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Study on Activity of Liver Enzymes in HIV affected Women

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ABSTRACT

BACKGROUND:HIV is a type of retrovirus that belongs to the well-known lentivirus family and is defined by a long duration of survival and replication prior to disease onset. While all AIDS patients have immunological dysfunction, the clinical continuum of HIV infection is complex, and multiple organ involvement is normal. Liver disease has been linked to HIV infection, and symptoms include unexplained fevers, hepatomegaly, and subclinical irregularities in liver function studies.

OBJECTIVES: To measure SGOT, SGPT, and ALP in HIV/AIDS patients and equate them to healthy people.

MATERIAL AND METHODS: This study was conducted in collaboration with Jawaharlal Nehru Medical College, Sawangi (Meghe), Wardha, Maharashtra, India, in the Department of Biochemistry at Datta Meghe Medical College in Nagpur.Total 40 individuals were included in the study and divided into 2 groups: Group I: HIV positive group and Group II: healthy controls.

RESULTS: Level of SGOT were significantly increased (P=0.005) in HIV positive patients as compare to healthy controls. SGPT level and ALP level were non-significantly increased in the HIV positive patients while comparing them with healthy controls.

CONCLUSIONS: Our results suggest that liver damage in ART-naive HIV-infected women is partially due to HIV infection's symptoms, and that liver diseases are less common in industrialized countries than previously believed. Advanced HIV infection is most likely the cause of impaired liver synthesis.

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KEY WORDS:SGOT, SGPT, ALP, HIV/AIDS and Liver Enzymes

INTRODUCTION

HIV is a class of retroviruses, which belong to the well-known lentivirus virus; they are characterized by a long period of persistence and repetition before the onset of any disease. HIV leads to the acquisition of immunodeficiency syndrome (AIDS) a condition in which the immune system is compromised, leading to life-threatening infections, allowing DNA to be transcribed with RNA and the production of reactive oxygen species (ROS) has been linked to the acceleration and regulation of AIDS development. Furthermore, antioxidant depletion was discovered to be a common sign at the onset of HIV infection, resulting in severe OS.[1,2]

HIV can therefore make copies of its genetic material like DNA in cells that act as human T-4 lymphocytes and this leads to the proliferation of many viral cells. Although immunosuppression is immune to all AIDS patients, HIV infection is different and most physical involvement is often seen. Liver disease and antioxidant status has been linked to HIV infection and emergence as flu of unknown origin, hepatomegaly or subclinical abnormalities in liver function tests. The authors suggest that the most important cause of hepatitis in HIV patients is a second infection called CMV.[2,3]

Prevalence of AIDS in India

India in 2017

- 2.1 million people were also infected with HIV.
- HIV prevalence was 0.1 in all people of all ages.
- The number of people living with HIV between the ages of 15 and 49 was 0.2%.
- HIV has recently infected 88 000 people.
- A total of 69 000 people died as a result of an AIDS-related disease.

Progress is now being made in the number of people affected by AIDS since 2010, by 56%, from 160 00 deaths and 69,000 deaths. The number of new HIV infections has dropped from 120,000 to 88,000 at a time. the same.

Target 90-90-90 predicts that, by 2020, 90% of people living with HIV will know their HIV status, 90% of people who know they are HIV-positive will be receiving treatment and 90% of those who have ARVs will receive suppressed viral loads. For all people living with HIV, reaching 90-90-90 means that 81% of all people living with HIV are receiving treatment and 73% of all people living with HIV are severely depressed.[2,4]

2017 in India

- 79% of people living with HIV knew their status.
- 56% of people living with HIV were on treatment.

Sixty-six percent of HIV-positive people aged 15 and up were receiving care. Antiretroviral medications are given to 60% of HIV-positive pregnant women and their infants, avoiding new HIV infections in newborns. In 2017, the number of HIV-infected babies who were screened for HIV before the age of eight weeks was 23 percent. 880,000 (41.9 percent) of the 2 100,000 people living with HIV were women. Women were more likely than men to be receiving HIV medication, with 63 percent of older women on treatment compared to 50 percent of older men.In India, same-sex marriages are legal. Just 26.17 percent of women and men between the ages of 15 and 24 have been reported as successful H1V prevention methods. In 2017, 33.4 percent of people diagnosed with HIV and tuberculosis were receiving treatment for both diseases, down from 36.3 percent in 2015.[4]

Antiretroviral drugs are useful in prolonging life and delaying AIDS or AIDS (ARC) problems, but they do not cure the virus.[5] Current HAART options are a combination (or cocktails) containing at least three drugs of at least two types / classes of antiretroviral agents. Prevalence of HIV infection and overuse of these drugs (ARDs) in the management of HIV infection and predicting its effects such as nausea, vomiting, rash, abdominal pain, rash, peripheral neuropathy,

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pancreatitis, diarrhea, Indirect hyperbilirubinemia, necessitated an investigation into the effect of ARVs on patients. Current research is being conducted to assess the impact of HIV infection on the enzymes that mark the liver and the risk associated with the use of antiretroviral drugs.[2,5]

AIMS AND OBJECTIVES

AIM

STUDY ON ACTIVITY OF LIVER ENZYMES IN HIV AFFECTED WOMEN

OBJECTIVES OF STUDY

Evaluate serum glutamate oxaloacetate transaminase, serum glutamate pyruvate transaminase and alkaline phosphatase in patients with HIV / AIDS and compare with standard subjects.
Evaluate serum glutamate oxaloacetate transaminase, serum glutamate pyruvate transaminase and alkaline phosphatase after treatment of HIV / AIDS patients and compare with standard subjects.

MATERIAL AND METHODS

STUDY AREA

In collaboration with Jawaharlal Nehru Medical College, Sawangi (Meghe), Wardha, Maharashtra, India, this research was conducted in the Department of Biochemistry at Datta Meghe Medical College in Nagpur.

STUDY POPULATION

(40) Subjects will be included in the study.

SELECTION OF THE PATIENTS

40subjects will be taken with following inclusion and exclusion criteria. Group 1: 20 HIV/AIDS positive patients
Group 2: 20 healthy subjects

Inclusion criteria:

- Outpatient HIV patients and those treated for one year or less.
- People between the ages of 15-60.
- People who do not have the physical symptoms of metabolic syndrome.
- People with Hepatitis (A, B, or C) who do not have HIV.

Exclusion criteria:

- Unwanted participant
- People with severe liver symptoms or other metabolic syndrome.
- Alcohol, tobacco smokers or drug abusers.
- Patients with hepatitis A, B or C

SAMPLE PROCESSING

For the bio- chemical parameters to be analysed, blood sample will be collected after an overnight fast from the anticubital vein avoiding venostasis in all subjects. 5 ml of venous blood will be drawn from the subject and control after written and informed consent, in dry disposable syringe under aseptic conditions and will be transferred to a sterile, dry and acid washed vial for biochemical analysis. Sample will be allowed to clot at room temperature, Centrifugation will be done at 2500 -3000 rpm for 15 minutes, serum will be then processed.

BIOCHEMICAL INVESTIGATIONS

Parameters will be assessed immediately using following method:
Plain vials will be used for the estimation

- AST and ALT are liver toxicity markers. The AST and ALT levels were determined using Reitman and Frankel's system (1957).[6]
- King Armstrong's process was used to determine alkaline phosphatase (1980).[7]

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STATISTICAL ANALYSIS

Data collected will be entered into Microsoft Excel Worksheet and statistically analysed by using SPSS (Statistical Package for Social Sciences) version 20. For quantitative data mean, standard mean, standard deviation, t-test and Karl Pearson's Coefficient of Correlation will be calculated. P value < 0.05 (0.01) will be considered as statically significant (highly significant) at 95% confidence interval.

ETHICAL CONSIDERATION

Before gathering data and a blood sample, each subject will give their informed and written consent (in the language they understand best). Just those who volunteer to take part in the research will be considered, and the information will be kept private. Since the thesis would not cause any hardship to the participants or the Institute, it is ethically permissible. The proposed study will be undertaken subject to approval by Institutional Ethical Committee.

OBSERVATION AND RESULT

Table 1: Comparison of SGOT, SGPT and ALP between HIV positive and healthy controls

Parameters	HIV Positive	Healthy Control	P- value
SGOT	46.71±22.26	24.31±14.2	P=0.005
SGPT	48.27±34.20	26.45±17.46	P=0.0152
ALP	112.75±59.87	88.55±36.48	P=0.1310

Table 1 shows significantly increase of SGOT in HIV patients as compare to the healthy controls (P=0.005) while the SGPT level and ALP level were non-significantly increased in the HIV positive patients while comparing them with healthy controls.

Table 2: Comparison of SGOT, SGPT and ALP in after treatment of HIV positive patients and healthy controls

Parameters	HIV Positive after 6 month of treatment	Healthy Control	P- value
SGOT	58.55±36.61	24.31±14.2	P=0.004
SGPT	52.20±28.27	26.45±17.46	P=0.0013
ALP	117.85±49.45	88.55±36.48	P=0.0395

Table 2 shows significantly increase of SGOT in HIV patients after treatment as compare to the healthy controls (P=0.004). The SGPT level were also significantly increased in HIV positive patients after 6 month of treatment (P=0.0013). ALP level was non-significantly increased in the HIV positive patients after 6 month of treatment while comparing them with healthy controls (P=0.0395).

DISCUSSION

In a study conducted in Nigeria, an AIDS patient with antiretroviral drugs (HAART) had a significant impact on predicting HIV infection, so deaths from AIDS were significantly reduced at the start of treatment. Studies show that HIV-positive patients are between the ages of 20 and 39 and that women are the majority of HIV-positive patients. These findings are inconsistent with UNAID's 2010 report which reported that the rate of women living with HIV / AIDS increased from 43% in 1999 to 50% in 2010 and in sub-Saharan Africa women accounted for 59% adults infected with HIV. A research report by Babadoko, (2005) showed that in northern Nigeria women accounted for 59% of the population living with HIV / AIDS in 2010.

In this study, liver enzymes found to be elevated in HIV that could be treated with antiretroviral drugs compared to control subjects.[8]
In a study conducted in Namibia concluded, a variety of liver toxicity monitoring methods may be required and should be incorporated into guidelines for ART toxicity monitoring. This approach should be based on clinical signs and symptoms of hepatocellular injury such as jaundice and asymptomatic elevation in ALT at baseline and at three months in all patients initiated on ART. They concluded on the basis of their findings that patients at high risk of hepatocellular injury such as low CD4 count, female genital mutilation, and> high grade 2 ALT, and patients testing for HBV / HCV, should be considered for at least 6 months after onset. for antiretroviral therapy.[2,9]
A study conducted in western India discovered a connection between AG levels and CD4 counts (0.241; p value: 0.0002). And, by comparing those with normal LFT to those with uncommon LFT, the AG incidence was higher in the lower category (1.2173 0.385 vs 1.1019 0.469; p value: 0.037). Patients with reduced CD4 cell counts are more likely to contract other opportunistic diseases, which can be explained by low serum albumin (negative acute reactant) levels. Patients with active tuberculosis (at ATT) had a lower AG value (0.934/ 0.32) than those without. Therefore all HIV-positive patients with low AG levels should be screened for opportunistic infections, especially tuberculosis.[10]Related studieswere reported. Agarwal et. al. reported on pregnancy in Hiv-discordant couple[11]. A number of studies on different liver diseases were reported by Arya et. al. [12], Bagga et. al. [13] and Bawankule et. al.[14]. Dangore reported a study on evaluation of risk of liver fibrosis in areca nut habitual by ultrasonography and liver enzyme analysis[15]. Relevant studies on liver related pathologies were reviewed [16-17]. Mohammad et. al. reported about assessments of elevated liver enzymes in Moschcowitz Syndrome[18]. Regmi et. al. reflected on Nepali migrants health issues[19] and related effects.

CONCLUSION:

Finally, our results show that liver injury in HIV-negative women without ART could be due to HIV infection's symptoms, and that liver damage is less frequent in developing countries than previously believed. Advanced HIV infection is most likely the cause of non-invasive liver transplants. To improve prevention, diagnosis, and treatment of HIV infection and liver function in low-income areas, future studies should consider using direct or indirect measurements of liver injury (e.g., imaging). Many who will be studying HIV infection, hepatitis progression, and the effects of ART on reducing aminotransferase levels in these patients should be identified in order to ascertain the presence of anomalies of the liver and to build causal relationships.

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