

# Acute Onset of Generalize Pustular Psoriasis in a Patient with Previously Unknown HIV Infection

## HIV Enfeksiyonu Olduğu Önceden Bilinmeyen Bir Hastada Akut Jeneralize Püstüler Psöriyazis Manifestasyonu

Ali TÜRKAY<sup>a</sup>,  
Yuliia PAVLIVNA KARVATSKA<sup>a</sup>,  
Olha IVANIVNA DENYSENKO<sup>a</sup>

<sup>a</sup>Department of Dermatoveneorology,  
Bukovinian State Medical University  
(BSMU),  
Chernivtsi, UKRAINE

Received: 11 Jan 2019

Received in revised form: 04 May 2019

Accepted: 24 Jun 2019

Available online: 27 Jun 2019

Correspondence:

Ali TÜRKAY  
Bukovinian State Medical University  
(BSMU),  
Department of Dermatoveneorology,  
Chernivtsi,  
UKRAINE/UKRAYNA  
aliturkaydr@gmail.com

**ABSTRACT** HIV is epidemic in Ukraine and at the end of 2017, the total official number was reported to be 42700 cases. Approximately, 90% of HIV positive patients develop various types of skin diseases. Especially, patients with psoriasis and HIV infection often present with more severe and treatment-refractory cutaneous disease. We describe a patient with first manifestation of pustular psoriasis with previously unknown HIV infection. A 35 years-old male was admitted to our clinic with severe pustular psoriasis eruption which first emerged two months ago. The patient's HIV antibody test was positive. Psoriasis manifestations can be severe in patients with acquired immune deficiency syndrome (AIDS). Physicians may face diagnostic and therapeutic difficulties when psoriasis coexists with HIV infection. The HIV test should be considered in patients affected by severe erythrodermic psoriasis and resistant to conventional and biological treatments.

**Keywords:** Pustular psoriasis; HIV infection; AIDS

**ÖZET** Ukrayna'da insan immün yetmezlik virüsü (HIV) epidemik olup, 2017 yılının başında resmi olarak açıklanan toplam sayı 42700 vakadır. HIV pozitif olan hastaların yaklaşık %90'ında bazı deri hastalıkları gelişir. Özellikle HIV enfeksiyonu bulunan hastalarda, psöriyazis daha ciddi ve tedaviye dirençli bir deri hastalığı olarak karşımıza çıkar. Burada, ilk kez püstüler psöriyazis tanısı alan ve daha önce HIV pozitifliği bilinmeyen bir hastanın vaka sunumunu yaptık. Otuzbeş yaşında erkek hasta kliniğimize 2 ay önce ilk kez ortaya çıkan ciddi püstüler psöriyazis nedeniyle başvurdu, HIV antikör testi sonucu pozitif olarak gelen hastanın HIV pozitifliğinden daha önce haberi olmadığı öğrenildi. Edinsel immün yetmezlik sendromlu hastalarda psöriyazis ciddi seyirli olabildiği gibi, klinisyenler tanıda ve tedavide HIV enfeksiyonu ile birlikte bulunan psöriyazis hastalarında zorluklarla karşılaşabilirler. Bu vaka dolayısıyla HIV araştırılmasının özellikle ciddi, eritrodermik, konvansiyonel ve biyolojik tedavilere dirençli vakalarda önemini vurgulamak istedik.

**Anahtar Kelimeler:** Psöriyazis; HIV; edinilmiş immünyetmezlik sendromu

Psoriasis is a chronic erythematous squamous dermatitis characterized by abnormal keratinocyte hyperproliferation, resulting in thickening of the epidermis and stratum corneum, which affects genetically predisposed individuals. Factors such as family history, stress, trauma, infections, medicines, lifestyle and immune disorders are the well-known predisposing factors and also increased epidermal inflammation, proliferation, angiogenesis, hyperkeratosis, parakeratosis and keratinocytes turn-over are the hallmarks for psoriasis. Psoriasis may present with various manifestations, including generalized pustular psoriasis (GPP) which is generally severe and most commonly associated with systemic symptoms.<sup>1</sup> Von Zumbusch pustular psoriasis (VZPP), acute generalized form of GPP is a very severe form

of psoriasis, is characterized by onset of sterile pustule formation with widespread inflammation and erythema and classically associated with numerous comorbidities like fever, chills, malaise, anorexia, nausea, secondary infections, arthropathy and congestive heart failure. Treatment of VZPP is a rough task and needs multidiscipline approach. Especially when psoriasis confounded with immune deficiencies like HIV infection treatment is more challenging.<sup>2,3</sup> Acquired immune deficiency syndrome (AIDS) and HIV infection are commonly manifested by skin diseases and those may be indicatives for immune system dysfunction and initial manifestation of HIV infection may be psoriasis. It has been reported as being more severe, more challenging to treat and also the risk for several forms of psoriasis are increased, more often when associated with HIV infection.<sup>4</sup> Previous studies have indicated that prevalence of psoriasis and psoriatic arthritis are similar to general population.<sup>5,6</sup> As known, fulminant manifestations of dermatologic diseases are common in patients with HIV infection. Psoriasis can be the very first and early manifestation in every stage of the HIV infection, its onset seems to be related to low CD4+ T-cell count, over 80% of HIV-positive patients with psoriasis have active psoriatic lesions when they have <450 cells/mm<sup>3</sup> and it has been shown that CD4+ lymphocyte counts <200 cells/mm<sup>3</sup> represent a 9 times greater risk for active psoriasis and being most severe when falls below 100 cells/mm<sup>3</sup>. In the patients with advanced HIV infection, even more than one type of psoriasis can be observed concurrently and this may lead to diagnostic challenges.<sup>7-10</sup>

To the best of our knowledge, psoriasis is the result of alteration of T cells' activity which causes our treatment strategies to target the suppression of T cell hyperactivity. In contradiction with that, in HIV positive patients with decreased T-lymphocyte count, immunosuppression is generally associated with psoriasis. This may be the result of losing either Th 1, Th 2 and CD4, CD8 positive lymphocytes' balance or dysregulation of pro-inflammatory and anti-inflammatory pathways.<sup>11</sup>

In GPP's pathogenesis, certain chemokines like interleukin-1 (IL-1), IL-6, IL-23, IL-36 and

tumor necrosis factor-alpha (TNF- $\alpha$ ) are released, migration of macrophages and neutrophils to the tissue causes chemotaxis and reduces natural killer cells. Dermal dendrocytes release elastase which may play a role in formation of pustules.<sup>12</sup> T lymphocytes such as Th 17 cells, and inflammatory cytokines like TNF- $\alpha$  and also genetic predispositions play an important role and has been studied that activation of psoriasis causing GPP may be a result of mutations in IL-36 receptor.<sup>10,13-15</sup>

In this report, we describe a patient who has no history of psoriasis or HIV infection presenting with initially severe acute onset of pustular psoriatic lesions.

## CASE REPORT

A 36 years-old previously healthy single Caucasian male patient who lives at suburban areas of Ukraine was admitted to our clinic with complaint of diffuse skin lesions. The patient was not aware of HIV positivity on admission and claimed that didn't have a HIV test before. He gave a history of sexual promiscuity and intravenous drug abuse. He didn't report a previous history of psoriasis or any other illnesses. His family history was uneventful for psoriasis or any chronic autoimmune diseases. The patient's explicit consent has been taken for publication of his records for medical purposes.

The patient reported that the initial lesions appeared as papules on the base of erythematous patches on his trunk, chest, back, buttocks and evolved to pustules with hyperkeratosis and desquamation, spreading to both extremities, palms, soles and scalp as well, two months before his admission to our clinic. He noticed subfebrile fever after appearance of pustules during the last month of his illness. In that period, he initially used topical antifungal ointments as a treatment by himself without any medical advice. He declared that in time, lesions worsened, progressed to other body areas and recently he felt a decrease in his general state of health.

On admission he had fatigue and malaise. His body temperature was 37.4°C. Physical examination revealed widespread rash covered by innu-

merous spread pinhead-sized pustules on erythematous base with disseminated desquamation and thick yellowish crusts. Patient's %42 of body surface area was covered with lesions including genitalia, scalp, extremities, even on hyperkeratotic palm and soles but sparing mucous membranes (Figure 1, Figure 2). His initial PASI score was 37.4. The patient additionally had notable fingernail de-



FIGURE 1: Widespread erythema and pustules on the both feet.



FIGURE 2: Lakes of pustules covering most of body areas as well as the feet.

struction, unguis bed thickening and onycholysis with periungual hyperemia.

Laboratory findings revealed white blood cell:  $14000/\text{mm}^3$  (neutrophils %62, lymphocytes %32, monocytes %3), hemoglobin: 10.5 gr/dl (anemia of chronic disease), platelets:  $251.000/\text{mm}^3$ , sedimentation rate: 20 mm/h and lactate dehydrogenase: 1020 U/L.

The patient's HIV antibody test was positive. CD4 T-cell count was  $64/\text{mm}^3$ . Anti-HIV-II, anti-HTLV-I, anti-HTLV-II, VDRL, and antinuclear antibodies were negative. Liver enzymes, renal, thyroid and parathyroid functions, and albumin, calcium blood levels were normal. Bacterial and fungal cultures of the pustulous lesions were negative. Skin biopsy was performed, result was reported as pustular psoriasis where there were parakeratosis, elongation of the rete ridges, neutrophils in epidermis. Subcorneal spongiform pustules were noted with perivascular lymphocyte infiltration.

## DISCUSSION

Psoriasis can be the early cutaneous manifestation in patients HIV-infected and the prevalence of psoriasis in HIV-infected individuals is approximately 1-4%.<sup>16</sup>

Psoriasis may have a sudden onset, severe, extensive involvement and recalcitrant nature whereas it can be highly variable and requires consideration of a broad differential in the diagnosis in HIV positive patients. Patients with severe erythrodermic or pustular psoriasis and those who are resistant to conventional and biological treatments should need HIV tests.

The HIV infection has emerged as a major health problem worldwide. Compared to immunocompetent individuals, atypical clinical presentation of these various infectious and inflammatory conditions is more frequently evident in HIV seropositive individuals.

Our patient was living in Ukrainian suburbs where has a high prevalence and a tendency to an increase in the incidence of HIV and AIDS. As re-

vealed in a recent study; in 2017, there were 135,000 of HIV-infected Ukrainian citizens (319.5 cases per 100,000) who accessed the healthcare services, more than 40,000 with the diagnosis of AIDS (94.8 cases per 100,000). During first 4 months of 2017, 6,050 of new cases of HIV-infection were registered in Ukraine (the rate of growth +15.4% annually).<sup>17</sup>

Initial admission of the patient was GPP and he was not aware of his HIV infection. As reported in literature for explaining the appearance of psoriasis for the first time in previously non-psoriatic patients involves the surface protein gp120 of the HIV. It was postulated that gp120 acts as a superantigen the same way as the infective organisms as mentioned above leading to keratinocyte expression of HLA-DR, but this theory still requires further researches.<sup>18</sup>

As in our patient, HIV-related psoriasis has a sudden onset, more severe and atypical manifestations and also recalcitrant to treatment. These are considered to result from immunosuppression. Risk of psoriasis has been observed to be nine-fold greater in HIV-seropositive individuals with a CD4+ T-lymphocyte count less than 200/mm. Thus, HIV-associated psoriasis is considered to be paradoxical as well as a marker of immune suppression.<sup>6,19</sup>

Dermatologic manifestation of our patient is defined as VZPP, as known, the pustular form presents itself in different variants: GPP, impetigo herpetiformis, and localized pustular psoriasis (palmoplantar pustulosis, acrodermatitis continua of Hallopeau). Generalized pustular psoriasis may be a life-threatening disease with systemic complications and manifestations (capillary leak syndrome, heart failure, acute respiratory distress syndrome, and sepsis).

The VZPP is characterized by disseminated pustules on the trunk, extremities, and palmar-plantar areas which have tendency to coalesce, in latter stage of the disease pustules resolve and it leaves widespread erythema and diffuse scaling remains.<sup>18</sup>

The patients who have such diagnosis must be hospitalized and carefully managed especially when they are immunocompromised with HIV+ as in our case. Apart from dermatological therapy, patients with HIV-associated psoriasis improve with highly active antiretroviral therapy.<sup>7</sup> In the pathogenesis of both pustular psoriasis and HIV infection, dysregulation of the proinflammatory cytokines like TNF- $\alpha$  are inevitable and critical.<sup>20,21</sup> This may explain why TNF- $\alpha$  is a possible target for the treatment of psoriasis.

This patient showed us again that the need to maintain a high degree of awareness for increased risk of HIV-infection when facing with initial severe or atypical manifestation of psoriatic disease. Coexistence of HIV infection and psoriasis is a challenging situation for medical care providers. Because of atypical presentations of this co-existing disease, sometimes diagnosis may be difficult to make and misleading. Sudden onset or severe, unusual type of psoriasis might give us a clue about immune compromise level of a HIV positive patient. Serological analysis for HIV should be done when there is a suspected manifestation of psoriasis. Anti-psoriasis therapies have immunosuppressive effects and must be carefully recommended in HIV-infected patients.

Our patient's CD4+ T-cell count was 66, presented with prominent pustular psoriasis. His treatment was planned with a local HIV center, but the patient had refused to continue his treatment and was lost to follow-up.

#### **Source of Finance**

*During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.*

#### **Conflict of Interest**

*No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.*



### Authorship Contributions

**Idea/Concept:** Ali Türkay, Yuliia Pavlivna Karvatska, Olha Ivanivna Denysenko; **Design:** Ali Türkay, Yuliia Pavlivna Karvatska, Olha Ivanivna Denysenko; **Control/Supervision:** Olha Ivanivna Denysenko, Yuliia Pavlivna Karvatska; **Data Collec-**

**tion and/or Processing:** Ali Türkay, Yuliia Pavlivna Karvatska; **Analysis and/or Interpretation:** Ali Türkay, Yuliia Pavlivna Karvatska, Olha Ivanivna Denysenko; **Literature Review:** Ali Türkay, Olha Ivanivna Denysenko; **Writing the Article:** Ali Türkay; **Critical Review:** Olha Ivanivna Denysenko.

## REFERENCES

- Guerreiro de Moura CA, de Assis LH, Góesa P, Rosad F, Nunes V, Gusmão IM, et al. A case of acute generalized pustular psoriasis of von Zumbusch Triggered by Hypocalcemia. *Case Rep Dermatol.* 2015;7(3):345-51. [[Crossref](#)] [[PubMed](#)] [[PMC](#)]
- Trent JT, Kerdel FA. Successful treatment of von Zumbusch pustular psoriasis with infliximab. *J Cutan Med Surg.* 2004;8(4):224-8. [[Crossref](#)] [[PubMed](#)]
- Mikhail M, Weinberg JM, Smith BL. Successful treatment with etanercept of von Zumbusch pustular psoriasis in a patient with human immunodeficiency virus. *Arch Dermatol.* 2008;144(4):453-6. [[Crossref](#)] [[PubMed](#)]
- Rachakonda TD, Schupp CW, Armstrong AW. Psoriasis prevalence among adults in the United States. *J Am Acad Dermatol.* 2014;70(3):512-6. [[Crossref](#)] [[PubMed](#)]
- Duvic M, Johnson TM, Rapini RP, Freese T, Brewton G, Rios A. Acquired immunodeficiency syndrome-associated psoriasis and Reiter's syndrome. *Arch Dermatol.* 1987;123(12):1622-32. [[Crossref](#)] [[PubMed](#)]
- Mallon E, Bunker CB. HIV-associated psoriasis. *AIDS Patient Care STDS.* 2000;14(5):239-46. [[Crossref](#)] [[PubMed](#)]
- Morar N, Willis-Owen SA, Maurer T, Bunker CB. HIV-associated psoriasis: pathogenesis, clinical features, and management. *Lancet Infect Dis.* 2010;10(7):470-8. PMID: 20610329. [[Crossref](#)] [[PubMed](#)] [[PMC](#)]
- Ceccarelli M, Venanzi Rullo E, Vaccaro M, Facciola A, d'Aleo F, Paolucci IA, et al. HIV-associated psoriasis: Epidemiology, pathogenesis, and management. *Dermatol Ther.* 2019;32(2):e12806. [[Crossref](#)] [[PubMed](#)]
- Valenzuela F, Fernández J, Sánchez M, Zamudio A. Erythrodermic psoriasis and human immunodeficiency virus: association and therapeutic challenges. *An Bras Dermatol.* 2018;93(3):438-40. [[Crossref](#)] [[PubMed](#)] [[PMC](#)]
- Alpalhão M, Borges-Costa J, Filipe P. Psoriasis in HIV infection: an update. *Int J STD & AIDS.* 2019;30(6):596-604. [[Crossref](#)] [[PubMed](#)]
- Parisi R, Symmons DP, Griffiths CE, Ashcroft DM. Global epidemiology of psoriasis: a systematic review of incidence and prevalence. *J Invest Dermatol.* 2013;133(2):377-85. [[Crossref](#)] [[PubMed](#)]
- Zhang Z, Xu JH. Investigation of psoriasis susceptibility loci in psoriatic arthritis and a generalized pustular psoriasis cohort. *J Investig Dermatol Symp Proc.* 2018;19(2):S83-5. [[Crossref](#)] [[PubMed](#)]
- Teraki Y, Tanaka S, Hitomi K, Izaki S. A case of generalized psoriasiform and pustular eruption induced by infliximab: evidence for skin-homing Th17 in the pathogenesis. *Br J Dermatol.* 2010;163(6):1347-51. [[Crossref](#)] [[PubMed](#)]
- Onoufriadis A, Simpson MA, Pink AE, Di Meglio P, Smith CH, Pullabhatla V, et al. Mutations in IL36RN/IL1F5 are associated with the severe episodic inflammatory skin disease known as generalized pustular psoriasis. *Am J Hum Genet.* 2011;89(3):432-7. [[Crossref](#)] [[PubMed](#)] [[PMC](#)]
- Marrakchi S, Guigue P, Renshaw BR, Puel A, Pei XY, Fraitag S, et al. Interleukin-36-receptor antagonist deficiency and generalized pustular psoriasis. *N Engl J Med.* 2011;365(7):620-8. [[Crossref](#)] [[PubMed](#)]
- Muñoz-Pérez MA, Rodríguez-Pichardo A, Camacho F, Colmenero MA. Dermatological findings correlated with CD4 lymphocyte counts in a prospective 3-year study of 1161 patients with human immunodeficiency virus disease predominantly acquired through intravenous drug abuse. *Br J Dermatol.* 1998;139(1):33-9. [[Crossref](#)] [[PubMed](#)]
- The Public Health Center of the Ministry of Health of Ukraine [Statistical Reference for HIV/AIDS]. 2018 Kyiv, Ukrainian: MOZ2016; 2018. [[Link](#)]
- Duvic M. Immunology of AIDS related to psoriasis. *J Invest Dermatol.* 1990;95(5 Suppl): 38S-40S. [[Crossref](#)] [[PubMed](#)]
- Gudjonsson JE, Elder JT. Psoriasis. In: Goldsmith LA, Katz SI, Gilchrist BA, Paller AS, Leffell DJ, Wolff K, eds. *Fitzpatrick's Dermatology in General Medicine.* 8<sup>th</sup> ed. Vol 22. New York: McGraw-Hill; 2012. p.197-231.
- Iizuka H, Takahashi H, Ishida-Yamamoto A. Pathophysiology of generalized pustular psoriasis. *Arch Dermatol Res.* 2003;295 Suppl 1:S55-9. [[Crossref](#)] [[PubMed](#)]
- Drexler AM. Tumor necrosis factor: its role in HIV/AIDS. *STEP Perspect.* 1995;7(1):13-5. [[PubMed](#)]