ORIGINAL RESEARCH PAPER
Volume - 13 | Issue - 04 | April - 2024 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

"LIPID PROFILE AS A SEVERITY INDICATOR IN CIRRHOSIS OF LIVER IN A TERTIARY CARE HOSPITAL - CROSS SECTIONAL STUDY "

General Medicine

Dr. Lohitha Athuluri — Final year Postgraduate, Department of General Medicine

Dr. T. Shankar Kumar — M.D, Assistant Professor, Department of General Medicine, Santhiram Medical College And General Hospital.

ABSTRACT

Background: Cirrhosis is a degenerative condition of the liver in which normal hepatic tissue is replaced by microscopically abnormal structures, which eventually impair liver synthetic as well as excretory function. Liver cirrhosis represents the advanced stage of hepatocellular injury caused by chronic liver diseases such as infectious causes like hepatitis, alcoholic liver disease and various other causes and may gradually end in hepatic failure and hepatocellular carcinoma. Lipids are one of the necessary components of cell wall and also control cellular functions and homeostasis. Liver plays an essential role in lipid metabolism, as it is the major site of converting excess carbohydrate into triglyceride and fatty acids, several stages of lipoprotein synthesis and transportation. The liver synthesizes large quantities of cholesterol and phospholipids. Majority of endogenous cholesterol is synthesized in the liver and its excretion by lipoprotein remnants. The synthesis and metabolism of cholesterol is impaired in chronic liver disease and this eventually results in decrease in plasma levels. High density lipoprotein (HDL) cholesterol and its major Apo lipoproteins have been shown to be reduced in cirrhosis, because of the severe metabolic derangement as also the serum levels of low-density lipoprotein (LDL) cholesterol. Hence this study aims at studying the changes in lipid profile in Cirrhosis, thereby recommending assessment of the need for lipid profile in all the patients as a prognostic indicator of severity of liver cell injury. **Aim:** To assess the lipid profile abnormalities in patients with cirrhosis of liver and to correlate with the severity of cirrhosis. **Materials And Methods:** A Hospital-based cross-sectional study was conducted in the Department of General Medicine, Santhiram Medical College, and General Hospital for six months. A total of 50 cases with cirrhosis of liver from all causes and patients that were admitted to the hospital during this period were taken into the study. **Results:** In my study depending on the Child Pugh score lipid profile changes has been depicted. Cholesterol level found to be lowest in Child Pugh category C when compared to Child Pugh score B then to A, with the mean value of 176.9+12 in group A, 148.6+11.8 in group B and 121.4+9.5 in group3+ C; it is found statistically significant with the P value <0.001. The triglyceride values were found statistically significant with mean value of 152+9 in group A, 130+8.6 in group B and 92.7+9.9 in group C with P value of <0.001. The serum LDL levels were calculated, mean value of 101.5+12.4 in group A, 86.6+10.9 in group B and 74+10.3 in group C, found statistically significant. The serum VLDL values were calculated mean values are 30.4+1.8 (group A), 26+1.7 (group B) and 18.2+2.0 (group C), which are statistically significant. The serum HDL values are measured with mean values of 45+5.2 in group A, 36+4.7 in group B and 28.6+4.3 in group C which are statistically significant with P value of <0.001. **Conclusion:** Lipid profile changes are common findings in patients with cirrhosis. In this study it was found that there is significant reduction in levels of lipid profile parameters like serum total cholesterol, LDL, VLDL, TGL, HDL in patients with cirrhosis as the severity increases. Presence of low lipid levels in cirrhosis patients presenting with altered sensorium and renal failure can aid in diagnosis of complications like hepatorenal syndrome and hepatic encephalopathy.

KEYWORDS

INTRODUCTION:

The liver has a central role in cholesterol metabolism. As liver contains most of the LDL receptors, it is responsible for most of the endogenous cholesterol synthesis. It takes up cholesterol from the diet via lipoproteins. It can excrete cholesterol from the body in bile. The chylomicron remnants enriched in apo B and apo E and cholesterol then bind rapidly to hepatic LDL-receptor related protein, which recognizes the apo E ligand. Within the hepatic cells the cholesterol is utilized and the apolipoproteins catabolized. Thus, ultimately the exogenous pathway delivers triglyceride to adipose tissue and muscle and cholesterol to the liver. Liver is the main source of endogenous lipids. Carbohydrates gets converted to fatty acids in the liver, it also esterifies the fatty acids with glycerol to form triglycerides and most endogenous cholesterols getting produced in the liver. Hepatic cholesterols can either be derived from chylomicron remnant or from exogenous pathway or synthesized locally.

From the liver lipids are transported as VLDL particles are transported to tissue capillaries. The resulting VLDL remnant or intermediate density lipoprotein (IDL) contains cholesterol and triglyceride as well as apo B and apo E and is rapidly taken up by the liver or converted by the action of hepatic lipase to LDL by losing apo E and triglyceride. Within the cell, the LDL particles are broken down by lysosomes, releasing cholesterol. This cholesterol can be incorporated into cell membranes or in specific tissues such as the adrenal cortex or gonads and utilized in steroid synthesis.

AIMS AND OBJECTIVES:

To assess the lipid profile abnormalities in patients with cirrhosis of liver and to correlate with the severity of cirrhosis.

MATERIALS AND METHODS:

A Hospital-based cross-sectional study was conducted in the Department of General Medicine Santhiram Medical College, and General Hospital for six months after approval from the Hospital Ethics and Research Committee.

Duration Of Study: From July 2023 to December 2023

Sample Size: 50

Methods Of Data Collection:

- All the selected cases of Cirrhosis of Liver of all causes admitted to Santhiram medical college and general hospital, Nandyal, fulfilling the inclusion criteria, were taken for study after taking prior informed consent.
- Information is collected through a pre-structured proforma for each study subject
- The study was carried out on patients with diagnosed Cirrhosis of liver.
- Qualifying study subjects will be undergoing detailed history, clinical examination, and laboratory investigations.

Sampling Technique: Simple Random Sampling

Inclusion Criteria:

- Patients of age more than 18 years with cirrhosis
- Patients who are willing to participate and give informed written consent

Exclusion Criteria:

- Diabetes mellitus / hypertension
- Cerebrovascular disease
- Patients on lipid lowering drugs
- Pancreatitis
- Chronic kidney disease
- Hypo/hyperthyroidism

Data Analysis:

1. Data was collected using a pretested proforma meeting the study's objectives. Detailed history, physical examination, and necessary investigations were undertaken.
2. The chi-square and Fisher's Exact test were used in statistical analysis to compare proportions. At a P-value of 0.05, statistical results were considered significant <0.01.

RESULTS:

Table 1: - Age distribution in the case group

Age	No. of cases	Percentage
20-29	5	10%
30-39	18	36 %
40-49	20	40 %
50-59	7	14 %
Total	50	100.0 %

In this study, most of the patients with cirrhosis of liver happened to be in age of 30 to 49 years.

Table 2: - Gender distribution

Gender	No. of cases	Percentage
Female	16	32 %
Male	34	68 %
Total	50	100.0 %

A male preponderance of 68% was found in this study.

Table 3: - Child PUGH Score

Child Pugh Score	No of Patients	Percentage
A	17	34
B	24	48
C	9	18

In my study among total of 50 patients,17 patients were under the Child Pugh Score category A (34%), 24 patients under category B (48%), 9 patients were under category C (18%).

Table 4:Lipid Profile According To Child Pugh Score Classifiction Child Pugh Score

		A	B	C
Cholesterol	Mean +/- SD	176.9 (12.0)	148.6(11.8)	121.4(9.5)
	Range	152-210	130-178	102-134
	95% Confidence interval	173.2-180.5	145.3-152.0	117.6-125.3
	P value (Anova)	<0.001	<0.001	<0.001
Triglyceride	Mean +/- SD	152.1(9.0)	130.1(8.6)	92.7(9.9)
	Range	125-174	110-145	74-112
	95% Confidence interval	149.3-154.8	127.7-132.6	88.7-96.7
	P value (Anova)	<0.001	<0.001	<0.001
LDL	Mean +/- SD	101.5(12.4)	86.6(10.9)	74.3(10.3)
	Range	77-140.6	69.6-116	57.6-94.4
	95% Confidence interval	97.7-105.3	83.5-89.7	70.1-78.5
	P value (Anova)	<0.001	<0.001	<0.001
VLDL	Mean +/- SD	30.4(1.8)	26.0(1.7)	18.5(2.0)
	Range	25-34.8	22-29	14.8-22.4
	95% Confidence interval	29.9-31.0	25.5-26.5	17.7-19.3
	P value (Anova)	<0.001	<0.001	<0.001
HDL	Mean +/- SD	45.0(5.2)	36.0(4.7)	28.6(4.3)
	Range	34-55	28-45	22-37
	95% Confidence interval	43.4-46.5	34.7-37.3	26.8-30.3
	P value (Anova)	<0.001	<0.001	<0.001

DISCUSSION:

In my study depending on the Child Pugh score lipid profile changes has been depicted. Cholesterol level found to be lowest in Child Pugh category C when compared to child pugh score B then to A, with the mean value of 176.9+12 in group A, 148.6+11.8 in group B and 121.4+9.5 in group3+ C. it is found statistically significant with the P value <0.001. The triglyceride values were found statistically significant with mean value of 152+9 in group A, 130+8.6 in group B and 92.7+9.9 in group C with P value of <0.001. The serum LDL levels were calculated, mean value of 101.5+12.4 in group A, 86.6+10.9 in group B and 74+10.3 in group C, found statistically significant. The serum VLDL values were calculated mean values are 30.4+1.8 (group A), 26+1.7 (group B) and 18.2+2.0 (group C), which are statistically significant. The serum HDL values are measured with mean values of 45+5.2 in group A, 36+4.7 in group B and 28.6+4.3 in group C which are statistically significant with P value of <0.001.

There are various scoring system available to assess the severity of cirrhosis like Child Pugh Turcotte score includes serum bilirubin, ascites, encephalopathy, serum albumin and PT-INR. Model for end stage liver diseases (MELD) score also used for prioritizing patients for liver transplantation. Lipid metabolism is solely dependent on liver. Hence, in cirrhosis the levels of lipid profile parameters like serum total cholesterol, LDL, VLDL, TGL, HDL are reduced with increasing severity of cirrhosis. Considering lipid profile abnormalities in chronic liver disease is paramount importance to assess the severity since the changes are correlating statistically significant with previously existing severity assessment score like Child Pugh Turcotte score.

CONCLUSION:

1. In this study it was found that there is significant reduction in levels of lipid profile parameters like serum total cholesterol, LDL, VLDL, TGL, HDL in patients with cirrhosis as the severity increases.
2. Presence of low lipid levels in cirrhosis patients presenting with altered sensorium and renal failure can aid in diagnosis of complications like hepatorenal syndrome and hepatic encephalopathy.
3. Further formulation of scoring system in association with preexisting score system may provide better assessment of patients' prognosis in view of morbidity and mortality.
4. It is cost effective method.
5. We recommend it is necessary to assess fasting lipid profile in all patients with cirrhosis and prognosticate the disease progression.

List Of Abbreviations

HDL: High Density Lipoprotein

LDL: Low Density Lipoprotein

TGL: Triglycerides

VLDL: Very Low Density Lipoprotein

IDL: Intermediate Density Lipoprotein