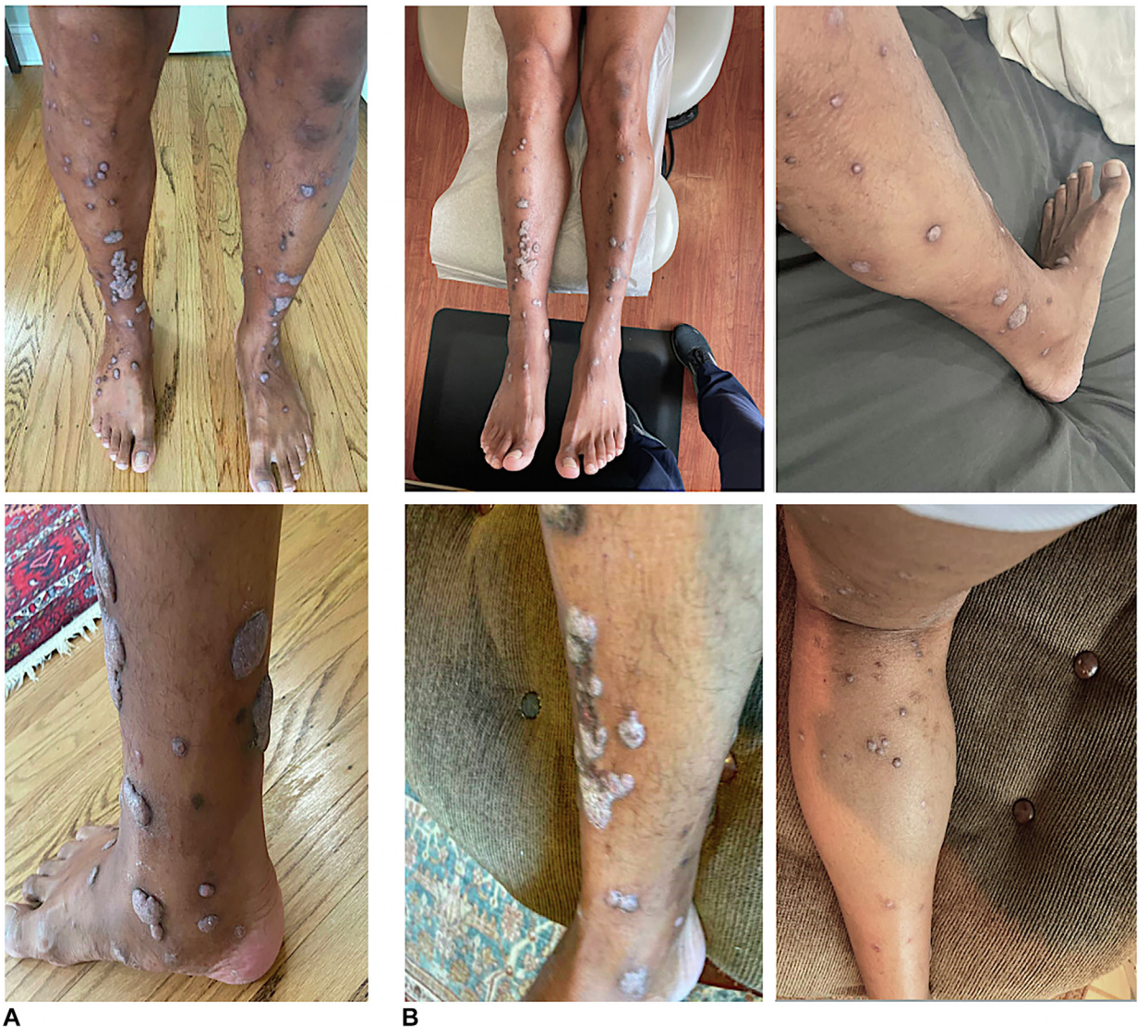

Fig 3. Clinical images of case 2's *lower legs* at presentation (**A**) and after a 3-year course of 40 mg/0.8 mL adalimumab (**B**).

hyperpigmented to violaceous papules over his mid to lower back and bilateral upper and lower extremities (Fig 3, *A*). Nodules were present over affected sites except the upper extremities. Clobetasol cream (0.05 %) and rounds of intralesional steroid (triamcinolone 5 and 10 mg/mL) injections were ineffective. He failed a year of hydroxychloroquine sulfate (200 mg OD for 8 months and twice a day for 4 months after dissemination). Moreover, a 3-year course of 40 mg/0.8 mL adalimumab was inefficacious (he achieved remission, then flared once stopped it, and didn't improve in spite of 3 months of resumption (Fig 3, *B*)). Lipid profile, CBC, and CMP were checked before starting and during adalimumab therapy.

He subsequently presented with LP exacerbation. He had several stubborn, itchy, painful, and thick lesions over his shins and many severely hyperkeratotic flat-topped plaques over his bilateral arms and legs. Therefore, 10 mg oral tofacitinib twice daily was prescribed. After 6 weeks, he noticed drastic improvement and no side effects. Physical examination showed hyperpigmented patches and plaques, which had significantly reduced in size, over bilateral extensor arms and lower legs (Fig 4, *A*).

He presented after 3 months with skin clearance apart from non-pruritic hyperpigmented patches over bilateral lower legs (Fig 4, *B*). He had a 10-day bout of COVID-19 infection, during which he didn't

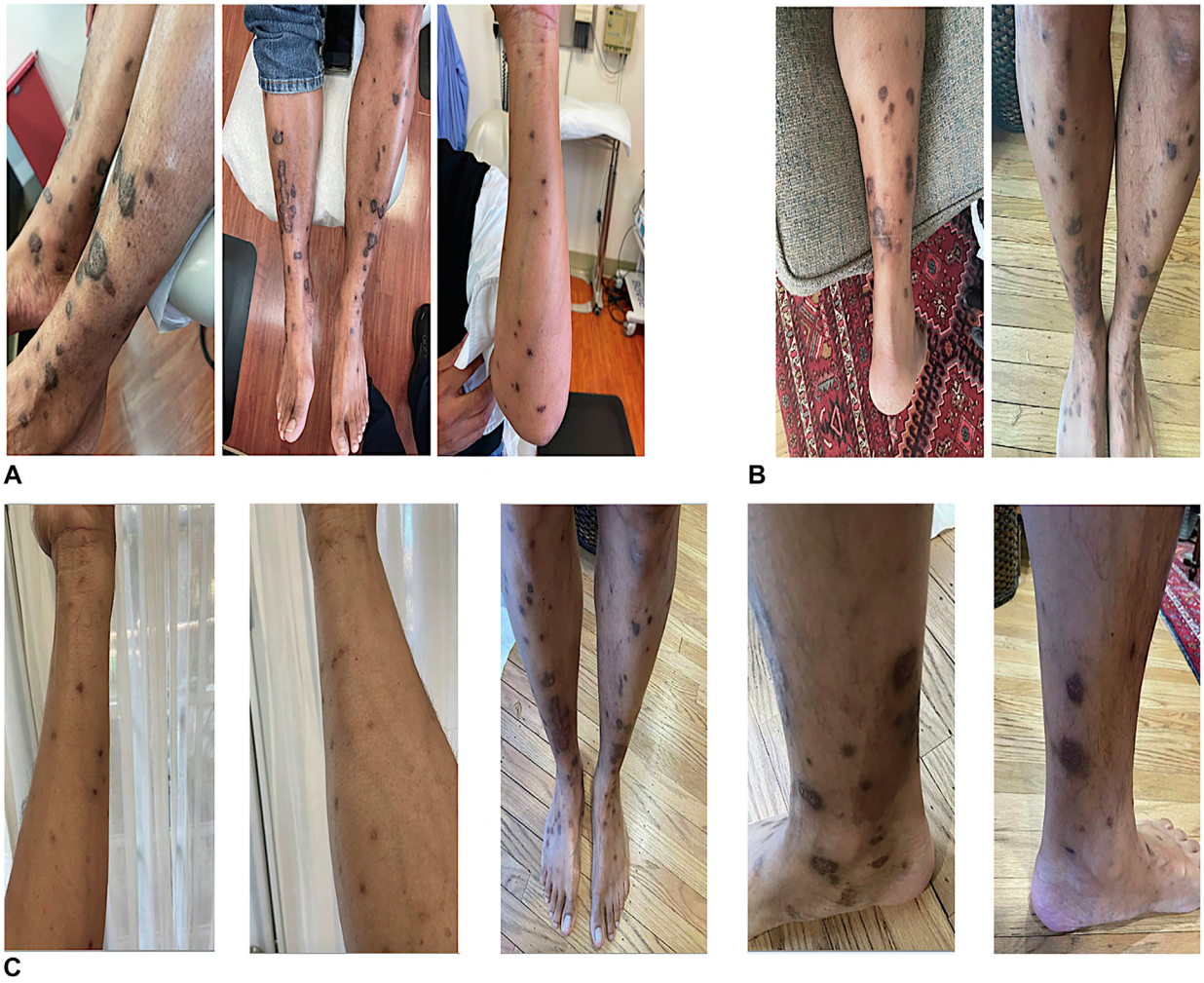

Fig 4. Clinical images of case 2's *lower legs* and *left forearm* after 6 weeks (**A**), 12 weeks (**B**), and 16 weeks (**C**) of 10 mg oral tofacitinib twice daily.

discontinue tofacitinib. He was advised to taper off to 5 mg twice daily and step up the dose (10 mg BID) in case of recrudescence. The patient continues to follow up (Fig 4, *C*) to check disease progress and therapy response and tolerability. He has been on 6 months of well-tolerated treatment.

DISCUSSION

There is insufficient data perusing the therapeutic benefit of JAKis for LP. A recent systematic review outlined the documented literature outcomes of JAKis in LP patients. Complete resolution was achieved in 25% of barcitinib-treated patients, 10% of tofacitinib-treated patients, 16.7% of ruxolitinib-treated patients, and 100% of upadacitinib-treated patients.[10]

Our report examined 2 recalcitrant CLP cases (case 1: eruptive, case 2: hypertrophic) refractory to first line therapies. Skin clearance and symptomatic relief were only demonstrated after the institution of oral tofacitinib (10 mg twice daily), which was well tolerated. Furthermore, Damsky et al[8] illustrated the promising role played by oral tofacitinib (5 mg BID) for LP.[8] Their data suggest that tofacitinib suppresses the JAK-STAT (signal transducer and activator of transcription) signaling pathway in both keratinocytes and lymphocytes.[8]

Our findings, along with the few available studies, provide good clinical evidence for the effectiveness of JAKis in patients with LP. Our propitious results, coupled with the dearth of research, emphasize how crucial it is to design placebo-controlled, double blind, randomized clinical trials to further appraise

the efficacy and safety of JAKis, especially tofacitinib, for the treatment of LP.

Conflicts of interest

None disclosed.

REFERENCES

1. Lehman JS, Tollefson MM, Gibson LE. Lichen planus. *Int J Dermatol*. 2009;48(7):682-694.
2. Le Cleach L, Chosidow O. Clinical practice. Lichen planus. *N Engl J Med*. 2012;366(8):723-732.
3. Schwager Z, Stern M, Cohen J, Femia A. Clinical epidemiology and treatment of lichen planus: a retrospective review of 2 tertiary care centers. *J Am Acad Dermatol*. 2019;81(6):1397-1399.
4. Wagner G, Rose C, Sachse MM. Clinical variants of lichen planus. *J Dtsch Dermatol Ges*. 2013;11(4):309-319.
5. Boch K, Langan EA, Zillikens D, Ludwig RJ, Kridin K. Retrospective analysis of the clinical characteristics and patient-reported outcomes in vulval lichen planus: results from a single-center study. *J Dermatol*. 2021;48(12):1913-1917. https://doi.org/10.1111/1346-8138.16191
6. Almutairi N, Nour TM, Hussain NH. Janus kinase inhibitors for the treatment of severe alopecia areata: an open-label comparative study. *Dermatology*. 2019;235(2):130-136.
7. Zhang L, Guo L, Wang L, Jiang X. The efficacy and safety of tofacitinib, peficitinib, solcitinib, baricitinib, abrocitinib and deucravacitinib in plaque psoriasis - a network meta-analysis. *J Eur Acad Dermatol Venereol*. 2022;36(11):1937-1946. https://doi.org/10.1111/jdv.18263
8. Damsky W, Wang A, Olamiju B, Peterson D, Galan A, King B. Treatment of severe lichen planus with the JAK inhibitor tofacitinib. *J Allergy Clin Immunol*. 2020;145(6):1708-1710.e2.
9. Seiringer P, Lauffer F, Pilz AC, Boehmer D, Biedermann T, Eyerich K. Tofacitinib in hypertrophic lichen planus. *Acta Derm Venereol*. 2020;100(14):adv00220.
10. Abduelmula A, Bagit A, Mufti A, Yeung KCY, Yeung J. The use of Janus kinase inhibitors for lichen planus: an evidence-based review [published online ahead of print, 2023 Feb 23]. *J Cutan Med Surg*. 2023:12034754231156100.