

Application of IL-17A Inhibitors in Psoriasis Complicated by Multiple Infections – Successful Treatment and Insights from a Case of Psoriasis with HIV and Neurosyphilis

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Psoriasis is a chronic immune-mediated inflammatory disease with a recurrent course and multifactorial aetiology. With the advent of targeted therapies for psoriasis, biological agents and small-molecule drugs have helped improve outcomes. However, the clinical management of psoriasis complicated by human immunodeficiency virus (HIV), syphilis and other chronic infectious diseases remains challenging.

We report a case of severe plaque psoriasis with concurrent HIV infection and neurosyphilis. After treatment with secukinumab, an interleukin 17A (IL-17A) inhibitor, the patient achieved complete clearance of psoriasis lesions without exacerbation of HIV infection or neurosyphilis, indicating the favourable clinical efficacy and safety of secukinumab. This case provides clinical evidence for the use of IL-17A inhibitors in patients with psoriasis and concurrent HIV and syphilis infections.

CASE PRESENTATION

A 46-year-old Chinese male had a 20-year history of psoriasis and hepatitis B virus infection. The patient denied a family history of psoriasis or other chronic illnesses. In April 2022, he presented with personality changes and right limb weakness. During hospitalization, the *Treponema pallidum* particle agglutination assay (TPPA) was positive and the rapid plasma reagent (RPR) titer was 1:128. A lumbar puncture confirmed neurosyphilis based on cerebrospinal fluid (CSF) findings. Meanwhile, asymptomatic HIV infection was diagnosed by HIV-RNA and CD4 tests.

The patient received IV aqueous penicillin G (18 million U/day) for 14 days, followed by IM benzathine penicillin G (2.4 million U/week, bilaterally) for 3 weeks (two courses). Simultaneously, antiretroviral therapy (ART) was initiated with Biktarvy (one tablet QD) and Albuvirtide (400 mg QW). After treatment, his personality changes and limb weakness relieved. However, he did not undergo regular follow-ups and voluntarily discontinued ART in January 2023.

In January 2024, re-examination showed a serum syphilis RPR titer of 1:64 without obvious neurological symptoms. However, CSF testing was declined. HIV

viral load had increased to 8.82×10^4 copies/ml, and the psoriasis lesions became exacerbated and generalized. He received one additional course of the anti-syphilis regimen and continued Biktarvy for HIV. Concurrently, he sought treatment for exacerbated psoriasis, which severely impacted his quality of life.

Pre-psoriasis treatment, the patient's Psoriasis Area and Severity Index (PASI) was 14.2 and Dermatology Life Quality Index (DLQI) was 16. Given ongoing anti-syphilis therapy and HAART, oral acitretin (30 mg QD) plus topical halometasone cream (BID) was prescribed to avoid impacting primary infections. With no improvement after 2 weeks, apremilast was titrated to 30 mg BID; combined treatment for 11 weeks yielded a PASI of 13.6. Following anti-syphilis treatment, stable HAART, and normal infection screenings, secukinumab was initiated: 300 mg subcutaneous (SC) at weeks 0, 1, 2, 3, 4, then 300 mg SC every 4 weeks. After 12 weeks, generalized lesions resolved completely with only hyperpigmentation, achieving PASI 100 and DLQI 0 (**Fig. 1**). Twenty-four weeks of consolidation therapy was followed by maintenance dosing (300mg SC every 12 weeks).

To date, the patient has been treated for 80 weeks with sustained lesion clearance and no adverse reactions, neurological symptoms, or serological exacerbation of HIV/syphilis (**Table I**).

DISCUSSION

Psoriasis with chronic infections is often severe and complex. Systemic therapy must avoid exacerbating immunosuppression and worsening chronic infections (1). HIV-related immune dysfunction promotes psoriasis in susceptible individuals, with viral load correlating positively with disease exacerbation (2). Concurrent HIV and syphilis are common due to overlapping risk factors.

Guidelines recommend acitretin or apremilast as first-line therapies for HIV-positive psoriasis patients (3). Biologics, including IL-17A inhibitors, can be cautiously used in HIV-infected patients with moderate-to-severe psoriasis if HIV is adequately treated and monitored (4, 5). Real-world data confirm favourable efficacy, with all patients achieving PASI 75 responses,



Fig. 1. Before treatment, multiple red and dark red plaques with scales were present on the trunk and extremities. Twelve weeks after treatment with secukinumab, the generalized psoriasis lesions had resolved completely, leaving hyperpigmentation.

and stable CD4+ counts and HIV viral loads over 12-month follow-up (6). IL-17A inhibitors have shown efficacy in HIV-positive patients with plaque psoriasis, erythrodermic psoriasis and psoriatic arthritis, with only isolated candidiasis reports and no documented infection reactivation.

Cases of psoriasis complicated with HIV infection and neurosyphilis are extremely rare. Our patient had 20 years of psoriasis before developing neurosyphilis and HIV . After voluntarily discontinuing HAART, his HIV viral load and syphilis titer increased, with generalized psoriasis exacerbation severely impairing his quality of life. He denied new unprotected sexual contact; lesions progressed despite re-administered anti-syphilis treatment combined with HAART. Thus, the lesions were attributed to rapid psoriasis progression due to immune dysfunction from HAART discontinuation rather than syphilis,

requiring targeted treatment. Although there were no recurrent neurological symptoms and no CSF examination was performed, haematological findings indicated that neurosyphilis was not fully controlled. CSF examination prior to psoriasis treatment would have been more accurately assessed his neurosyphilis status. The main limitation is that we cannot confirm neurosyphilis activity before starting secukinumab. Given his complex concurrent infections, initial acitretin plus topical glucocorticoids failed; apremilast was added, but efficacy remained unsatisfactory. Secukinumab was then initiated under monitoring of HIV viral load, CD4+ count, and syphilis titer. Over 80 weeks , complete clearance of psoriatic lesions was achieved 3 months after secukinumab initiation, with no adverse reactions. No neurological recurrence occurred, syphilis titer remained stable, CSF RPR was negative, CD4+

Table I. Laboratory test results related to HIV, syphilis, and hepatitis B

Test time	Syphilis				HIV			Hepatitis B	Other viral tests and T-STOP
	Serum		Cerebrospinal fluid		Blood			Blood	
	TPPA	RPR	TPPA	RPR	WBC (cells/L)	PRO (g/L)	CD4+ (cells/L)	HIV-RNA (copies/mL)	Hepatitis B surface antigen
Time of previous diagnosis	Positive	1:32	Positive	1:2	58×10 ⁶	0.84	300.03	6.69×10 ⁴	
Before secukinumab treatment	Positive	1:64					206.41	8.82×10 ⁻⁴	Negative
After secukinumab treatment	Positive	1:16	Positive	Negative	3×10 ⁶	0.44	643.88	4.32×10 ⁻¹	Negative

Other viral tests include: IgM antibodies against hepatitis A, hepatitis C, hepatitis C antigen, hepatitis D, E and G, Epstein-Barr virus (EBV), and cytomegalovirus (CMV).
The secukinumab treatment regimen was as follows: 300 mg subcutaneous injection once weekly (QW) from weeks 0 to 4, 300 mg subcutaneous injection once every 4 weeks (Q4W) from weeks 5 to 24, and 300 mg subcutaneous injection once every 12 weeks (Q12W) from weeks 25 to 80. The screening time after treatment was 1 year.
RPR:rapid plasma reagant; TPPA:Treponema pallidum particle agglutination assay; T-STOP:T-cell stimulation test; WBC:white blood cell count.

count stayed normal, and HIV RNA load remained low.

This case suggests that despite minimal data, IL-17A inhibitors may be effective and safe for psoriasis patients with neurosyphilis and HIV, based on adequate anti-syphilis treatment combined with HAART.

To our knowledge, this is the first report of an IL-17A inhibitor for severe psoriasis with HIV and neurosyphilis. To date, four case reports describe biologics for psoriasis with HIV plus secondary or prior syphilis. One patient achieved remission with risankizumab but later developed secondary syphilis, which resolved with anti-syphilis therapy; 48 week follow-up showed sustained psoriasis remission and well-controlled HIV, but no syphilis re-examination data (7). Another patient with a 3-year syphilis history had negative RPR before secukinumab initiation. Thirty-two weeks of treatment achieved near-complete psoriasis clearance and stable HIV, with no syphilis re-examination or new infections reported (8). The other two reports noted syphilis history but no details on treatment or titer changes pre- and post-biologics (9, 10). Isolated cases of secondary syphilis or neurosyphilis have been reported after TNF- α , IL-12/23 or IL-17A inhibitors treatment. It remains unclear whether this reflects latent *Treponema pallidum* proliferation or new infections during biologic therapy. Syphilis screening should be emphasized before treatment. Due to the diverse clinical manifestations of syphilis, attention should also be paid to the differential diagnosis if lesions recur during psoriasis treatment.

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Data Availability: The data that support the findings of this study are available from the corresponding author upon reasonable request.

The authors have no conflicts of interest to declare.

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