Original Research Article

Prevalence of adverse drug reactions and associated factors of anti-retroviral therapy among HIV positive individuals

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Abstract

Background: An estimated 33 million people are living with human immunodeficiency virus (HIV) infection and around 3 million people have access to antiretroviral therapy (ART) worldwide. **Aims and Objectives:** To study prevalence of adverse drug reactions and associated factors of Anti-retroviral therapy among HIV positive individuals. **Methodology:** After approval from institutional ethical committee a cross sectional study was carried out at Anti-retroviral centre (ART) for HIV positive patients at a tertiary health care centre during the one year period in all the patients who showed the signs and symptoms of adverse drug reactions were included into the study The statistical analysis was done by Chi –square test calculated by the SPSS 19 version software. **Result:** In our study we have seen that Out of the 173 HIV patients receiving ART treatment at ART centre 64 patients shown the various ADR so the prevalence of ADR was 37%. The majority of the patients were in the age group of 30-40 i.e. 39.06% followed by 40-50 were 32.81%, 50-60 were 14.06 %,20-30 were 7.81%, >60 were 6.25%. The majority of the patients were female i.e. 76.56% and Male were 23.44%. The ADRs were like Nausea, Diarrhea, Fatigue, Headache, Numbness/tingling, Rash, Anemia, Jaundice, Lipodystrophy/ Fat changes, Numbness/tingling and fat changes were significantly more common in the drug base of D4T followed by AZT and TDF respectively ($\chi 2=426.4$, df=16, $p<0.0001$. The most common associated risk factors were D4T based drug regimen 98.44%, followed by Duration of treatment >12 months 87.50%, Female sex- 76.56%, H/o Tobacco addiction -65.63%, H/o Alcohol addiction -60.94%, Associated with TB infection -35.94%. **Conclusion:** It can be concluded from our study that the ADR were more common in the D4T drug regimen and associated with risk factors like duration of treatment > 12 months, female sex, tobacco addiction, alcohol addiction, and TB infection etc.

Key Word: Anti-retroviral therapy (ART), HIV positive D4T-Stavudine, AZT- Zidovudine, TDF-Tenofovir.

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INTRODUCTION

An estimated 33 million people are living with human immunodeficiency virus (HIV) infection and around 3 million people have access to antiretroviral therapy (ART) worldwide.[1,2] Antiretrovirals have brought a ray of hope to people living with HIV. Unfortunately, adverse effects of these drugs are of serious concern. Adverse reactions to antiretrovirals in HIV patients cause medication non-adherence leading to treatment failure.[3] The Indian government has continued efforts to expand access to antiretrovirals. Phase-III of the Indian national AIDS control programme is estimated to spend INR 13 340 millions (US $266 million) for ART by 2011.[4] National AIDS Control Organization (NACO) has established ART centres which offer free treatment for HIV and related opportunistic infections (OIs).[5]The Indian National Pharmacovigilance Programme lacks continuity. There is a lack of awareness and inadequate training about drug safety monitoring among healthcare professionals in India[6].

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METHODOLOGY

After approval from institutional ethical committee a cross sectional study was carried out at Anti-retroviral centre (ART) for HIV positive patients at a tertiary health care centre during the one year period in all the patients who showed the signs and symptoms of adverse drug reactions were included into the study. The information like Base of the treatment to patients like D4T, AZT, TDF and various associated factors were extracted. The statistical analysis was done by Chi –square test calculated by the SPSS 19 version software.

RESULT

Out of the 173 HIV patients receiving ART treatment at ART centre 64 patients shown the various ADR so the prevalence of ADR was 37%.

Table 1: Distribution of the patients as per the age

Age	No.	Percentage (%)
20-30	5	7.81
30-40	25	39.06
40-50	21	32.81
50-60	9	14.06
>60	4	6.25
Total	64	100.00

The majority of the patients were in the age group of 30-40 i.e. 39.06% followed by 40-50 were 32.81%,50-60 were 14.06 %,20-30 were 7.81%, >60 were 6.25%.

Table 2: Distribution of the patients as per the sex

Sex	No.	Percentage (%)
Female	**49**	76.56
Male	15	23.44
Total	**64**	**100.00**

The majority of the patients were female i.e. 76.56% and Male were 23.44% .

Table 3: Distribution of the patients as per the ADRs of Drug regimen

ADRs of Drug regimen	Base			Total	P -value
	D4T	AZT	TDF		
Nausea	43 (67.19)	21(32.81)	0(0.00)	64(100)	
Diarrhea	60(93.75)	2(3.13)	1(1.56)	64(100)	
Fatigue	62(96.88)	1(1.56)	1(1.56)	64(100)	
Headache	64(100.00)	0(0.00)	0(0.00)	64(100)	
Numbness/tingling	60(93.75)	4(6.25)	0(0.00)	64(100)	χ^2=426.4, df=16, p<0.0001
Rash	1(1.56)	47(73.44)	16(25.00)	64(100)	
Anemia	26(40.63)	37(57.81)	1(1.56)	64(100)	
Jaundice	1(1.56)	62(96.88)	1(1.56)	64(100)	
Lipodystrophy/ Fat changes	55(85.94)	5(7.81)	4(6.25)	64(100)	
Numbness/tingling and fat changes	63 (98.43)	1(1.56)	0(0.00)	64(100)	

(Figures in the parenthesis indicates percentages) The ADRs were like Nausea, Diarrhea, Fatigue, Headache, Numbness/tingling, Rash, Anemia Jaundice, Lipodystrophy/ Fat changes, Numbness/tingling and fat changes were significantly more common in the drug base of D4T followed by AZT and TDF respectively (χ^2=426.4,df=16,p<0.0001)

Table 4: Distribution of the patients with respect to various risk factors

Risk factors	No.	Percentage (%)
D4T base	63	98.44
Duration of treatment >12 months	56	87.50
Female	**49**	76.56
H/o Tobacco addiction	42	65.63
H/o Alcohol addiction	39	60.94
Associated with TB infection	23	35.94

The most common associated risk factors were D4T based drug regimen 98.44%, followed by Duration of treatment >12 months 87.50%, Female sex- 76.56%, H/o Tobacco addiction -65.63%, H/o Alcohol addiction -60.94%, Associated with TB infection -35.94%.

DISCUSSION

USFDA defined serious adverse event as one when the patient outcome has one of the following events: death, life-threatening, hospitalization, resulted in switching/ discontinued and disability (i.e., significant impairment, damage or disruption) in the patient's body function/ structure.[7] ADRs may occur following a single dose or prolonged administration of medicine or result from the combination of two or more medicines. HIV-infected patients at the beginning of the antiretroviral treatment can frequently show a wide variety of adverse drug effects such as rashes, hyper pigmentation, hair loss, hypersensitivity reactions, injection site reaction, urticarial reaction, erythema multiform, toxic epidermal necrolysis (TEN) or Stevens–Johnson syndrome (SJS).[8] Further, it has been reported that up to 80% of HIV-infected patients experience ADRs at some point during their therapy, presumably as a result of immune dysregulation, altered medicine metabolism and/or polypharmacy.[9] However, HIV-infected patients are more prone to developing cutaneous reactions than the non-infected population.[10] It has been reported that the severity of cutaneous adverse reactions varies greatly, and some may be difficult to manage. Cutaneous adverse drug reactions have been reported with all antiretroviral medications. So far, clinical trials have not given conclusive safety results. It is critical to be very cautious when including these agents into HIV treatment regimens. Most of the ADRs are relatively mild can be disappear, if the drug is stopped, or some gradually subside as the body adjusts to the drug. Other side some of ADRs are lasting longer. In every 3-7% of hospital admissions, at least one ADR estimated in the United States.[11] The safety profile of ARV drugs and magnitude of ADRs among patients on ART in Ethiopia is virtually unknown. None the less, patients on HAART suffer from ADRs. Several factors such as the sex of the patient, clinical condition, drug classes or agent used, pre- existing illness like liver dysfunction, are known to be associated with the occurrence, type and severity of ADRs among patients taking ART.[12] The use of HAART has had an important impact on the course and treatment of the disease and diseaserelated morbidity of HIV-infected patients, increasing their life span and quality of life. However, it has been reported that these advantages have been accompanied by a marked increase in the number of adverse drug reactions (ADRs), including minor and serious adverse drug reactions.[13] In our study we have seen that Out of the 173 HIV patients receiving ART treatment at ART centre 64 patients shown the various ADR so the prevalence of ADR was 37%. The majority of the patients were in the age group of 30-40 i.e. 39.06% followed by 40-50 were 32.81%, 50-60 were 14.06 %,20-30 were 7.81%, >60 were 6.25%. The majority of the patients were female i.e. 76.56% and Male were 23.44%. The ADRs were like Nausea, Diarrhea, Fatigue, Headache, Numbness/tingling, Rash, Anemia, Jaundice, Lipodystrophy/ Fat changes, Numbness/tingling and fat changes were significantly more common in the drug base of D4T followed by AZT and TDF respectively (χ^2=426.4, df=16, p<0.0001. The most common associated risk factors were D4T based drug regimen 98.44%, followed by Duration of treatment >12 months 87.50%, Female sex-76.56%, H/o Tobacco addiction -65.63%, H/o Alcohol addiction -60.94%, Associated with TB infection -35.94%. Retty Rajan Modayil [6] they observed monitoring by active surveillance indentified 159 (52.82%) ADRs from 400 patients. One hundred and forty-two (47.17%) reactions were spontaneously reported. Anaemia and vomiting were the most commonly observed ADRs. The ADRs were severe in 10.9% of cases. A total of 88% ADRs were definitely/probably preventable. Use of Zidovudineþ Lamivudine with Nevirapine or Efavirenz, CD4, also Ramanjireddy Tatiparthi[14] found total of 233 patients, 70.8% were developed ADRs and the most of them are nausea, vomiting and diarrhea at 18.9%, 15% and 7.7% respectively, and the least one is hepatotoxicity at 0.43% only. The prevalence of ADRs of HAART was high at JUSH. Low CD4 cell count was identified at initial stages and concomitant use of cotrimoxazole with ARVs is the major risk factor for ADRs. Thus, health care providers working in the JUSH ART clinic need to monitor the CD4 count of patients, particularly those treated with combination of antibiotics and ARVs. The variation in prevalence of ADR may be depend upon the Base of the treatment regimen and health status and associated risk factors in the patients.

CONCLUSION

It can be concluded from our study that the ADR were more common in the D4T drug regimen and associated with risk factors like duration of treatment > 12 months, female sex, tobacco addiction, alcohol addiction, and TB infection etc.

REFERENCES

1. World Health Organization [home page on the internet]. c2008 [cited 2008 October 23].
2. Averting HIV and AIDS [home page on the internet]. 2008 November 26 [cited 2009 January 5]
3. Cooper CL, Breau C, Laroche A, Lee C, Garber G. Clinical outcomes of first antiretroviral regimen in HIV/hepatitis C virus co-infection. HIV Med 2006; 7(1): 32–37.
4. Bachani D. 650 link ART centres planned under NACP-III. NACO News 2009; 5(1): 8.
5. National AIDS Control Organization. Ministry of Health and Family Welfare, Government of India. [home page on the internet]. 2009 August 26 [cited 2009 August 31]. Available from: URL: https:// nacoonline.org/NACO

6. Retty Rajan Modayil , Anand Harugeri , Gurumurthy Parthasarathi . Adverse drug reactions to antiretroviral therapy (ART): an experience of spontaneous reporting and intensive monitoring from ART centre in India. pharmacoepidemiology and drug safety 2010; 19: 247–255.
7. Szarfman, Ana, Machado SG, O'Neill RT. Use of screening algorithms and computer systems to efficiently signal higher-than-expected combinations of drugs and events in the US FDA's spontaneous reports database. Drug Safety 2002; 25(6): 381-92.
8. Salazar AH, Rosales SPDL, Frausto SR, Criollo E, Dubon CA, Topete RO. Epidemiology of adverse cutaneous drug reactions. A prospective study in hospitalized patients. Arch Med Res. 2006; 37(7): 899-902.
9. González-Martín G, Yañez CG, González-Contreras L, Labarca J. Adverse drug reactions (ADRs) in patients with HIV infection. A prospective study. Int J Clin Pharmacol Ther. 1999; 37(1): 34-40.
10. Manzardo C, Zaccarelli M, Agüero F, Antinori A, Miró JM. Optimal timing and best antiretroviral regimen in treatment-naive HIV-infected individuals with advanced disease. J Acquir Immune Defic Syndr. 2007; 46(1): S9-18.
11. Bates, David W, Cullen DJ, Laird N, Petersen LA, Small SD, et al. Incidence of adverse drug events and potential adverse drug events: implications for prevention. JAMA. 1995: 274(1): 29-34.
12. Puro V, Cicalini S, Carli GD, Soldani F, Antunes F, Balslev U, et al. Post-exposure prophylaxis of HIV infection in healthcare workers: recommendations for the European setting. European Journal of epidemiology. 2004: 19(6): 577-84.
13. Calmy A, Hirschel B, Cooper DA, Carr A. A new era of antiretroviral drug toxicity. Antivir Ther. 2009; 14(2): 165-79.
14. Ramanjireddy Tatiparthi, Yitagesu Mamo. Prevalence of ADRs and Associated Factors of Antiretroviral Treatment on HIV Positive Adults at Jush. Indian Journal of Pharmacy Practice. Oct-Dec, 2014; 7(4): 8-15.

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