

Study of lipid profile in HIV/AIDS patients on antiretroviral therapy

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Abstract

Background: The introduction of effective highly active antiretroviral therapy (HAART) in the mid 1990s led to the marked reduction in the morbidity and mortality from human immunodeficiency virus (HIV) infection. Increasing life expectancy, an aging population, and high rates of smoking have led to concerns of the health of HIV infected individuals in the long run. Metabolic effects of HIV infection such as hypertriglyceridemia are well defined and side effects of HAART such as dyslipidemia and were described soon after its introduction.

Aim: To study the lipid profile of HIV/AIDS patients on antiretroviral therapy.

Materials and Methods: The present study was carried out in department of Medicine, Shri B. M. Patil Hospital and Research Centre, Vijayapur, Karnataka. This study was conducted between December 2013 and June 2015.

Results: 120 patients are studied for period of 18 months. 66.7% patients have Hypercholesterolemia and 33.3% have in the normal range. 80% of the patients have HDL below the normal range and 20% have in the normal range. 70% of the patients have hypertriglyceridemia and 30% have within the normal range. 60% of patients have LDL in the abnormal range and 40% in the normal range. 5.8% of the patients have VLDL within abnormal range and 94.2% have it within the normal range. Males are more affected than females. The patients in the young age group are more affected than patients in the older group.

Keywords: HIV, LDL, HDL, antiretroviral drugs.

1. Introduction

The introduction of effective highly active antiretroviral therapy (HAART) in the mid 1990s led to the marked reduction in the morbidity and mortality from human immunodeficiency virus (HIV) infection. Increasing life expectancy, an aging population, and high rates of smoking have led to concerns of the health of HIV infected individuals in the long run. Metabolic effects of HIV infection such as hypertriglyceridemia are well defined and side effects of HAART such as dyslipidemia and were described soon after its introduction [1].

Initial concerns of the increased rates of myocardial infarction arising as a result of dyslipidemia in HIV infected patients on antiretroviral (ARV) have been confirmed by studies such as the D.A.D study, a large, multicohort study that showed association between exposure to antiretroviral therapy and increased risk of myocardial infarction.[2]

Endothelial function is also found to be abnormal in HIV infected patients. Changes in platelet reactivity among HIV infected patients also reported and increased rates of insulin resistance and diabetes is a well described side effect of exposure to some of the ARV. All of these factors act in combination with dyslipidemia to increase overall

cardiovascular risk of HIV infected patients on ARV [3].

Hence the "STUDY OF LIPID PROFILE IN HIV/AIDS PATIENTS ON ANTIRETROVIRAL THERAPY" is undertaken to know the magnitude of the problem, of progression and severity of disease, and guide to therapy particularly in resource limited settings.

2. Materials and methods

The present study was carried out in department of Medicine, Sri B. M. Patil Hospital and Research Centre, Vijayapur, Karnataka. This study was conducted between December 2013 and June 2015. A predetermined pretested Performa is used to record the details of history, physical examination and investigations. Patients which were included in this study were diagnosed HIV positive as per NACO guidelines using three spot tests COOMBS AIDS, TRILINE, QUALPRO [4]. Patients with a history of cardiovascular diseases like congenital heart diseases and with type II Diabetes mellitus were excluded from this study.

3. Results

120 cases of HIV diagnosed by ELISA method, admitted in BLDEU's Shri B M Patil Medical College and

research centre, Vijayapur, during a period of 18 months from Nov 2013 to June 2015. Of the 120 cases 83 patients were male and remaining 37 were females. Among them 49 patients were in the age group of 20-35, 56 patients were in the age group 36-50, and 15 were in the 51-70 age group. Among the patients in the age group of 20-35, 71.4% have hypertriglyceridemia, 71.4% have hypercholesterolemia, and 85.7% have low levels of HDL. Male patients were more affected than females. Patients in the young age group were more affected than the patients in the older age groups. Patients in the age group of 51-70 were having maximum LDL-80%. Of the 120 cases, 70 % of cases had hypertriglyceridemia and 30% were within the normal range (Table 1 and figure 1). 66.7% of patients have hypercholesterolemia and 33.3% have total cholesterol in the normal range (table 2 and figure 2). 80% of patients have HDL below the normal range and 20% have within the normal range. (Table 3 and figure 3). 60% of patients have LDL above the normal range and 40% have in the normal range (Table 4 and figure 4). 5.8% of patients have VLDL within the abnormal range and 94.2% patients have in the normal VLDL (Table 5 and figure 5).

Table 1: TG Distribution

TG	N	Percent
Normal	36	30
Abnormal	84	70
Total	120	100

Figure 1: Distribution of TG

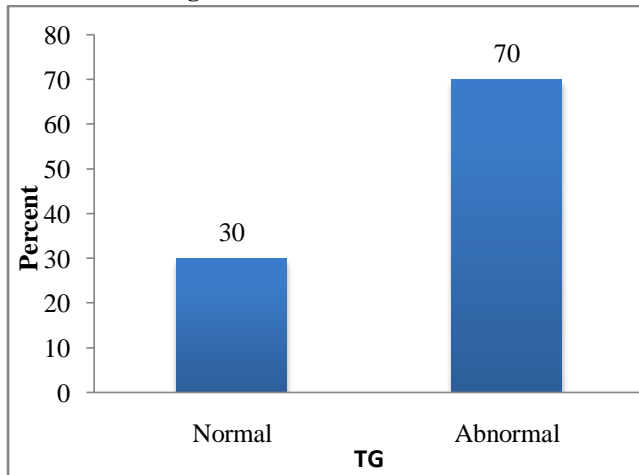


Table 2: TC distribution

TC	N	Percent
Normal	40	33.3
Abnormal	80	66.7
Total	120	100

Figure 2: Distribution of TC

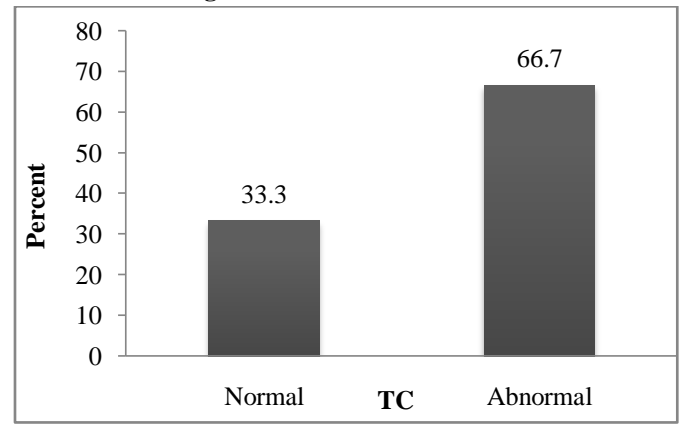


Table 3: Distribution of HDL

HDL	N	Percent
Normal	24	20
Abnormal	96	80
Total	120	100

Figure 3: Distribution of HDL

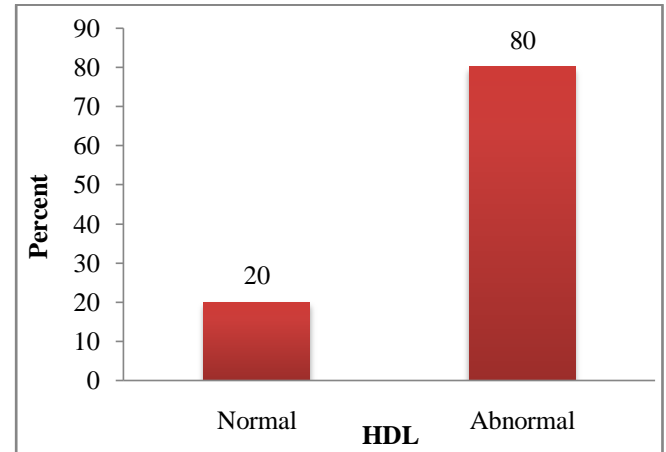


Table 4: Distribution of LDL

LDL	N	Percent
Normal	48	40
Abnormal	72	60
Total	120	100

Figure 4: Distribution of LDL

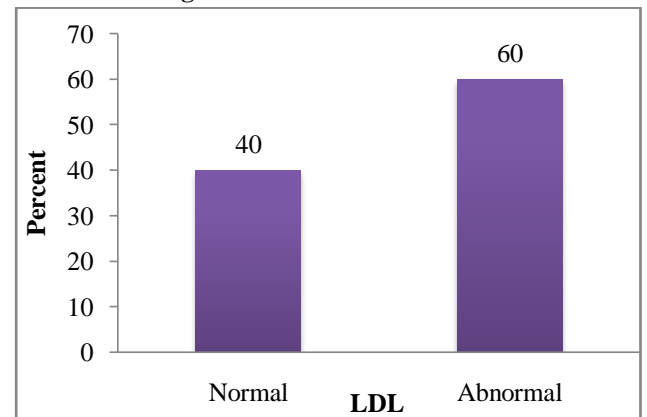
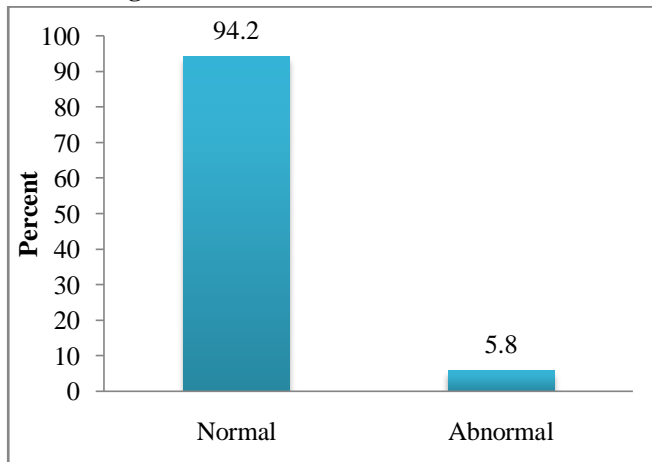


Table 5: Percent Distribution of VLDL

VLDL	N	Percent
Normal	113	94.2
Abnormal	7	5.8
Total	120	100

Figure 5: Percent Distribution of VLDL

4. Discussion

The prevalence of dyslipidemia in HIV patients on antiretroviral therapy is very high. Males are affected more than females. Patients in the young age group (25-35) are having maximum dyslipidemia. In the above age group the prevalence of hypertriglyceridemia is 71.4%, that of hypercholesterolemia is 71.4%, and that of low HDL is 85.7%. In similar studies conducted by Cavin Epie Bekolo et al the prevalence of hypertriglyceridemia is 52%, that of hypercholesterolemia is 66.7%, and that low HDL is 80%. In the same study maximum numbers of patients were in the younger age group (20-35). 49 patients were found in this age group [5]. Hypertriglyceridemia in patients on antiretroviral therapy is common among patients taking Protease inhibitors as they increase the hepatic triglyceride synthesis by increased expression of key enzymes involved in its synthesis. There is impaired uptake of triglycerides in the adipocytes which leads to increases in their levels [6]. Antiretroviral drugs are responsible for reduced expression of LDL receptors, thus reducing fat storage and increasing free fatty acid plasma levels [7]. NRTI class of drugs is associated with a worst lipid profile parameters. They cause increases in total cholesterol, triglycerides and LDL. Among that category of drugs Stavudine is the drug associated with severe dyslipidemia [8]. The presence of an atherogenic lipid profile in HIV patients on antiretroviral therapy makes these patients more susceptible to cardiovascular events. A longer duration of antiretroviral therapy is associated with greater chances of coronary artery stenosis due to dyslipidemia and due to the metabolic effects of HIV infection. This has led to increased concerns of myocardial infarction in HIV patients [9]. The presence of dyslipidemia in young patients makes them susceptible to subclinical coronary atherosclerosis is a major

concern as lack of suspicion of coronary artery disease makes them prone to sudden grave consequences[10]. The lack of an alternative to antiretroviral therapy makes it more difficult to protect and prevent these patients from dyslipidemia and thus future cardiac events. After initiation of antiretroviral therapy of fasting lipid profile is a must for HIV patients.

5. Conclusion

Significant dyslipidemia is present in HIV patients on antiretroviral therapy. The study has further strengthened the relation between existences of coronary artery diseases in patients on antiretroviral therapy. It will help to encourage further studies to evaluate the role of individual antiretroviral drugs in causing dyslipidemia and also make clinicians aware to evaluate patients for dyslipidemia once they are initiated on antiretroviral therapy.

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