



CASE REPORT ON SEVERE ANEMIA AND ACUTE GASTRITIS DUE TO ZIDOVUDINE, LAMIVUDINE, NEVIRAPINE (ZLN) REGIMEN

Madan Mohan Rao¹
R. Sidda Rama^{2*}
Gangula Amareswara Reddy²,
A Samson Deepak²
R Rohith²
M Venkata Subbaiah³
Dr. Vijayan Venugopal⁴

¹MD Associate professor, Department of General Medicine, RIMS, Kadapa,

²Pharm D, ³Assistant Professor, Department of Pharmacy Practice, P Rami Reddy Memorial College of Pharmacy, Kadapa, India – 516003

⁴ Department of Pharmaceutical Technology, AMST University, Malaysia-08100.

ABSTRACT

There are numerous studies that report anemia and hematological abnormalities in patients with human immunodeficiency virus (HIV) infection and acquired immunodeficiency syndrome (AIDS). Highly Active Antiretroviral therapy (HAART) is the best suited regimen that is potent enough to reduce the viral load in patients with HIV/AIDS. On the other hand, this regimen has the tendency to cause anemia and bone marrow suppression. We report a case of 26 years female patient confirmed with HIV infection since 6 months and is on Zidovudine, Lamivudine and Nevirapine therapy for the past 4 months. While the patient was in this regimen it leads to severe anemia and acute gastritis. The relationship between the suspected drug and reaction was established by performing casualty assessment. There is a need of close monitoring at regular intervals to find the development of bone marrow toxicity and other complications which help in prevention and better management of disease and therapy problems

Key words: Zidovudine, Lamivudine, Anemia, Gastritis, ADR Analysis

INTRODUCTION

In patients with HIV infection, anemia is a very common finding predominantly in individuals with progressive stages of HIV illness treating with Zidovudine [1,2]. Numerous observational studies have also reported a higher death cases in HIV infected patients due to low Hemoglobin levels [3,4]. The etiology of anemia in HIV infection is due to many factors and characteristically the anemia results from decreased production of red blood cells and often the laboratory findings are well matched with anemia. Zidovudine use is related with hematological toxicity, mainly bone marrow aplasia leading to anemia in some patients. The mechanism of Zidovudine induced anemia is attributed to 50-70 percent inhibition of production of blood cell progenitor cells in a dose and time related manner [5]. Additionally, laboratory data have also proved that Zidovudine shows cytotoxicity to the erythroid and myeloid precursors in the bone marrow at drug concentrations near to those related with the ideal *in-vitro* antiviral effect.

Address for correspondence

R. Sidda Rama*
Department of Pharmacy Practice,
P Rami Reddy Memorial College of Pharmacy,
Kadapa, India – 516003
E-mail: siddu6873@gmail.com
Mobile: 7306209795

Within 3-6 months, hematological toxicity is detected in most of the patients and can be reversed. In some studies being female has been observed as a risk factor for the occurrence of anemia [6]. On examining the drug profile of lamivudine, we found severe abdominal discomfort and pain as one of the well known side effects. In this case report, we present a HIV patient (receiving ZLN regimen) with severe anemia and gastritis whose final outcome was death.

CASE REORT

A 26 years HIV+ female patient (confirmed 6 months back) was admitted in general medicine department with chief complaints of intermittent type fever (gradually progressed), cough and vomiting, weakness, indigestion, decreased appetite and abdominal pain. On general examination the patient was conscious and coherent, but looking very week, pale and her vitals were: BP - 130/80 mm of Hg, PR - 74 beats per minute, RR - 12 cycles per minute. On systems examination: CVS - S₁S₂ +ve, CNS - No abnormality detected, abdomen examination was suggestive of splenomegaly and hepatomegaly. Her CD4 count was found to be 120 cells/mm³ (Normal range is 500 to 1000 cells/mm³). Her liver function tests were unbalanced. She was under regular treatment with ZLN 30 regimen (Zidovudine, Lamivudine and Nevirapine) from past 6 months. Her husband is also a known HIV patient and was expired 18 months back. Based on general examination (pale skin,

mucous membranes and nail beds) and hematological tests (Hb - 3.8 gm %) patient was confirmed to have severe anemia. Other hematological reports shown that WBC - 3700 cells/mm³, Differential counts: Neutrophils 56%, Lymphocytes 33%, Eosinophils 7 %, Monocytes 4%, Basophils 0%, platelets 1.5 lakhs/mm³. She has also shown the symptoms of acute gastritis such as epigastric pain, vomiting, fever, anorexia and indigestion. Along with regular ZLN regimen, patient was treated with parenteral anti emetic drug (Ondansetran, 4 mg, IV, bd), anti ulcer drug (Pantoprazole 40 mg IV bd), oral anti pyretic drug (Paracetamol, 500 mg p/o, tid), parenteral antibiotic (ceftriaxone, 1gm, iv, bd) and mucoprotective drug (Susp. Sucralfate, 1gm, tid). She was advised for blood transfusion immediately to improve her Hb levels and by the time her relatives had arranged the blood, she was no more.

ADR analysis:

After collecting past and current medication history from the patient it was suspected that the patient had developed drug induced anemia and acute gastritis. After analyzing the ADR profiles of all the ART drugs, it was found that the most suspected drug for producing

anemia was Zidovudine and for acute gastritis was Lamivudine. We have further analysed to establish the relationship between the drug and the observed ADRs, through causality assessment by using Naranjo’s scale, WHO-UMC ADR assessing scale as well as Karch and lasagna scale, results were shown in **Table 01**. We have also assessed the severity, predictability and preventability as a part of management through Modified Hartwig and Siegel severity scale, Schumock And Thornton Preventability Scale results were shown in **Table 02**

ADR Management:

Generally, management of ADR includes withdrawal/suspension, dose reduction of suspected drug and administration of supportive therapy. But, in this case it is not possible to withdraw/suspension and dose reduction as disease condition is severe and no alternative available in this medical center and patient is very poor, can’t offer money to get treatment from other multispecialty hospitals. Patient was advised for blood transfusion as a supportive therapy, but due to unavailability of blood patient had lost her life.

S.No	ADR	Naranjo’s scale	WHO-UMC	Karch & Lasagna scale
1	Zidovudine induced Anemia	Possible	Possible	Possible
2	Lamivudine induced Acute gastritis	Possible	Possible	Possible

Table 1: causality assessment of suspected ADRs

ADR	Drug	Severity	Predictability	Preventability
Zidovudine induced Anemia	Zidovudine	Severe level 7	Predictable (Type A)	Probably preventable
Lamivudine induced Acute gastritis	Lamivudine	Moderate level 4	Not Predictable (Type B)	Definitely preventable.

Table 2: Severity, Predictability and Preventability of suspected ADR

DISCUSSION

Anti-retro viral therapy (ART) is related with numerous adverse effects like suppression of bone marrow, steatosis of liver, lactic acidosis, renal toxicity, myalgias, pancreatitis and peripheral neuropathy. Bone marrow suppression (Anemia and Neutropenia) is the most common ADR of zidovudine. Others include headache, myalgias, nausea, insomnia and malaise [6,7]. In the patients with advanced stage of illness, bone marrow toxicity was found to be very common and it is linked to amount of dose and period for which the therapy was given. Anemia induced by Zidovudine is specific and can be appropriately managed. The particular mechanism of zidovudine induced anemia is unknown even for today and it was assumed that the drug might decrease the erythropoiesis process and inhibit erythroid stem cells consequently guaranteeing redcell aplasia (i.e; reduced hemoglobin levels and reticulocyte counts or hemolysis). In our patient, the anemia induced by zidovudine noticeably presented after 4 months of initiation of ZLN based treatment. Usually

anemia will be identified within 1 to 6 months of initiation of zidovudine therapy. In addition, our patient had also symptoms of acute gastritis due to which she had poor dietary intake and absorption which had further aggravated her anemic condition. By the time we tried to improve her condition, it was too late and the patient was dead. This case is a clear cut example which warrants a strict monitoring of patients frequently for identification of any drug induced mishaps. Well planned and properly conducted studies have to be done in order to find out precise predictors and extent of zidovudine induced anemia in HIV patients. Lamivudine is in a class of medications called nucleoside reverse transcriptase inhibitors (NRTIs). Sometimes this medication is used along with Zidovudine when infection progresses. This drug may sometimes cause vomiting, nausea and stomach pain which may not be seen in all the patients. The mechanism behind this effect is not well established.

CONCLUSION

Here, in this case we suspect that the death of patient might have occurred majorly due to two reasons. One is due to severe anemia (may be zidovudine induced anemia) and the HIV infection. Therefore, patients who are started on ZLN combination regimen for HIV/AIDS treatment should be closely monitored at regular intervals to find the development of bone marrow toxicity and other complications which help in prevention and better management of disease and therapy problems.

REFERENCES

1. Miles SA. Hematopoietic growth factors as adjuncts to antiretroviral therapy. *AIDS Res Hum Retroviruses* 1992; 8 : 1073-80.
2. Belperio PS, Rhew DC. Prevalence and outcomes of anemia in individuals with human immunodeficiency virus: a systematic review of the literature. *Am J Med* 2004; 116 (Suppl 7A): 27S-43S.
3. Sullivan PS, Hanson DL, Chu SY, Jones JL, Ward JW. Epidemiology of anemia in human immunodeficiency virus (HIV)-infected persons: results from the multistate adult and adolescent spectrum of HIV disease surveillance project. *Blood* 1998; 91 : 301-8.
4. Lundgren JD, Mocroft A. Anemia and survival in human immunodeficiency virus. *Clin Infect Dis* 2003; 37 (Suppl 4): S297-303.
5. Groopman JE. Zidovudine intolerance. 11. *Rev Infect Dis* 1990; 12 (Suppl 5): S500-6.
6. Piyush Omprakash Somani, Amol Khot, Stavudine Induced Multiple Adverse Effects in HIV Infected Patient. *Journal of case reports* 2013.
7. Tanaka K, Fukahori S., Fatal lactic acidosis in a patient with acquired immunodeficiency syndrome treated with Stavudine, Lamivudine and Indinavir. *Kansenshogaku Zasshi*, 73, 1999, 1232-1235.

How to cite this article:

Madan Mohan Rao, R. Sidda Rama, Gangula Amareswara Reddy, A. Samson Deepak, R Rohith, M Venkata Subbaiah, Dr. Vijayan Venugopal: case report on severe anemia and acute gastritis due to zidovudine, lamivudine, nevirapine (zln) regimen, 6(1): 2453 - 2455. (2015)

All © 2010 are reserved by Journal of Global Trends in Pharmaceutical Sciences.