

# Palmoplantar pompholyx secondary to interleukin 17A inhibitor therapy for psoriasis: A case series



Melissa Peera, MBBS,<sup>a,b</sup> and Annika Smith, MBBS, MPHTM, FRACP, FACD<sup>a,b</sup>  
Sydney, New South Wales, Australia

**Key words:** adverse reaction; anti-IL-17; biologic; drug reaction; dyshidrotic eczema; eczema; interleukin-17 inhibitor; IL-17 inhibitor; palmoplantar pompholyx; psoriasis; secukinumab.

## INTRODUCTION

Newer antipsoriatic biologics, including interleukin-17 (IL-17) inhibitors have revolutionized the management of moderate to severe psoriasis due to their unprecedented disease control and favorable safety profile. With increased use in the real world, adverse events not previously described in large phase III clinical trials are being recognized. Of interest to dermatologists are those pertaining to the skin.

Ecematous reactions secondary to IL-17 inhibitor therapy used for psoriasis have been increasingly described in the literature,<sup>1,2</sup> including phenotypic forms such as atopic dermatitis-like,<sup>3</sup> flexural dermatitis,<sup>4</sup> periorbital dermatitis/blepharitis,<sup>3</sup> nose dermatitis,<sup>3</sup> and angular cheilitis.<sup>5</sup> Dyshidrotic eczema or palmoplantar pompholyx has also been described as a rarer variant of such ecematous phenotypes.<sup>4,6</sup> Pompholyx dermatitis is characterized by vesicles or bullae on the glabrous skin of the palms and soles.

We describe 2 cases of palmoplantar pompholyx reactions occurring in patients treated with the IL-17 inhibitor secukinumab for their psoriasis.

## CASE SERIES

### Case 1

A 65-year-old Filipino woman with a 20-year history of chronic plaque psoriasis, on a background of diabetic and hypertensive chronic kidney disease, was commenced on secukinumab 300 mg subcutaneous injections every 4 weeks, following standardized loading doses of 300 mg weekly for 4 weeks. She had previously failed etanercept and multiple other non-biologic systemic agents. The

### Abbreviations used:

IL-17: interleukin-17  
Th: t helper

patient had no personal nor family history of atopy. After her 7th week of treatment with secukinumab, she developed a florid and intensely pruritic vesicular eruption over both palms and later on both soles. There were no identifiable irritant or allergic contact factors at play, no preceding infectious symptoms; nor were there any other new medications.

A punch biopsy of the palm revealed marked spongiosis, with intra- and sub-corneal vesicles, and a mixed inflammatory cell infiltrate including eosinophils, consistent with a pompholyx reaction. She demonstrated a suboptimal response to topical 0.05% betamethasone dipropionate ointment and emollient twice daily with the wet-wrap technique. Her chronic kidney disease precluded the addition of systemic agents such as methotrexate or short-term cyclosporine for disease control, and an acute course of prednisolone was deemed inappropriate in the context of her psoriasis and comorbidities, including diabetes. Despite a good response of her whole body chronic plaque psoriasis to secukinumab, with a Psoriasis Area and Severity Index of 75 achieved at week 11 (baseline Psoriasis Area and Severity Index, 28.4; week 11 Psoriasis Area and Severity Index, 5.4), the palmoplantar pompholyx remained symptomatically bothersome, functionally limiting, and treatment resistant, necessitating cessation of secukinumab. The

From the Department of Dermatology, Westmead Hospital, Sydney<sup>a</sup>; and Sydney Medical School, The University of Sydney.<sup>b</sup>

Funding sources: None.

Correspondence to: Melissa Peera, MBBS, Department of Dermatology, Westmead Hospital, Corner Hawkesbury and Darcy Roads, Westmead, NSW 2145, Australia. E-mail: [melissa.peera@sydney.edu.au](mailto:melissa.peera@sydney.edu.au).

JAAD Case Reports 2021;13:46-8.  
2352-5126

© 2021 Published by Elsevier on behalf of the American Academy of Dermatology, Inc. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

<https://doi.org/10.1016/j.jidcr.2021.03.052>

**Table I.** Reported cases of IL-17 inhibitor induced palmoplantar pompholyx in patients treated for psoriasis

Case characteristics	Case 1 <sup>6</sup>	Case 2 <sup>6</sup>	Case 3 <sup>4</sup>	Case 4 <sup>7</sup>	Present case 1	Present case 2
Demographics	52 F	69 F	30 F	44 F	65 F	64 F
Psoriasis type	Guttate psoriasis	PPP	CPP	CPP	CPP	CPP
Biologic naïve	Yes	Yes	No	No	No	Yes
Eczematous/atopic personal history	No	NR	Yes – asthma	Yes – atopic dermatitis	No	No
IL-17i	Secukinumab	Secukinumab	Secukinumab	Secukinumab	Secukinumab	Secukinumab
Duration of IL-17i prior to PPPompholyx	8 months	7 weeks	5 weeks	5 weeks	7 weeks	16 weeks
Histopathology supporting PPPompholyx	NR	NR	Yes	Yes	Yes	NR
Other concurrent eczematous eruption	No	Yes	Yes	Yes	No	No
Treatment of PPPompholyx	NR	NR	NR	Cyclosporin 100 mg bid po and TCS	TCS	TCS
Cessation of IL-17i therapy	Yes	Yes	Yes	Yes	Yes	Yes

*BID*, Twice a day; *CPP*, chronic plaque psoriasis; *F*, female; *IL-17i*, interleukin-17 inhibitor; *NR*, not reported; *PO*, by mouth; *PPP*, palmoplantar psoriasis; *PPPompholyx*, palmoplantar pompholyx; *TCS*, topical corticosteroids.

palmoplantar pompholyx promptly settled within 4 weeks of secukinumab cessation, and the patient had no further recurrences.

### Case 2

The second case was a 64-year-old Caucasian woman, with a 13-year history of chronic plaque psoriasis with some hyperkeratotic palmoplantar involvement. She was biologically naïve prior to commencing secukinumab. She received the same dosing as described for case 1. Four months into treatment, she developed a similar, pruritic palmoplantar vesicular eruption, which was debilitating from a functional and occupational perspective. Again, there were no other identifiable causes or previous personal nor family history of atopy. Similarly, she did not respond to intensive topical steroid therapy with the wet-wrap technique, prompting cessation of secukinumab. Within 1 month of secukinumab cessation her palmoplantar pompholyx completely resolved. She was successfully transitioned to ustekinumab and had no further recurrences of palmoplantar pompholyx at the 1-year follow up.

### REVIEW

A literature search on the Ovid search engine identified 14 published reports on eczematous adverse events in the context of IL-17 inhibitor therapy for psoriasis. These articles describe a total of 47 cases of eczematous eruptions, with only 4

cases describing a palmoplantar pompholyx phenotype.<sup>4,6,7</sup> Of note, all cases occurred in the context of secukinumab treatment, while none have been described with other IL-17 inhibitor agents to date. The remaining features of these cases, including the 2 cases described in the present study, are summarized in [Table I](#).

### DISCUSSION

Psoriasis and eczema are characterized by an imbalance in the T helper (Th)1/Th2 immune response, with Th1 being more prominent in psoriasis and Th2 in eczema,<sup>8</sup> including dyshidrotic eczema.<sup>9</sup> Th1/Th2 immune pathways are closely related, such that when the Th1 response is blocked or decreased, Th2 increases to maintain balance.<sup>8</sup> It is plausible that, as IL-17 inhibitor therapy decreases Th1, there is subsequent shunting to a Th2-dominant immune response, thereby resulting in an eczematous reaction. Some authors hypothesize that the eczematous reactions may constitute a cutaneous paradoxical adverse reaction, as IL-17 cytokines have been implicated in the pathogenesis of eczema.<sup>10</sup> IL-17 also has a role in the mucocutaneous defense against infections. Mouse model studies suggest that IL-17A plays a key role in skin microbiome homeostasis and in regulation of filaggrin expression.<sup>4</sup> It is therefore plausible that IL-17A inhibition may play a role in the pathogenesis of eczematous eruptions.

Our 2 cases describe de novo palmoplantar pompholyx, the severity and treatment resistance of which necessitated cessation of IL-17 inhibitor therapy and switch of biologic class, consistent with the 4 other cases described in the literature (Table D). Supporting features include the temporal relationship with disease onset, absence of other plausible etiologies, and prompt and sustained clinical improvement following treatment withdrawal.

Our report highlights that IL-17 inhibitor therapy should be considered as a causative drug trigger for de novo palmoplantar pompholyx in patients being treated for psoriasis. Dermatologists should be aware of this important cutaneous side effect. Continued real world experience with these biologic agents will enable us to better characterize these cutaneous reactions and potential predictive factors for those at risk.

#### Conflicts of interest

None disclosed.

#### REFERENCES

1. Al-Janabi A, Foulkes AC, Mason K, Smith CH, Griffiths CEM, Warren RB. Phenotypic switch to eczema in patients receiving biologics for plaque psoriasis: a systematic review. *J Eur Acad Dermatol Venereol*. 2020;34(7):1440-1448.
2. Caldarola G, Pirro F, Di Stefani A, et al. Clinical and histopathological characterization of eczematous eruptions occurring in course of anti IL-17 treatment: a case series and review of the literature. *Expert Opin Biol Ther*. 2020;20(6):665-672.
3. Burlando M, Cozzani E, Russo R, Parodi A. Atopic-like dermatitis after secukinumab injection: a case report. *Dermatol Ther*. 2019;32(1):e12751.
4. Lai FYX, Higgins E, Smith CH, Barker JN, Pink A. Morphologic switch from psoriasiform to eczematous dermatitis after anti-IL-17 therapy: a case series. *JAMA Dermatol*. 2019;155(9):1082-1084.
5. Hitaka T, Sawada Y, Okada E, Nakamura M. Recurrent angular cheilitis after secukinumab injections. *Australas J Dermatol*. 2018;59(1):e79-e80.
6. Bose R, Beecker J. Dyshidrotic eczema in two patients on secukinumab for plaque psoriasis: a case report. *SAGE Open Med Case Rep*. 2020;8:2050313X20904561.
7. Blackcloud P, Dupuy E, Kang Y, Smart C, Hsiao J. Bullous acral eruption related to secukinumab. *Dermatol Online J*. 2019;25(6):13030/qt9q7937xb.
8. Eyerich S, Onken AT, Weidinger S, et al. Mutual antagonism of T cells causing psoriasis and atopic eczema. *N Engl J Med*. 2011;365(3):231-238.
9. Abreu-Velez AM, Pinto FJ Jr, Howard MS. Dyshidrotic eczema: relevance to the immune response *in situ*. *N Am J Med Sci*. 2009;1(3):117-120.
10. Leonardi S, Cuppari C, Manti S, et al. Serum interleukin 17, interleukin 23, and interleukin 10 values in children with atopic eczema/dermatitis syndrome (AEDS): association with clinical severity and phenotype. *Allergy Asthma Proc*. 2015;36(1):74-81.