

Research Article**Study of mean lipid profile in cases of liver cirrhosis presenting
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and ³Muzammil Basheer**¹House Officer, Jinnah Hospital, Lahore²Assistant Professor (OPS), Department of Medicine,
Bahawal Victoria Hospital, Bahawalpur³General Dentist, FazalRehman Hospital, Multan**ABSTRACT**

Cirrhosis of liver is development of fibrosis to the point that there is architectural distortion with the formation of regenerative nodules¹. Cirrhosis is the tenth most common cause of death in United States. Chronic viral hepatitis C and alcoholic liver disease are the most common causes of cirrhosis. It is seen that lipid abnormalities exist in patients with cirrhosis. Liver plays an essential role in lipid metabolism, synthesis, transportation and clearance. It is therefore reasonable to expect an abnormal lipid profile in those with severe liver dysfunction and so low levels of triglycerides and cholesterol are observed in chronic liver disease.

OBJECTIVE: To determine the mean lipid profile values in liver cirrhosis patients.

Material and methods: This cross sectional was conducted at Department of Medicine, Jinnah Hospital, Lahore from March 2017 to September 2017. Total 171 patients with cirrhosis of liver was selected for this study and mean lipid profile was determined of all the selected patients.

Results: Mean age of the cirrhotic patients was 38.96 ± 13.893 and mean and standard deviation for HDL, LDL, TC, TG was 40.22 ± 3.001 , 138.08 ± 9.713 , 203.64 ± 24.219 and 197.99 ± 71.270 respectively. Frequencies for child pugh grades as Mild 34 (19.9%), Moderate 50 (29.2%) and severe 87 (50.9%)

Conclusion: In this study most of the male patients were victim of liver cirrhosis as compared to female patients. Higher number of patients found with severe liver cirrhosis as compared to mild or moderate cirrhosis. Significant difference of mean HDL and mean cholesterol between male and female patients was observed.

Key words: Cirrhotic, dyslipidemia, child pugh class, lipid profile, Hepatitis, Hepatitis B, Hepatitis C

INTRODUCTION

Cirrhosis of liver is development of fibrosis to the point that there is architectural distortion with the formation of regenerative nodules¹. Cirrhosis is the tenth most common cause of death in United States. Chronic viral hepatitis C and alcoholic liver disease are the most common causes of cirrhosis². Hepatitis C is estimated to cause chronic infection in 200 million individuals or 2-3% of the world's population³. It affects 1.3% individuals in United States and 3.5% individuals in Asia⁴. Chronic alcoholic liver disease accounts for 40% of deaths due to cirrhosis of liver¹.

According to a local study conducted in 2012, most common cause of cirrhosis of liver is hepatitis C, 61.66% of all patients with cirrhosis, followed by hepatitis B infection, 18.94% and then alcoholic liver disease which accounts for 3.2% of the patients of cirrhosis of liver⁵. These patients need frequent visits and multiple hospital admissions for management of cirrhosis and its complications. Child Turcotte Pugh classification is used to predict survival in patients with cirrhosis⁶.

It is seen that lipid abnormalities exist in patients with cirrhosis. Liver plays an essential role in lipid metabolism, synthesis, transportation and clearance⁷. It is therefore reasonable to expect an abnormal lipid profile in those with severe liver dysfunction and so low levels of triglycerides and cholesterol are observed in chronic liver disease⁸.

In a study conducted by Ghadir MR et al, it was concluded that total LDL, HDL and cholesterol levels in patients with cirrhosis are inversely correlated with severity of cirrhosis (p value was <0.05). According to their study mean values of lipid profile in cirrhotic patients were, LDL cholesterol 80.5±20.125 mg/dl, HDL 40.7±10.175 mg/dl, total cholesterol 138.9±34.742 mg/dl and triglycerides 82.2±20.55 mg/dl^{9,10}.

In a study conducted by EL-Khabbany ZA, it was concluded that dyslipidemia is a frequent finding in a patient with chronic liver disease, which worsened with increased severity of CLD. Of the 40 studied cases with CLD, 8(20%) had hypercholesterolemia, 13(32.5%) had hypertriglyceridemia, 17(42.5%) had low HDL and 9(22.5%) had high LDL.¹¹

Abbas et al also found that hypocholesterolemia is a common finding in decompensated chronic liver disease and has got significant association with Child-Pugh class. As severity of liver dysfunction increased these levels decreased proportionately. Results also revealed that males were more hypocholesterolemic than females.¹² The association of lipid profile and severity of liver disease is not well studied in Pakistan and usually this parameter is ignored.

Rationale of our study is to determine the mean lipid profile values in liver cirrhosis as there is a high prevalence of chronic liver disease in Pakistan. Also etiology of chronic liver disease as well as dietary factors are different in our country as compared to the developed countries. The results of this study will help in making protocols for screening dyslipidemias in cirrhotic.

Operational Definitions:

Cirrhosis:

Presence of all was labeled as liver cirrhosis;

- Patients with deranged liver function tests ,serum bilirubin> 2.0 mg/dl
- presence of yellowness of sclera
- ascites on clinical examination
- evidence of shrunken liver and splenomegaly on ultrasonography

MATERIAL AND METHODS

This cross sectional was conducted at Department of Medicine, Jinnah Hospital, Lahore from March 2017 to September 2017.

Inclusion criteria:

- Patients with established cirrhosis of liver, in Child's Class A and B
- Patients from either sex
- Age between 15 - 65 years,

Exclusion criteria:

- Patients with co morbid diseases such as Diabetes Mellitus,
- Hypertension and Ischaemic heart disease,
- Patients on lipid lowering drugs or hepatotoxic drugs,
- Patients with BMI>30,
- Patients with acute hepatitis,
- Patients with end stage renal disease.

Data Collection and Procedure:

- Permission from the ethical committee of Jinnah Hospital, Lahore was sought.
- Written Informed consent was taken from the patients about their inclusion in the study.
- Demographic data of the enrolled patients including Name, Age, Gender, Address, Phone Number (optional) and Hospital Registration number was recorded
- Blood samples of all the patients was taken by researcher for PT, INR, albumin, bilirubin and fasting lipid profile (after an overnight fast of 12 hours)
- All samples was sent to the same laboratory for analysis.
- Ultrasonography of all the patients was done by a consultant radiologist with minimum 5 years experience.
- All relevant information including all variable age, gender, lipid profile and Child's Grading was noted on a specially designed Performa

Data Analysis:

Data was entered and analyzed using Statistical Package for the Social Sciences version 19. Mean and Standard Deviation (SD) was calculated for the quantitative variables like age, LDH, HDL, total cholesterol and triglycerides. Frequencies and percentages was calculated for categorical variables like gender and Child's Grade. Effect modifiers like age, Child's Grade and gender was controlled by stratification. Chi – square test was applied to compare post stratification outcome. P-value of less than or equal to 0.05 was considered as significant.

RESULTS

After entering and analyzing all the data of 171 cirrhotic patients in SPSS version 16, results are as follows. Mean age of the cirrhotic patients was

38.96 ± 13.893 and mean and standard deviation for HDL, LDL, TC, TG was 40.22 ± 3.001, 138.08 ± 9.713, 203.64 ± 24.219 and 197.99 ± 71.270 respectively. Shown in table No.1. Table No. 2 showing frequencies of male and female as 104 (60.8%) and 67 (39.2%). Table No. 3 showing frequencies for child pugh grades as Mild 34 (19.9%), Moderate 50 (29.2%) and severe 87 (50.9%). Table No.4 showing comparison of gender for mean lipid profile, there was insignificant difference in mean HDL and TC (p. value 0.4582 and 0.2325) and significant difference in mean LDL and TG (p. value 0.0012 and 0.0217) between male and female. Table No. 5 showing comparison of mean lipid profile for age groups. There was insignificant mean difference in age groups for mean HDL, LDL, TC, TG (p. values 0.9138, 0.8096, 0.0905, 0.0888).

Table No. 1: Mean and standard deviation of lipid profile

Lipid Profile	Mean	SD
HDL	40.22	3.001
LDL	138.08	9.713
TC	203.64	24.219
TG	197.99	71.270

Table No. 2: Frequencies of Gender

Gender	Frequency	Percent
Male	104	60.8
Female	67	39.2
Total	171	100

Table No.3: Frequencies for Child pugh grades

Child Pugh Grade	Frequency	Percent
Mild	34	19.9
Moderate	50	29.2
Severe	87	50.9
Total	171	100

Table No. 4: Comparison of gender for mean lipid profile

Lipid Profile	Gender		P. Value
	Male n = 104 Mean ± SD	Female n = 67 Mean ± SD	
HDL	40.08 ± 2.602	40.43 ± 3.543	0.4582
LDL	139.99 ± 8.996	135.12 ± 10.102	0.0012
TC	205.42 ± 23.365	200.88 ± 25.420	0.2325
TG	187.98 ± 44.465	213.52 ± 97.954	0.0217

Table No. 5: Comparison of age groups for mean lipid profile

Lipid Profile	Age Groups		P. Value
	Age 15-40 Years n = 90 Mean ± SD	Age 41-65 Years n = 81 Mean ± SD	
HDL	40.24 ± 2.842	40.19 ± 3.186	0.9138
LDL	137.91 ± 9.201	138.27 ± 10.305	0.8096
TC	200.67 ± 22.593	206.95 ± 25.643	0.0905
TG	189.19 ± 58.486	207.77 ± 82.489	0.0888

DISCUSSION

Liver plays a vital role in lipid metabolism. It contributes both in exogenous and endogenous cycles of lipid metabolism and transport of lipids through plasma. Lipids are essential component of biological membranes, free molecules and metabolic regulators that control cellular function and homeostasis. Synthesis of many apolipoproteins takes place in liver. The apolipoproteins are required for the assembly and structure of lipoproteins. Lipoproteins play an important role in the absorption of dietary cholesterol, long chain fatty acids and fat soluble vitamins. Liver is the principal site of formation and clearance of lipoproteins. This shows liver is involved in many steps of lipid metabolism and lipid transport. Thus in severe liver disease, lipid metabolism is profoundly disturbed.¹³⁻¹⁴

In this study mean values for HDL, LDL, TC, TG was 40.22 ± 3.001, 138.08 ± 9.713, 203.64 ± 24.219 and 197.99 ± 71.270 respectively. Study by Sen A et al¹⁵ was in contrast with my findings reporting mean values for HDL, LDL, TC, TG as 55.629 ± 26.73, 104.21 ± 41.47, 141.00 ± 78.62 and 141.73 ± 79.54 respectively. This may be due to different mean age as the mean age in Sen A et al study was almost 10 years greater than my study and it was expected the liver cirrhosis may definitely be advanced day by day. Same was found with Mandal SK et al¹⁶ mean values for HDL, LDL, TC, TG was 33.50±12.78, 86.58±35.63, 141.5±46.69 and 120.9±96.23 respectively. But in a study conducted by Ghadir

MR et al,⁹ it was concluded that total LDL, HDL and cholesterol levels in patients with cirrhosis are inversely correlated with severity of cirrhosis (p value was <0.05). According to their study mean values of lipid profile in cirrhotic patients were, LDL cholesterol 80.5±20.125 mg/dl, HDL 40.7±10.175 mg/dl, total cholesterol 138.9±34.742 mg/dl and triglycerides 82.2±20.55 mg/dl. All these findings were comparable with my values as the similar trend was in my study. Subhan F et al¹⁷ from Peshawar documented mean values for HDL, LDL, TC, TG as 38.7, 82.5, 140.9 and 84.2 in liver cirrhotic.

Our study is indoor study on hospitalized patients. Chronic liver disease is one of the highly prevalent disease in our community. Dyslipidemia also contributes for its morbidity and mortality as commonly observed in them. Its effective screening and prompt management may helpful in decreasing morbidity and mortality of chronic liver disease. It is suggested to perform further studies in this aspect particularly community based, so that results will be more generalized.

CONCLUSION

In this study most of the male patients were victim of liver cirrhosis as compared to female patients. Higher number of patients found with severe liver cirrhosis as compared to mild or moderate cirrhosis. Significant difference of mean HDL and mean cholesterol between male and female patients was observed.

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