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LETTER TO THE EDITOR

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Successful treatment of acrodermatitis continua of Hallopeau by TYK2 inhibitor with every other day

Dear Editor,

Acrodermatitis continua of Hallopeau (ACH) is a rare variant of localized pustular psoriasis characterized by chronic recurrent eruptions of sterile pustules on the distal fingers and sometimes toes, as well as the nail apparatus (1). Owing to the chronic and relapsing nature of ACH, long-term control is required to prevent adverse outcomes. The pathogenesis of ACH is not yet fully understood; however, mutations in the *IL36RN* gene have been found in some patients [2]. Owing to the rarity of this condition, no standard treatment guidelines exist [3]. We report a case of ACH successfully treated with deucravacitinib, a tyrosine kinase 2 (TYK2) inhibitor that binds to the functional control site of TYK2 and stabilizes the interaction between this site and the catalytic site, thereby inhibiting TYK2 activation induced by interleukin (IL)-23, IL-12, and type I interferon (IFN), and suppressing TYK2-mediated inflammation and immune responses [4].

A 74-year-old man with no personal or known family history of psoriasis had recurrent episodes of redness, swelling, and purulent discharge on one finger of the right hand; fingers 1, 3, and 4 of the left hand; and two toes on the right foot with progressive degeneration of the nails (Figure 1(a,b)). The recurrent pustules on his fingers caused pain accompanied by a burning sensation, with pus originating from the nail beds. The patient reported a pain score of 9 on a visual analog scale (VAS). Biopsy of the nail bed of the affected fingers was performed, leading to a histological diagnosis of ACH (Figure 2(a,b)). The patient quit smoking after his initial visit and underwent tonsillectomy; however, after 2 years, there was still little improvement in the symptoms. The patients underwent puncture drainage of the nail bed during each outpatient visit. Acitretin 20–30 mg/day was discontinued because of ineffectiveness after 10 months of treatment. Cyclosporine (3–5 mg/kg) was discontinued owing to renal dysfunction after 11 months of treatment.

Complete laboratory and instrumental tests, including chest radiography; electrocardiography; QuantiFeron TB-Gold; and complete blood count, complete liver profile, creatinine, and autoantibody tests showed a C-reactive protein (CRP) level of 2.8 mg/L, erythrocyte sedimentation rate (ESR) of 30 mm/h, and hepatitis B core antigen (HBc) antibody positivity. No other abnormalities are observed. We presented the patient with treatment options for pustular psoriasis, and he preferred to be treated with oral medications. He was also concerned about complications, such as the exacerbation of hepatitis.

Based on the test results, we decided to administer deucravacitinib at a dose of 6 mg every other day, owing to its good safety profile as an anti-TYK2 drug. The patient's finger lesions markedly improved from week 8 onward, experiencing a significant reduction in discomfort and pain. At week 12, ESR was 19 mm/h, CRP level was 0.31 mg/L, and the VAS score for pain was 1. HBV DNA levels were not elevated. After 24 weeks of deucravacitinib treatment, the symptoms resolved, especially, the nail lesions almost completely resolved (Figure 3(a,b)).

Phase III studies in Japan have shown good clinical efficacy of deucravacitinib in patients with generalized pustular psoriasis (GPP) [5]. In a single-arm, open-label study in three patients with pustular psoriasis (erythema with pustules on ≥10% of body surface area), 6 mg of the drug was administered once daily for up to 52 weeks. After 16 weeks, all three patients with pustular psoriasis showed improvement in the total and global improvement scores based on the severity criteria for pustular psoriasis put forth by the Japanese Dermatological Association. In the case of our patient, at 16 weeks, the skin and nail lesions were almost completely cleared in all affected fingers, resulting in a consistently improved quality of life that was adversely affected by disease-related impairment of critical functional organs, such as the hands.

The TYK2 inhibitor response in GPP may be facilitated by an unregulated IL-36 signaling pathway. This may be relevant to ACH, given the similarities between GPP and ACH. The TYK2 inhibitor response may lead to the recruitment and activation of neutrophils, which are typically involved in this disease.

To our knowledge, ours is the only documented case in which deucravacitinib use resulted in rapid and complete resolution of both skin and nail manifestations. Our experience suggests that deucravacitinib administered every other day can be an effective therapeutic option for patients with ACH in whom conventional therapies have failed.

Disclosure statement

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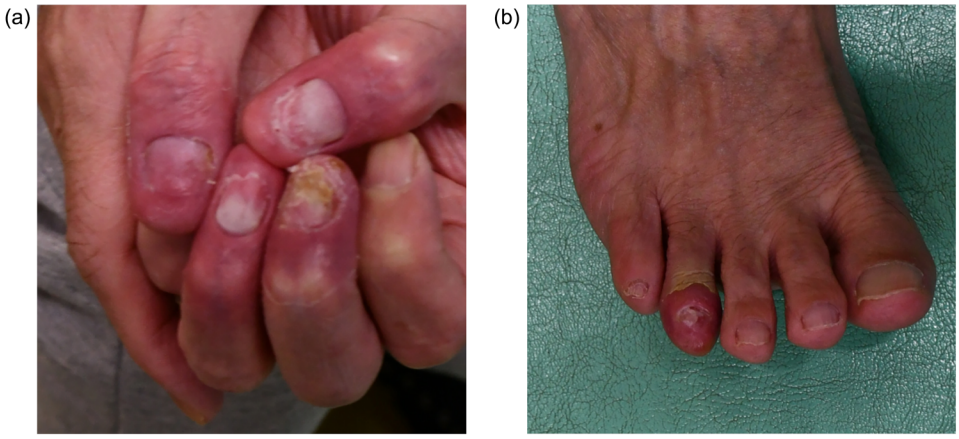

Figure 1. (a,b) Clinical findings on initial presentation. (a) and (b) illustrate painful erythema and swelling of the distal digits, nail hyperkeratosis, and detachment.

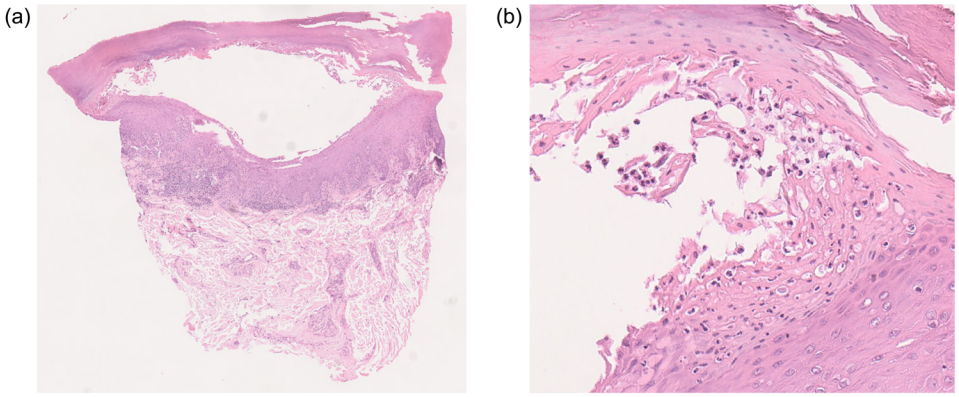

Figure 2. (a) A thick stratum corneum with incomplete keratinization and underlying pustules are seen, and a dense cellular infiltrate is seen in the surrounding area. (b) Numerous neutrophils collect in the upper epidermis from the stratum corneum down to the stratum corneum, forming large pustules. Kogoj's spongiform pustule is formed in the surrounding epidermis.

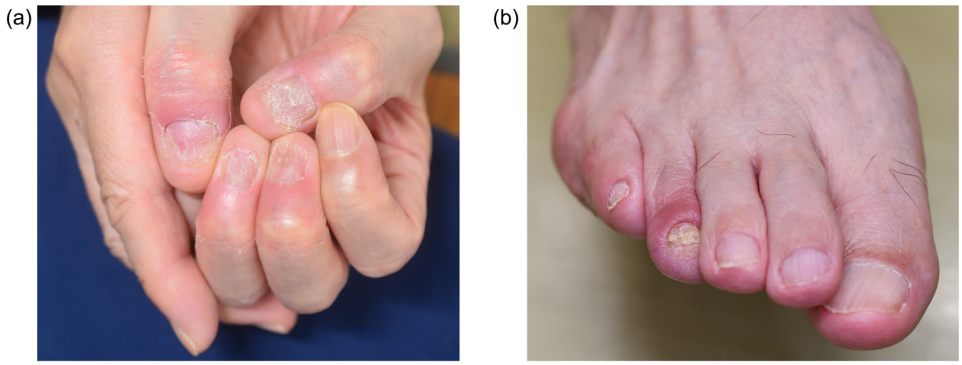

Figure 3. (a,b) Clinical finding after52 weeks of deucravacitinib treatment. (a) and (b) show complete remission of skin and nail disease.

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