

# Unusual Case of Lamivudine-Associated Skin Rashes in an HIV/AIDS Patient: A Case Presentation

Kashif U. Khan<sup>1</sup>, Amer H. Khan<sup>1</sup>, Syed A. Sulaiman<sup>1</sup>, Chow T. Soo<sup>2</sup>, Syed I. Ahmad<sup>3</sup>

<sup>1</sup>Department of Clinical Pharmacy, School of Pharmaceutical Sciences, University Sains Malaysia (USM), <sup>2</sup>Department of Infectious Diseases, General Hospital Penang, Penang, <sup>3</sup>School of Pharmacy, International Medical University Malaysia (IMU), Kuala Lumpur, Malaysia

## Abstract

In patients with human immunodeficiency virus (HIV) infection, lamivudine is used as a first-line drug for antiretroviral therapy. Lamivudine is relatively nontoxic in nature, and it can also be used during pregnancy. Herein, we describe a 43-year-old, HIV-positive female hospitalized with maculopapular, pruritic rash that appeared first on the extremities and gradually spread with systemic symptoms such as fever and myalgia after lamivudine therapy.

**Keywords:** Antiretroviral therapy, lamivudine, skin rash

## INTRODUCTION

In patients with human immunodeficiency virus (HIV) infection, lamivudine is used as a first-line drug for antiretroviral (ARV) therapy. Lamivudine is a member of the nucleoside reverse transcriptase inhibitors (NRTIs) group of therapy. In combination with other NRTIs such as zidovudine, lamivudine acts synergistically and strengthens the antiviral effects.<sup>[1]</sup> Lamivudine is found to be relatively nontoxic in nature and can be used during pregnancy. Lamivudine may be included as part of postexposure prevention in those who have been potentially exposed to HIV.

For the past few decades, there has been a massive increase in the number of HIV-infected patients. The use of ARV drugs plays a significant role in improving the quality of life of the HIV-infected patients as well as disease-related morbidity of these patients. However, along with the benefits of ARV drugs, there are also a number of adverse reactions including skin rashes. Among non-nucleoside reverse transcriptase inhibitors (NNRTIs), nevirapine usage is the most common reason for dermatological reactions, though lamivudine (NRTI) is also rarely considered responsible for causing skin rashes in HIV-infected patients, which sometimes may lead to discontinuation of the therapy.<sup>[2]</sup> We report a case of skin rashes developed in a patient after the introduction of lamivudine therapy.

## CASE REPORT

A 43-year-old, HIV-positive female with a CD4 count of 189 cells/ $\mu$ L was initiated with zidovudine, lamivudine, and nevirapine for highly active antiretroviral therapy (HAART). The patient was hospitalized with maculopapular, pruritic rash that appeared first on the extremities and gradually dispersed with systemic symptoms such as fever and myalgia, which started from the 12<sup>th</sup> day after initiation of HAART. The patient was already on co-trimoxazole prophylaxis for more than 3 weeks and was tolerating it well. Routine laboratory investigations including liver and kidney functions and hemogram were normal. However, physical examination of the patient showed an increase in body temperature and rash on the trunk and the extremities without any mucosal involvement. After HAART and all other medications including co-trimoxazole were stopped, the patient improved within a few hours, and the rash completely disappeared by the 14<sup>th</sup> day.

After the disappearance of rash completely in 3 weeks, a decision was taken to introduce a combination of zidovudine, lamivudine, and efavirenz. Nevirapine was

**Address for correspondence:** Mr. Kashif Ullah Khan, Department of Clinical Pharmacy, School of Pharmaceutical Sciences, University Sains Malaysia, Penang 11800, Malaysia.  
E-mail: kashif00khan@gmail.com

### Access this article online

#### Quick Response Code:



#### Website:

www.archivepp.com

#### DOI:

10.4103/app.app\_64\_16

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 License, which allows others to remix, tweak, and build upon the work noncommercially, as long as the author is credited and the new creations are licensed under the identical terms.

**For reprints contact:** reprints@medknow.com

**How to cite this article:** Khan KU, Khan AH, Sulaiman SA, Soo CT, Ahmad SI. Unusual case of lamivudine-associated skin rashes in an HIV/AIDS patient: a case presentation. Arch Pharma Pract 2017;8:82-3.

considered as the causative drug for the rash. However, the rash reappeared with more severity and extensive distribution after the third dose of HAART. The rash disappeared after stopping all of the ARVs. Thereafter, a decision to initiate treatment with lopinavir/ritonavir along with zidovudine and lamivudine and completely exclude any NNRTI was taken. The initiation of the new regimen did not improve the rash condition, and the regimen was forced to stop.

After withdrawal of all ARV drugs, the rash disappeared within 10 days. In the next regimen, lamivudine was substituted with didanosine, because zidovudine and lamivudine were the common denominator in all the three ARV regimens. After zidovudine, didanosine, and lopinavir/ritonavir were initiated, the patient did not develop any rash further. Efavirenz was substituted instead of lopinavir/ritonavir after 2 months.

## DISCUSSION

There is an increased risk of developing mucocutaneous drug reaction in an HIV-infected patient.<sup>[3]</sup> When any cutaneous reaction appears simultaneously with the initiation of zidovudine/stavudine, lamivudine, and nevirapine/efavirenz treatment in an HIV-infected patient, normally the NNRTI component is most commonly considered as the causative agent. NNRTIs such as nevirapine and efavirenz are often given under close medical supervision to the HIV-infected patients with mild-to-moderate rash.<sup>[2]</sup> In severe cases such as Stevens–Johnson syndrome, NNRTIs are never reintroduced to the patient, and alternative agents such as ritonavir-boosted atazanavir or lopinavir (PIs) are started. After NNRTI, the commonly suspected group as the offending agent of cutaneous reaction is NRTI. Zidovudine and lamivudine have been reported to be associated with skin rash very rarely. The first case of lamivudine-associated skin rashes was reported in a 49-year-old male, in whom it appeared anaphylactically after the first dose of lamivudine (150 mg).<sup>[4]</sup> During the HAART containing lamivudine, almost 80% of the patients experienced an adverse drug reaction either from altered drug metabolism, polypharmacy, or immune dysregulation.<sup>[5]</sup> Dermatitis was reported in healthcare workers taking lamivudine for postexposure prophylaxis.<sup>[6]</sup> Another case was in a patient with chronic hepatitis B, in whom it was reported that lamivudine caused an incidence of severe skin eruption and led to discontinuation of the drug.<sup>[7]</sup> It is difficult to manage patients with lamivudine intolerance without availability of single-drug formulation, because lamivudine

is available only as fixed-dose coformulation with other NRTIs such as zidovudine, stavudine, and tenofovir. Lamivudine-associated adverse drug reactions sometimes may lead to discontinuation of the therapy; therefore, clinicians must be aware of such adverse reactions, even though it has been an effective, widely used, and safe ARV drug.

## CONCLUSION

The skin rash seen in this reported patient was observed on starting HAART and was triggered after re-exposure to lamivudine within 1–2 days. The temporal relation between appearance of rash and lamivudine initiation, rapid regression after its discontinuation, relapse following its reintroduction, and tolerance to lamivudine-sparing regimens confirmed the causal relationship. Clinicians must be aware of such severe, adverse reactions to lamivudine, which may require treatment discontinuation, so that swift treatment can be given to such patients.

## Financial support and sponsorship

The Institute of Postgraduate studies (IPS) is acknowledged for the provision of a USM Fellowship (Teaching) to Kashif Ullah Khan (Ref: P-FD 0022/15 (R)).

## Conflicts of interest

There are no conflicts of interest.

## REFERENCES

1. Campbell TB, Shulman NS, Johnson SC, Zolopa AR, Young RK, Bushman L, *et al.* Antiviral activity of lamivudine in salvage therapy for multidrug-resistant HIV-1 infection. *Clin Infect Dis* 2005;41:236-42.
2. Khan K, Khan AH, Sulaiman SA, Soo CT, Akhtar A. Adverse drug reactions in HIV/AIDS patients at a tertiary care hospital in Penang, Malaysia. *Jpn J Infect Dis* 2016;69:56-9.
3. Singh H, Kachhap VK, Kumar BN, Nayak K. Nevirapine induced Stevens-Johnson syndrome in an HIV infected patient. *Indian J Pharmacol* 2011;43:84-6.
4. Kainer MA, Mijch A. Anaphylactoid reaction, angioedema and urticaria associated with lamivudine. *Lancet* 1996;348:1519.
5. Borrás-Blasco J, Navarro-Ruiz A, Borrás C, Casterá E. Adverse cutaneous reactions associated with the newest antiretroviral drugs in patients with human immunodeficiency virus infection. *J Antimicrob Chemother* 2008;62:879-88.
6. Smith KJ, Buckley R, Skelton H. Lamivudine (3TC)-induced contact dermatitis. *Cutis* 2000;65:227-9.
7. Kim SB, Seo PJ, Baik du S, Yun SY, Kim BH, Shin JE, *et al.* A case of severe skin eruption caused by lamivudine in a patient with chronic hepatitis B. *Korean J Gastroenterol* 2006;48:281-5.

© 2017. This work is published under

<https://creativecommons.org/licenses/by-nc-sa/4.0/>(the “License”).

Notwithstanding the ProQuest Terms and Conditions, you may use this content  
in accordance with the terms of the License.