

Assessment of Liver Function Test in AIDS Patients Taking HAART At Rims Art Centre, Ranchi, Jharkhand, India

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Abstract

Introduction: HIV/AIDS patients are increasing in number in India. With a slight decrease in prevalence in last decade due wide accessibility of ART. Antiretroviral therapy is highly effective at reducing morbidity and mortality through viral suppression and immune function restoration. Although ART itself is associated with toxicity in long term.

Objective: To monitor Total bilirubin, ALT and AST levels in HIV patients taking HAART (Highly active anti-retroviral treatment), in ART centre, RIMS, ranchi.

Method: Data for the study was collected from ART CENTRE RIMS RANCHI who were on HAART therapy. A total of 48 patients were included in this study and their total bilirubin, ALT and AST value was taken for 2 times at 6 month interval.

Result: Total 48 patients whose Total bilirubin, ALT and AST level was taken at 6 month interval and their mean was calculated and analysed.

Conclusion: Total bilirubin, ALT and AST level was slightly improved in 2nd reading than the 1st one taken after six month interval. It means haart therapy can significantly improve liver functions.

Keywords: Aids, Alt, Ast, Haart (Stavudine+Lamivudine+Nevirapine), Tbil

I. Introduction

According to National AIDS Control Organization of India, the prevalence of AIDS in India in 2013 was 0.27, which is down from 0.41 in 2002.[1] While the National AIDS Control Organisation estimated that 2.39 million people live with HIV/AIDS in India in 2008–09,[2] a more recent investigation by the Million Death Study Collaborators in the British Medical Journal (2010) estimates the population to be between 1.4–1.6 million people.[3] The last decade has seen a 50% decline in the number of new HIV infections.[4] According to more recent National AIDS Control Organisation data, India has demonstrated an overall reduction of 57 percent in estimated annual new HIV infections (among adult population) from 0.274 million in 2000 to 0.116 million in 2011, and the estimated number of people living with HIV was 2.08 million in 2011.[5] The prevalence rate of HIV/AIDS has declined in Jharkhand from 0.31% to 0.13% which is less than the national figure of 0.31%, according to data of the UNICEF. In Jharkhand, there are 23,000 cases in which 12,000 have been identified and the rest are unaware of their status. Every year there are eight lakh pregnant women in Jharkhand of which 10% are detected positive for hiv.(6) Acquired immune deficiency syndrome (AIDS), caused by the human immune deficiency virus (HIV) is exemplified by progressive impairment of body's immune system resulting in a number of opportunistic infections and biochemical complications [7]. The advent of highly active antiretroviral therapy (HAART) has enhanced long-term viral suppression, decrease of opportunistic infections and increased quality of life of infected individuals [8]. However, the long-term treatment with HAART is associated with toxicity and drug resistance. [9]

All antiretroviral drugs may lead to the emergence of acute toxic hepatitis. However, most cases of acute toxic hepatitis are subclinical in nature which subside spontaneously. Several highly active antiretroviral therapy (HAART) regimens are hepatotoxic and the liver is one of the vital organs useful in the metabolism of these drugs as well as in detoxification. It is therefore important that the liver which is the main biochemical hub of the body and it has to be monitored and those HAART regimens that may be toxic to it identified so that changes or modifications can be made to enhance patient care.

Haart has significantly improved survival and reduced progression of disease in the population. Hepatotoxicity, liver enzyme elevation and drug interactions are a significant problem in AIDS

patients taking HAART. In patients taking ART therapy 14-20% experience elevation in liver enzymes. 2-10% need to interrupt ART due to severe hepatotoxicity and marked elevation in liver enzymes and switch to alternate regimen which is safer.

The present study therefore is done to assess the effect of HAART therapy on Total bilirubin, ALT and AST levels by monitoring their level at every 6 month interval who came in RIMS ART centre for their follow-up.

II. Patients And Methods

This study was conducted on the patients who attended the ART centre at Rajendra Institute of Medical Sciences Ranchi between September 2015 to September 2016. A total of 48 patients were included in this study. All patients who were taking HAART combination (zidovudine+ lamivudine+ nevirapine) and their Total bilirubin, ALT and AST value were taken for 2 times at 6 month interval.

Inclusion Criteria:

1. All patients having confirmed hiv/aids.
2. Patients above the age of 12 of either sex.
3. Patient taking HAART combination (zidovudine+ lamivudine+ nevirapine).

Exclusion Criteria:

1. Patients who were lost for follow up
2. Patients below age 12

A master chart was prepared after recording levels of Total bilirubin, ALT and AST at 6 monthly intervals.

Confirmation of HIV:

All patients who attended ART centre at RIMS were screened for hiv, and hiv confirmation was done as per NACO guidelines .

Assays: Fasting blood was collected .Then serum of sample was evaluated at rims biochemistry department on fully automatic autoanalyser.

Total Bilurubin Assay: Photometric colour test for the quantitative determination of total bilirubin.

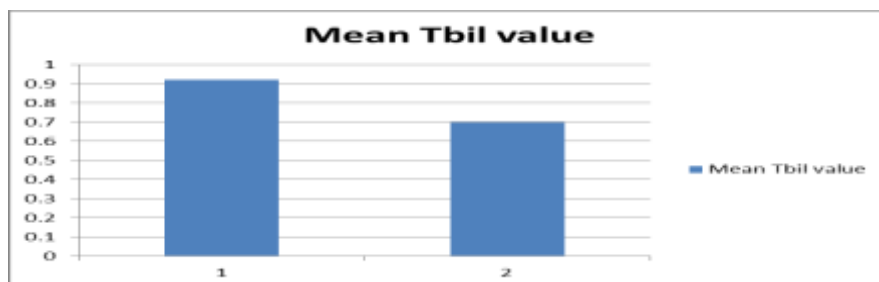
Alt Assay: Kinetic UV test for quantitative determination of ALT.

Ast Assay: Kinetic UV test for quantitative determination of AST.

Results: Total of 48 patients who were on HAART was analysed. Two readings of mean Total bilirubin, ALT and AST value at 6 month interval was obtained as

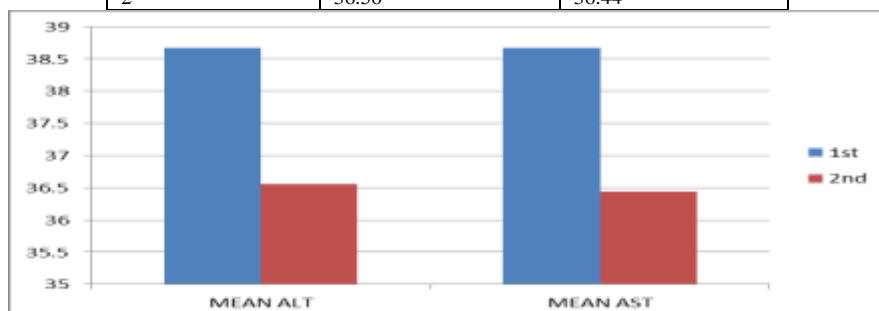
Total Bilurubin

Readings	Mean Tbil value(mg/dl)
1ST	0.92
2ND	0.70



Alt and Ast:

Readings	Mean Alt(Units/Litre)	Mean Ast(Units/Litre)
1 st	38.67	38.67
2 nd	36.56	36.44



III. Discussion:

Molecular studies have added to the knowledge of possible mechanisms about how HIV influences liver fibrosis progression. Tuyama et al. [10] recently were able to demonstrate the possibility of HIV to directly infect hepatic stellate cells and induce enhanced collagen production in an in-vitro model. Immuno-staining of liver biopsies have demonstrated that HIV might enhance hepatocyte apoptosis [11] and proliferation [12], which could add to the higher risk for fibrosis progression in HIV, these changes were less pronounced in the subgroup of HIV-positive patients receiving HAART than in untreated HIV-positive patients. Across all studies, there is a clear trend toward a protective effect of HAART on liver inflammation and fibrosis progression, which appears to be mainly driven by suppression of HIV RNA and immune reconstitution. Even though large prospective studies are still lacking at present, there is no doubt that HAART ameliorates the natural course of chronic hepatitis. This situation becomes evident if looking at cohort data analyzing the effect of HAART on liver-related death. [13]. In these studies, HAART vs. no HAART, low CD4 cell counts and failure to achieve complete suppression of HIV RNA were all associated with an increased risk of liver-related death.[14] starting HAART after a first hepatic decompensation significantly reduced the risk for a new hepatic decompensation and liver related death in a recent study by Bruno et al.[15] The ART guidelines by Association of Physicians of India recommended a determination of plasma viral load at six months to determine the efficacy of ART regimen.[16] This will help in assessing potency of regimen as well as adherence to regimen. A plasma viral load can identify failure earlier than CD4 count and reduces the accumulation of resistant mutations.

IV. Conclusion:

Above study shows that total bilirubin level was in normal range and there is approximately 20 % reduction in its value after 6 months of therapy with HAART. ALT and AST values are also within normal range but slightly near to upper normal range but there is reduction in both ALT and AST value after 6 months of HAART THERAPY.

From the above study it can be said that there is a certain amount of improvement in liver function due to HAART therapy. Since the study group was small, so it can be further studied on large population.

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