

Correspondence

Dupilumab for treatment of atopic dermatitis in patients living with HIV: a case series

Dear Editor,

Human immunodeficiency virus (HIV) infection is known to be associated with a wide spectrum of cutaneous manifestations that have continued to evolve in the era of highly active antiretroviral therapy (HAART).^{1,2} Patients living with HIV (PLWH) have increased risk of infectious, inflammatory, and neoplastic skin disorders,³ reflective of HIV-induced dysregulation of the immune system.⁴ Atopic dermatitis and disorders of pruritus have incidence as high as 37.5% in PLWH attributed to accentuated Th2 response in HIV.¹ These disorders can be particularly challenging to treat, often refractory to multiple treatment modalities.^{1,5} Treatment may be further limited by provider hesitancy to use systemic immunomodulatory agents, given risk of further compromising the immune system in these patients. In this article, we describe a series of four PLWH treated with dupilumab for atopic dermatitis and other pruritic disorders, achieving considerable clinical improvement while maintaining control of HIV.

A retrospective medical record review was performed to identify patients who developed any skin conditions following initiation of HAART for HIV and were subsequently treated with dupilumab. Four patients met this criteria, three males and one female, with ages ranging from 35 to 68 years. All patients were compliant with HAART. Patients were started on dupilumab between December 2018 and July 2019.

Patient 1 developed erythematous scaly plaques of the face, arms, hands, and legs years after HIV diagnosis in 1985. These skin conditions were associated with severe pruritus, resistant to multiple treatments including phototherapy, thalidomide, topical corticosteroids, and tacrolimus. Patient 2 developed diffuse hyperpigmented macules with intractable pruritus several months after HIV diagnosis in 2009. Treatment with topical corticosteroids was unsuccessful, and the patient later presented with severe lichenification of the face, dorsal forearms, and wrists, diagnosed as HIV photodermatitis. Following initial response with methylprednisolone, the patient eventually failed treatment with prednisone, thalidomide, phototherapy, and topicals including corticosteroids, calcipotriene, and tacrolimus. Patient 3 initially developed seborrheic dermatitis and groin rash after initiating HAART in 2015. The patient subsequently developed pruritic erythematous scaly plaques involving bilateral antecubital fossa and eyelids, refractory to topical corticosteroids and tacrolimus. Patient 4 presented with erythematous pruritic patches on the face, trunk, and extremities as well as lichenified plaques on dorsal hands, arms, and popliteal fossae 2 years after HIV diagnosis. After failing topicals including corticosteroids, tacrolimus, and

crisaborole, the patient improved on oral steroids but regressed upon discontinuation. Steroid wet wraps and phototherapy provided limited benefit.

Patients were treated with dupilumab at a dose of 300 mg every other week for 13–20 months with treatment ongoing. All patients experienced partial or full skin clearance within months of starting dupilumab in addition to patient-reported resolution of pruritus (Table 1). HIV viral load and CD4 counts remained stable in all patients. Since starting dupilumab, viral warts involving the dorsal hands and perianal region were seen in patients 1 and 2, respectively, while patient 4 reported an upper respiratory tract infection treated with azithromycin. No serious infections have been observed.

From our experience, dupilumab elicited notable clinical improvement in patients with previously treatment-resistant atopic dermatitis, photodermatitis, and prurigo nodularis without negatively impacting HIV control. Response to treatment occurred relatively quickly, within months, with notable reduction of previously intractable itch. In this immunocompromised population, risk of further weakening the immune system was a significant concern. After more than a year of dupilumab therapy, there were no significant changes in CD4 counts and viral load. We were further encouraged that none of these patients developed serious infections after starting dupilumab. Although further prospective studies are needed, we suggest dupilumab may be an effective and safe option for the treatment of atopic dermatitis and pruritic disorders in PLWH.

Kelsey B. Nusbaum¹, BS 
Benjamin H. Kaffenberger², MD
Michela M. Paradiso BS²
Jennifer A. Sopkovich², MD
Hala Daou³, BS 
Lucia Seminario-Vidal³, MD, PhD
John C. Trinidad^{2*}, MD

¹University of Cincinnati College of Medicine, Cincinnati, Ohio, USA

²Division of Dermatology, Department of Internal Medicine, The Ohio State University, Columbus, Ohio, USA

³Department of Dermatology, University of South Florida, Tampa, Florida, USA

*E-mail: John.Trinidad@osumc.edu

Conflict of interest: None.

Funding source: None.

doi: 10.1111/ijd.15471

Table 1 Summary of cases

Patient no.	Age	Diagnosis	Year of HIV diagnosis	HAART Regimen	Time on dupilumab (Months)	Time for initial efficacy (Months)	Clinical response	Unresolved lesions	Itch reduction	CD4 + T-cell Count		HIV Viral Load (copies/mL)		Infectious adverse events
										Dupilumab initiation	1 year after initiation	Dupilumab initiation	1 year after initiation	
1	56	Atopic dermatitis, prurigo nodularis	1985	Bictegravir–Emtricitabine–Tenofovir	20	2	Partial	Arms, hands, face, lower legs	Yes	684	530	414	<40	Viral warts of dorsal hands, resolved with cryotherapy
2	35	HIV photodermatitis	2009	Abacavir–Dolutegravir–Lamivudine	14	3	Partial	Arms, hands, face	Yes	136	183	<40	<40	Perianal viral warts, recurrent, present prior to dupilumab initiation
3	68	Atopic dermatitis	2015	Efavirenz–Emtricitabine–Tenofovir	13	2	Complete	Not applicable	Yes	430	482	<40	<40	None
4	37	Atopic dermatitis	2013	Efavirenz–Emtricitabine–Tenofovir	13	3	Partial	Arms, hands, popliteal fossae	Yes	735	700 ^a	<40	<40	Upper respiratory infection, resolved with azithromycin

HIV, human immunodeficiency virus, HAART, highly active antiretroviral therapy.

^aCD4 count was checked 11 months after dupilumab initiation.

References

- 1 Coates SJ, Leslie KS. What's new in HIV dermatology? *F1000Research* 2019; **8**: 980.
- 2 Zancanaro PC, McGirt LY, Mamelak AJ, *et al.* Cutaneous manifestations of HIV in the era of highly active antiretroviral therapy: an institutional urban clinic experience. *J Am Acad Dermatol* 2006; **54**: 581–588.
- 3 Tan J, Pina A, Borges-Costa J. Skin diseases in the era of highly active antiretroviral therapy: a retrospective study of 534 patients. *J Int Assoc Provid AIDS Care* 2018; **17**: 2325957417752255.
- 4 Raju PK, Rao GR, Ramani TV, *et al.* Skin disease: clinical indicator of immune status in human immunodeficiency virus (HIV) infection. *Int J Dermatol* 2005; **44**: 646–649.
- 5 Gunathilake R, Schmuth M, Scharschmidt TC, *et al.* Epidermal barrier dysfunction in non-atopic HIV: evidence for an “inside-to-outside” pathogenesis. *J Invest Dermatol* 2010; **130**: 1185.