Successful Treatment of Severe Dystrophic Nail Psoriasis With Deucravacitinib

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PRACTICE **POINTS**

- Nail psoriasis can masquerade as other dermatologic conditions, including squamous cell carcinoma of the nail bed and acrodermatitis continua of Hallopeau.
- Nail psoriasis can progress to permanent nail loss if not treated properly, making early recognition and treatment crucial.
- Deucravacitinib, an oral tyrosine kinase 2 inhibitor approved for the treatment of plaque psoriasis, has shown promise as an effective treatment for nail psoriasis in cases that are refractory to standard therapies.

To the Editor:

Psoriasis is a chronic inflammatory skin condition that commonly affects the nail matrix and/or nail bed.[1] Nail involvement is present in up to 50% of patients with cutaneous psoriasis and 80% of patients with psoriatic arthritis.[1] Approximately 5% to 10% of patients with psoriasis demonstrate isolated nail involvement with no skin or joint manifestations.[1] Nail psoriasis can cause severe pain and psychological distress, and extreme cases may cause considerable morbidity and functional impairment.[2,3] Treatment often requires a long duration and may not result in complete recovery due to the slow rate of nail growth. Patients can progress to permanent nail loss if not treated properly, making early recognition and treatment crucial.[1,2] Despite the availability of various treatment options, many cases remain refractory to standard interventions, which underscores the need for novel therapeutic approaches. Herein, we present a severe case of refractory isolated nail psoriasis that was successfully treated with deucravacitinib, an oral tyrosine kinase 2 (TYK2) inhibitor.

A 59-year-old woman presented with a progressive, yellow, hyperkeratotic lesion on the left thumbnail of 2 years' duration. The patient noted initial discoloration and peeling at the distal end of the nail. Over time, the discoloration progressed to encompass the entire nail. Previous treatments performed by outside physicians including topical corticosteroids, calcineurin inhibitors, and 2 surgeries to remove the nail plate and nail bed all were unsuccessful. The patient also reported severe left thumbnail pain and pruritus that considerably impaired her ability to work. The rest of the nails were unaffected, and she had no personal or family history of psoriasis. Her medical history was notable for hypertension, gastroesophageal reflux disease, and osteomyelitis of the right thumb without nail involvement. Drug allergies included penicillin G benzathine, sulfonamides, amoxicillin, and ciprofloxacin.

Physical examination of the left thumbnail revealed severe yellow, hyperkeratotic, dystrophic changes with a large, yellow, crumbling hyperkeratotic plaque that extended from approximately 1 cm beyond the nail plate to the proximal end of the distal interphalangeal joint, to and along the lateral nail folds, with extensive distal onycholysis. The proximal and lateral nail folds demonstrated erythema as well as maceration that was extremely tender to minimal palpation (Figure 1). No cutaneous lesions were noted elsewhere on the body. The patient had no tenderness, swelling, or stiffness in any of the joints. The differential diagnosis at the time included squamous cell carcinoma of the nail bed and acrodermatitis continua of Hallopeau.

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Radiography of the left thumb revealed irregular swelling and nonspecific soft tissue enlargement at the tip of the digit. A nail clipping from the left thumbnail and 3-mm punch biopsies of the lateral and proximal nail folds as well as the horn of the proximal nail fold (Figure 2) were negative for fungus and confirmed psoriasiform dermatitis of the nail.

The patient was started on vinegar soaks (1:1 ratio of vinegar to water) every other day as well as urea cream 10%, ammonium lactate 15%, and petrolatum twice daily for 2 months without considerable improvement. Due to lack of improvement during this 2-month period, the patient subsequently was started on oral deucravacitinib 6 mg/d along with continued use of petrolatum twice daily and vinegar soaks every other day. We selected a trial of deucravacitinib for our patient because of its convenient daily oral dosing and promising clinical evidence.[4,5] After 2 months of treatment with deucravacitinib, the patient reported substantial improvement and satisfaction with the treatment results. Physical examination of the left thumbnail after 2 months of deucravacitinib treatment revealed mildly hyperkeratotic, yellow, dystrophic changes of the nail with notable improvement of the yellow hyperkeratotic plaque on the distal thumbnail. Normal-appearing nail growth was noted at the proximal nail fold, demonstrating considerable improvement from the initial presentation (Figure 3). However, the patient had developed multiple oral ulcers, generalized pruritus, and an annular urticarial plaque on the left arm. As such, deucravacitinib was discontinued after 2 months of treatment. These symptoms resolved within a week of discontinuing deucravacitinib.

While the etiology of nail psoriasis remains unclear, it is believed to be due to a combination of immunologic, genetic, and environmental factors.[3] Classical clinical features include nail pitting, leukonychia, onycholysis, nail bed hyperkeratosis, and splinter hemorrhages.[1,3] Our patient exhibited a severe form of nail psoriasis, encompassing the entire nail matrix and bed and extending to the distal interphalangeal joint and lateral nail folds. Previous surgical interventions may have triggered the Koebner phenomenon—which commonly is associated with psoriasis—and resulted in new skin lesions as a secondary response to the surgical trauma.[6] The severity of the condition profoundly impacted her quality of life and considerably hindered her ability to work.

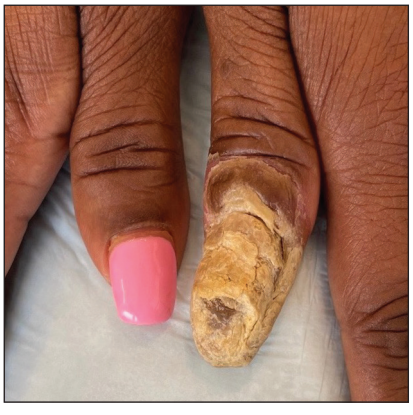

FIGURE 1. On initial presentation, nail psoriasis demonstrated extensive hyperkeratotic dystrophy affecting the entire thumbnail, with thickening and yellow discoloration.

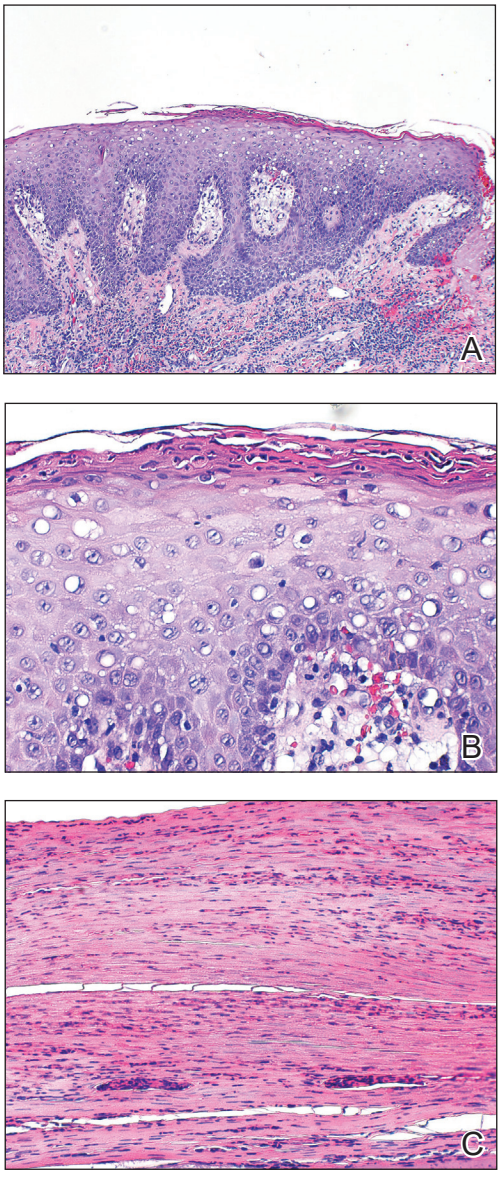

FIGURE 2. A, A punch biopsy of the proximal nail fold revealed focal parakeratosis with neutrophils in the stratum corneum, a decreased granular layer, psoriasiform epidermal hyperplasia, and a dense lymphohistiocytic infiltrate in the dermis (H&E, original magnification ×100). B, Parakeratosis with scattered degenerated neutrophils, absent granular layer, and pallor in the stratum spinosum were noted in the proximal nail fold skin. These findings are diagnostic of psoriasis (H&E, original magnification ×400). C, A markedly thickened stratum corneum with parakeratosis and multiple linear collections of neutrophils were seen in the cornified layer of the proximal nail fold. Munro abscesses are identified in the lower portion of the photomicrograph (H&E, original magnification ×400).

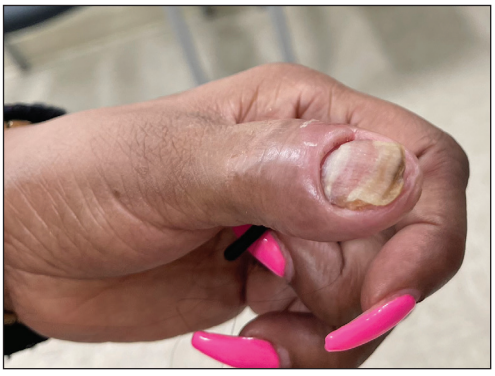

FIGURE 3. After 2 months of treatment with deucravacitinib 6 mg daily, substantial improvement of the nail psoriasis was noted.

Treatment for nail psoriasis includes topical or systemic therapies such as corticosteroids, vitamin D analogs, tacrolimus, and tumor necrosis factor α inhibitors.[1,3] Topical treatment is challenging because it is difficult to deliver medication effectively to the nail bed and nail matrix, and patient adherence may be poor.[2] Although it has been shown to be effective, intralesional triamcinolone can be associated with pain as the most common adverse effect.[7] Systemic medications such as oral methotrexate also may be effective but are contraindicated in pregnant patients and are associated with potential adverse events (AEs), including hepatotoxicity and acute kidney injury.[8] The use of biologics may be challenging due to potential AEs and patient reluctance toward injection-based treatments.[9]

Deucravacitinib is a TYK2 inhibitor approved for treatment of plaque psoriasis.[10] Tyrosine kinase 2 is an intracellular kinase that mediates the signaling of IL-23 and other cytokines involved in psoriasis pathogenesis.[10] Deucravacitinib selectively binds to the regulatory domain of TYK2, leading to targeted allosteric inhibition of TYK2-mediated IL-23 and type I interferon signaling.[4,5,10] Compared with biologics, deucravacitinib is advantageous because it can be administered as a daily oral pill, encouraging high patient compliance.

In the POETYK PSO-1 and PSO-2 phase 3 randomized controlled trials, 20.9% (n=332) and 20.3% (n=510) of deucravacitinib-treated patients with moderate to severe nail involvement achieved a Physician's Global Assessment of Fingernail score of 0/1 compared with 8.8% (n=165) and 7.9% (n=254) of patients in the placebo group, respectively. All patients in these trials had a diagnosis of plaque psoriasis with at least 10% body surface area involvement; none of the patients had isolated nail psoriasis.[4,5]

The phase 3 POETYK PSO-1 and PSO-2 trials demonstrated deucravacitinib to be safe and well tolerated with minimal AEs.[4,5] However, the development of AEs in our patient, including oral ulcers and generalized pruritus, underscores the need for close monitoring and consideration of potential risks of treatment. Common AEs associated with deucravacitinib include upper respiratory infections (19.2% [n=840]), increased blood creatine phosphokinase levels (2.7% [n=840]), herpes simplex virus (2.0% [n=840]), and mouth ulcers (1.9% [n=840]).[11]

Patient education also is a crucial component in the treatment of nail psoriasis. Physicians should emphasize the slow growth of nails and need for prolonged treatment. Clear communication and realistic expectations are essential for ensuring patient adherence to treatment.

Our case highlights the potential efficacy and safety of deucravacitinib for treatment of nail psoriasis, potentially laying the groundwork for future clinical studies. Our patient had a severe case of nail psoriasis that involved the entire nail bed and nail plate, resulting in extreme pain, pruritus, and functional impairment. Her case was unique because involvement was isolated to the nail without any accompanying skin or joint manifestations. She showed a favorable response to deucravacitinib within only 2 months of treatment and exhibited considerable improvement of nail psoriasis, with a reported high level of satisfaction with the treatment. We plan to continue to monitor the patient for long-term results. Future randomized clinical trials with longer follow-up periods are crucial to further establish the efficacy and safety of deucravacitinib for treatment of nail psoriasis.

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