CASE REPORT

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A Case Report on Nevirapine Induced Autoimmune Hemolytic Anemia

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Abstract

Nevirapine is one of the first line agents of the anti-retroviral therapy (ART) used widely in the management of human immunodeficiency virus (HIV) infection and also in acquired immunodeficiency syndrome (AIDS). Anemia is often reported in the individuals taking ART. We report a case of Nevirapine induced autoimmune haemolytic anemia (AIHA). This case report creates awareness on the hematologic abnormality caused by the drug requiring immediate medical attention.

Key words: Drug induced blood disorder, Drug rash, Altered hematology and Quality of life.

INTRODUCTION

Nevirapine is a non–nucleoside reverse transcriptase inhibitor (NNRTI) used most commonly and frequently in ART. Nevirapine is used along with Zidovudine, Lamivudine, and Tenofovir in regimen–I and regimen–I (a) approved by national AIDS control organisation (NACO, India). It is usually given as a first line agent for patients with haemoglobin $\geq$ 9 g/dl.[1] In the view of ADRs caused by Nevirapine, continuous monitoring of the therapy by a health care professional is necessary in promoting efficient therapy and enhancing the quality of life (QOL) of the patient.

CASE DETAILS

A 45 year old female patient was admitted to the department of general medicine with the complaints of facial puffiness, breathlessness, myalgia, headache and generalized body pains. She was lean weighing 35 kgs only. She was diagnosed as HIV positive seven years earlier and she is on ART from past three years. She had a past history of Nevirapine induced drug rash. On examination she was found to have grade–III breathlessness and pallor. Laboratory investigations suggested a marked decrease in the blood indices such as Red blood cell count (RBC)–2.05×106 U/L, haemoglobin–5.3 g/dl and haematocrit–15.8% with slight reduction in Mean cell volume (MCV)–77.3 fL, Mean cell haemoglobin (MCH)–25.7 Pg, and Mean cell haemoglobin concentration (MCHC)–31.6%. A slight elevation in blood urea nitrogen (BUN)–30 mg/dl was also observed. The patient was managed with injection hydrocortisone 100 mg IV Twice daily, inj pantoprazole 40 mg IV Once daily, inj ceftriaxone 1 g IV twice daily, tab B complex once daily and tab calcium once daily day one. Tablet iron and folic acid 200 mg once daily and high protein diet were recommended on day two along with

the drugs given on day one. ART was continued from day two by withdrawing Nevirapine from the therapy. On day three, one unit of packed cell transfusion was done and the vitals remained stable during the transfusion and no post transfusion reactions were observed. The patient was discharged from hospital with the similar medications as those prescribed on day two.

DISCUSSION

Nevirapine is a non-nucleotide reverse transcriptase enzyme inhibitor (NNRTI) which acts by directly binding to the catalytic site of the viral reverse transcriptase causing enzyme inactivation and inhibition of viral DNA synthesis. The occurrence of AIHA as an adverse effect of Nevirapine is observed very rarely.[2] The current diagnosis is very likely as the patient was predisposed to Nevirapine induced skin rash. The mechanism of Nevirapine in inducing AIHA is not elucidated. But the possible mechanisms may be due to the presence of drug dependent antibodies or drug independent antibodies, which are involved in drug induced autoimmune haemolytic anaemia. Drug dependent antibody mediated AIHA hemolysis appears within two weeks after initiation of the drug, where the patient presents with rapidly progressing anaemia. The adverse event subsides after withdrawing the offending drug and blood indices return to normal usually within two weeks and treatment with steroids is usually considered ineffective in the management of drug dependent AIHA. Whereas drug independent AIHA involves management with steroids and IV immunoglobulins along with withdrawal of the offending agent.[3] The mechanism involved in drug dependent AIHA is, formation of a neoantigen (drug metabolite) provoking the IgG antibodies which bind to the RBC membrane resulting in Fc receptor recognition by the splenic macrophages ending up with extravascular hemolysis. The mechanism involved in drug independent AIHA is not exactly determined but the possible mechanisms interpreted are molecular mimicry, immune disregulation, and drug adsorption causing altered RBC membrane protein antigens. [3] In this case, the symptoms of hemolysis appeared within one week i.e. the haemoglobin count was reduced to 4.4 g/dl from 6.4 g/dl and RBC count was reduced to 2.5 lakh cell/cumm after taking the drug and the patient was managed with steroids which makes it difficult to categorise the adverse reaction into either drug dependent antibody mediated or drug independent antibody mediated. Usually,

direct antiglobulin test (DAT) is performed to differentiate between drug dependent AIHA and drug independent AIHA which was not performed in this case.[3] Based on Naranjo Causality Assessment scale to establish the relation between the drug and the observed ADR, the score was found to be eight, which means that the occurrence of ADR is probable i.e. the ADR might be probably related to drug intake.[4] So, there is a need to elucidate the exact mechanism of action of NEVIRAPINE induced AIHA to provide proper care and to prevent further complications. The management provided to this patient was appropriate as there was an improvement in the patient's complaints. [5] The symptomatic management with tablet B complex, tablet calcium, and tablet iron and folic acid aid in early recovery of the patient.

CONCLUSION

The existence of morbidity due to ART is commonly observed in people taking anti-retroviral therapy. So, keeping this in view close monitoring of the patient is essential. Laboratory investigations such as blood indices and liver function tests should be performed regularly to eliminate the risks due to ART. The health care team should educate the patient regarding the symptoms of drug toxicity and also to consult a physician immediately in case of any abnormalities.

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