



## CHANGE IN LIPID PROFILE AMONG ACUTE VIRAL HEPATITIS

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**ABSTRACT**

**Background:** liver is responsible for the metabolism of the lipid profile. In the cases of acute viral hepatitis the dysfunction of liver lead to dyslipidemia. Present study examined the plasma lipid profile in the cases of acute viral hepatitis.

**Methods:** This is the Hospital-based prospective study on acute viral hepatitis. Sixty cases of acute viral hepatitis and sixty age and sex matched controls was included in study. Routine biochemical investigation for viral marker lipid profile and liver function test was done in the positive viral hepatitis cases. A 'p value'  $<0.05$  was considered statistically significant.

**Results:** no significant difference in the base line characteristic of the case and control ( $p>0.5$ ). Jaundice (100%), anorexia (99%), vomiting (100%) and dark coloured urine (100%) were the commonest presentations. Serum cholesterol, triglycerides, low density lipoprotein (LDL) were appreciably higher ( $p<0.01$ ) while high density lipoprotein (HDL) was considerably lesser ( $p<0.01$ ) in acute viral hepatitis compared to controls.

**Conclusion** Noteworthy variation of the lipid profile in blood is seen in the cases of acute viral hepatitis. Difference in lipid fractions point out the severity of the liver damage and help in prognosis of the Acute hepatitis patients.

**KEYWORDS :** Acute viral hepatitis, serum lipids, liver function test.

**INTRODUCTION**

Organ accountable for metabolism of lipids, lipoproteins and apolipoproteins is liver in the normal circumstances. In normal physiological conditions most lipids are initially synthesized in liver and then come in the systemic circulation. There is major change in plasma cholesterol and triglyceride (TG) levels in patients with severe hepatitis and hepatic failure. For condensed liver biosynthesis capacity, low levels of TG and cholesterol is typically observed in chronic liver diseases. In developing countries like India Acute viral hepatitis (AVH) continues to be a major public health trouble. Acute hepatitis may be referred to an inflammatory process of the liver lasting less than six months. The most common aetiology of acute hepatitis is viral infection, in which hepatitis A and hepatitis B are the most common causes followed by hepatitis C and hepatitis E. Earlier studies have recognized the modification of serum lipids in patients anguish from acute hepatitis due to hepatotropic virus. However, there is a deficiency of literature particularly from the north part of India about the alter in serum lipid profiles in the cases of acute viral hepatitis. Therefore, this study was carried to find out the patterns of lipid profile irregularity in patients with acute viral hepatitis.

**MATERIAL AND METHODS**

This study was carried out in the patients of IQ City Medical College and Rama Medical college patients from January 2018 till June 2018 in the Department of medicine and Laboratory. The study was conducted on two groups with comparable age, sex and body mass index (BMI).

**Group 1:** 60 patient of viral hepatitis with clinical manifestation and further confirmed with laboratory investigation was included in the study.

**Group 2:** 60 normal persons as a control group was included in the study.

All patients and controls in this study were subjected to: Full medical history and medical examination. Laboratory test for Liver functions tests (total plasma proteins, serum albumin, SGOT, SGPT, total and direct serum bilirubin, alkaline phosphatase and prothrombin time). Lipid profile: fasting cholesterol, low density lipoprotein(LDL), high density lipoprotein(HDL), and triglycerides. Viral hepatitis profile. And serological testing was done. A written consent was taken from the entire participant in this study.

**Exclusion Criteria:** Patients with co-morbidities which can affect blood lipids and lipoproteins levels were excluded.

**Data Management:** After tabulation, all data were analyzed statistically using SPSS statistical package version 16 & the following tests were done. Student t test.  $p<0.05$  indicated statistical significance.

**RESULT**

According to selection criteria 60 control and 60 cases of hepatitis was taken from both the hospital. Table 1 shows that there is no significant difference in the base line characteristic of the case and control ( $p>0.5$ ). Almost all the patient present with Jaundice (60), nausea/vomiting (60), dark yellow color urine (60) and anorexia (59) fever was seen in 66.66% cases followed by hepatomegaly in 58.3% cases the result is shown in table 2. The total serum bilirubin was significantly high in the cases as compare to control the mean total serum bilirubin  $8.60 \pm 3.74$ . Mean Alanine Transaminase (ALT) was  $989.19 \pm 13.48$  which is significantly high with p value  $<0.01$ . Shown in table 3. Table 4 shows the lipid profile of Patients in the acute viral group had significantly higher total cholesterol levels, (mean  $326.84 \pm 23.74$ ) than the uninfected control group (mean  $93.64 \pm 28.19$  mg/dL). ( $P < 0.01$ ). Patients in the acute viral group also had considerably higher total LDL levels when compared to the control group, (mean  $149.51 \pm 27.86$  mg/dL) versus (mean  $79.04 \pm 18.89$  mg/dL); ( $P < 0.01$ ). Patients in the infected group also had significantly higher triglycerides levels when compared to the uninfected control group (mean  $264.63 \pm 36.6$  mg/dL) versus (mean  $101 \pm 26.5$  mg/dL); ( $P < 0.01$ ). High density lipoprotein levels were statistically significant low in the acute viral hepatitis in compare with the control group  $p < 0.01$ .

**Table 1. Demographic characteristics of patients**

Parameter	Cases	Controls	p value
Mean age (years)	30.63	31.68	$>0.05$
Sex Male/ Female	35 /36	38 /37	$>0.05 / >0.05$
Mean body mass index (kg/m <sup>2</sup> )	21.6	22.1	$>0.05$

**Table 2. Clinical manifestation of the Acute Viral Hepatitis**

Clinical presentation	Number of cases	percentage
jaundice	60	100
Anorexia	59	99.8
Nausea/vomiting	60	100
Urine colour dark yellow	60	100
Hepatoegaly	35	58.3
Fever	40	66.66

**Table 3. Liver function tests in patients with acute viral hepatitis and controls**

Parameter	Cases	Controls	p value
Mean Total Serum Bilirubin	8.60±3.74	0.648±0.37	<0.01
Mean Alanine Transaminase (ALT)	989.19±13.48	49.37±12.19	<0.01

**Table 4. lipid profile comparison of acute viral hepatitis and control**

Parameter	Cases	Controls	p value
Total cholesterol	326.84±23.74	93.64±28.19	<0.01
Serum triglycerides	264.63±36.6	101±26.5	<0.01
High density lipoprotein	13.56±4.58	48.18±8.36	<0.01
Low density lipoprotein	149.51±27.86	79.04±18.89	<0.01

**DISCUSSION**

Liver is one of the key organs for the metabolism of lipid. Most plasma apolipoproteins, endogenous lipids and lipoproteins are synthesized by the liver, which depends on the integrity of cellular functions of liver. Therefore, laboratory analysis of plasma lipids and lipoprotein levels becomes supportive to establish the amount of the hepatic injury which occurs in patients with acute viral hepatitis. In our study jaundice, anorexia, vomiting was the commonest clinical feature of acute hepatitis which is similar to the study of Prasanta Kumar Bhattacharya et al and Irshad et al. Serum cholesterol is significantly higher in this study which is supported by Austin Flint, but it differ from the study by Libo Luo et al where they have shown that cholesterol lower in the acute hepatitis. In the present results we demonstrated that plasma levels of HDL were notably lesser in the patients at the acute phase of hepatitis than those in normal subjects which is similar the past study by Ahaneku JE. As per the available literature high density lipoprotein may provide as one of the best indicator of liver damage. Whereas plasma levels of triglycerides and LDL were noticeably elevated in the patients than in normal subjects. This study result for LDL and triglyceride is equivalent and alike with the other study and available literature.

**CONCLUSION**

Significant variation of the lipid fractions in blood is seen in acute viral hepatitis. Total cholesterol, triglycerides and low density lipoprotein levels are elevated; the levels of high density lipoproteins are lesser. Discrepancy in lipid fractions indicate the severity of the liver damage and help in prognosis of the Acute hepatitis patients

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