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Research Article

**STUDY TO KNOW THE DYSLIPIDEMIA IN PATIENTS OF  
CHRONIC LIVER DISEASE**<sup>1</sup>Dr. Kashaf Iqbal, <sup>2</sup>Dr. Ayesha Kazlaq, <sup>3</sup>Dr. Maria Akram<sup>1,2,3</sup>House Officer at Mayo Hospital, Lahore**Article Received:** February 2019**Accepted:** March 2019**Published:** April 2019**Abstract:****Objective:** To determine the changes in lipids metabolism in chronic liver disease patients.**Study Design:** Prospective, noninvasive observational study.**Place and Duration:** In the West Medical Department Mayo Hospital, Lahore for one year duration from September 2017 to September 2018.**Methods:** 160 patients who were admitted to the medical unit with the chronic liver disease diagnosis were selected for the analysis. In all cases, fasting lipid profile was done. The results were studied and compiled.**Results:** 63.75% patients were male and female were 58 (36.25%). Total cholesterol was significantly reduced in (15%) 24 patients. In the normal range, 132 patients were available (82.5%). Hypercholesterolemia was observed in 4 patients (2.5%). Hypertriglyceridemia was observed in one patient. The serum triglyceride level was lower in (63.13%) 101 cases. In all subjects HDL-c was lower than normal. LDL was found to be low in (88.13%) 141 patients, 12 (7.50%) patients has normal value and higher in (4.38%) 7 subjects.**Conclusion:** In chronic liver disease, a common finding was dyslipidemia. With advanced liver disease, lipid profile should be performed in all subjects.**Key words:** Dyslipidemia, HDL-c, LDL-c, Triglycerides, Cholesterol.**Corresponding author:****Dr. Kashaf Iqbal,**

House Officer at Mayo Hospital, Lahore

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**INTRODUCTION:**

Lipids are essential components of free molecules, metabolic regulators and biological membranes that control homeostasis and cell function<sup>1-2</sup>. The liver plays a important role in the lipids metabolism. It contributes to both endogenous and exogenous lipid metabolism cycles and the transport of lipids from plasma. Apolipoproteins are necessary. Much apolipoprotein synthesis occurs in the liver. For the construction and assembly of lipoproteins, apolipoproteins are essential. For dietary cholesterol absorption, fat-soluble vitamins and long chain fatty acids Lipoproteins are necessary. The transport of cholesterol, fat-soluble vitamins and triglycerides from the liver to the peripheral tissue and the transfer of cholesterol from peripheral tissue to the liver is carried out by lipoproteins<sup>3</sup>. In the metabolism of lipoproteins, apolipoproteins activate an important enzyme and helps in lipoproteins binding to cell surface receptors. Liver is the main area of elimination and formation of lipoproteins. This indicates that the liver plays a role in many lipid metabolism and lipid transport steps<sup>4-6</sup>. Therefore, in disease of liver in severe form, the lipids metabolism is deeply altered. In various ways, lipids are affected. Alpha and Beta bands may not be present before electrophoresis in every liver disease. The more commonly studied analysis was Cholestatic liver disease \. Obstructive liver disease has significant free cholesterol and phospholipid elevation<sup>7</sup>. In acute hepatocellular diseases such as viral or alcoholic hepatitis, similar changes can be observed in cholestatic phase, for example. raised phospholipid

and cholesterol levels<sup>8</sup>. In CLD due to reduced liver biosynthetic capacity, there are decrease cholesterol and triglyceride levels. The aim of this analysis was to evaluate the disorders of lipid metabolism in patients with chronic liver disease.

**MATERIALS AND METHODS:**

This Prospective, noninvasive observational study was held in the Medicine West Medical Department Mayo Hospital, Lahore for one year duration from September 2017 to September 2018.

For the study purpose, 160 patients of chronic liver disease admitted in the Medicine Department were selected.

**INCLUSION CRITERIA**

1. The patients belonged to the B and C classes of the Pugh Classification of Children.
2. Patients had chronic liver disease regardless of their etiology.

**EXCLUSION CRITERIA**

Patients with associated diseases such as hypertension, thyroid problems and diabetes mellitus were excluded. After physical examination and complete clinical history, for fasting lipid profile assessment blood samples were sent. The results were analyzed and compiled.

**RESULTS:**

In the study, 160 total patients were included. The distribution by gender and age is as follows.

**Table I: Age and Sex Distribution (n=160)**

Age in years	Male n=102	%age	Female n=58	%age
20-30	10	9.80	3	5.17
31-40	23	22.55	12	20.69
41-50	62	60.78	28	48.28
51-60	04	3.92	12	20.69
61 and above	03	2.94	03	5.17

Many patients were from the middle-aged group.

Table II: Lipid Profile Total Cholesterol (n=160) Normal up to 200 mg/dl

Total Cholesterol mg/dl	Male n=102	%age	Female n=58	%age
50-100	10	9.80	14	24.14
101-150	81	79.41	39	67.24
151-200	08	7.84	04	6.90
201-250	02	1.96	01	1.72
251 and above	01	0.98	0	0.00

In 24 patients, Very low cholesterol levels were recorded 14 patients (24.14%) were female and 10 men (9.80%). Below normal levels of cholesterol is noted in 132 patient. 89 of the patients were male (87.25%) and female were 43 (74.14%). In 4 patients, Hypercholesterolemia was noted; 3 (2.94%) men and one woman (1.72%).

Table: III S. Triglycerides Normal upto 150 mg/dl

S. triglycerides mg/dl	Male n=102	%age	Female n=58	%age
50-75	12	11.76	06	10.34
76-100	70	68.63	20	34.48
101-125	14	13.73	26	44.83
126-150	05	4.90	06	10.34
151 and above	01	0.98	0	0.00

The majority of patients 148 (92.5%) showed decreased serum triglyceride levels. It was recorded that total cholesterol, triglyceride, LDL and HDL levels decreased in many subjects with (P <0.001 value). Some subjects had normal levels.

Table: IV: HDL-c Levels Normal above 50 mg/dl

HDL-c mg/dl	Male n=102	%age	Female n=58	%age
20-30	1	0.98	3	5.17
31-40	89	87.25	50	86.21
41-50	12	11.76	05	8.62
51-60	0	0.00	0	0.00
61 and above	0	0.00	0	0.00

Hyperlipidemia noted in some patients. In chronic liver disease patients the common finding noted was dyslipidemia.

Table: V: LDL-c Levels Normal upto 150 mg/dl

LDL-c Levels mg/dl	Male n=102	%age	Female n=58	%age
50-75	10	9.80	21	36.21
76-100	13	12.75	07	12.07
101-125	62	60.78	28	48.28
126-150	11	10.78	1	1.72
151 and above	06	5.88	1	1.72

### DISCUSSION:

Dyslipidemia is a common finding in chronic liver disease. It is also seen in other diseases like chronic renal failure and diabetes mellitus etc. There are many national studies on dyslipidemia or chronic renal failure in diabetes mellitus<sup>9-10</sup>. As far as we know, there is no study on chronic liver disease in Pakistan. Internationally, this issue is discussed in detail. There are many studies that do not only show lipid metabolism disorder, but also have a relationship with the etiology of chronic liver disease. Fernandez and Rodríguez CM have documented that genotype 3 hepatitis C-associated chronic liver diseases are associated with changes in serum lipids in their study, and that these changes are reversible to a continuous viral response. This interaction with the lipid path is related to the viral load<sup>11</sup>. Brier C et al. Figure 6 examined the transfer of acyl lecithin and cholesterol in the plasma of patients with lipoproteins, HDL-apolipoproteins and hepatic lipase activity, and patients with post-alcoholic liver cirrhosis. His results showed that total cholesterol, HDL, VLDL, HDL-cholesterol and HL decreased in alcoholic cirrhosis<sup>12-13</sup>. Medium density lipoproteins were not detected in cirrhosis. LDL of patients with cirrhosis contained more triglycerides and fewer cholesterol esterified and free. Ooik et al. studied dyslipidemia in different liver diseases such as chronic hepatitis, liver cirrhosis, hepatocellular carcinoma and metastatic liver disease. They have discovered different lipid abnormalities in different liver diseases<sup>14</sup>. In chronic hepatitis, liver cirrhosis and hepatocellular carcinoma, triglyceride and cholesterol levels decreased, LDL triglyceride fraction increased and metastatic liver cancer decreased HDL fraction level, but hepatocellular carcinoma level was higher than other parameters. The levels of triglycerides, cholesterol, free fatty acids, HDL, low density lipoproteins, Apo A and Apo B in the hepatocellular carcinoma decreased and this may be due to the rupture of the hepatoid cells, which may indicate a negative prognosis. Patients

with hepatitis C and HIV coinfections have significant lipid abnormalities. In our study, we found a decrease in total cholesterol, triglycerides, LDL and HDL levels in chronic liver disease, regardless of etiology<sup>15</sup>. Hypolipidemia is also found in malabsorption, malnutrition, malignancy, hyperthyroidism and immunoglobulin disorders. Therefore, patients suffering from other concomitant diseases were not included in the study.

### CONCLUSION:

In hepatitis C infected patients mainly of 3a genotype had hypolipidemia, and this abnormality is directly associated with viral response and viral load. The common HCV type genotype in our country was 3a. In all chronic liver disease subjects, a lipid profile is recommended, especially because of genotype 3a of HCV.

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