Lipid Profile In Patients Of Liver Cirrhosis: A Study In Sheikh Russel National Gastroliver Institute & Hospital, Mohakhali, Dhaka, Bangladesh

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Abstract

Introduction: 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. Frequently multiple etiological factors contribute to the development of cirrhosis, as exemplified in epidemiological studies that identified regular (moderate) alcohol consumption, age above 50 years, and male gender as risk factors in chronic hepatitis. Due to the high prevalence of chronic liver disease in our country, we conducted this study to determine lipid profile in patients with cirrhosis. **Objective:** To find out study on Lipid Profile in Patients of Liver Cirrhosis. **Material And Methods:** This cross sectional study conducted at Department of Medicine Sheikh Russel National Gastroliver Institute & Hospital, Mohakhali, Dhaka, Bangladesh from January 2020 to July 2020. Total 200 patients of liver cirrhosis either male or female and having age from 18-65 years were recruited. An approval was taken from institutional review committee before commencing the study and written informed consent was taken from every patient. Patients with co-morbid diseases such as diabetes mellitus, hypertension and ischemic heart disease, patients on lipid lowering drugs or hepatotoxic drugs, patients with acute hepatitis, patients with end stage renal disease acute pancreatitis, recent parenteral nutrition and acute gastrointestinal bleeding, were excluded from the study. **Results:** Total 200 patients of liver cirrhosis were selected for this study. Dyslipidemia was noted in 160 (80%) patients. Total 140 (70%) were males and 60 (30%) were females. Dyslipidemia was in 120 (85%) male patient 40(66.6%) female patients. Age distribution of the patients was done and two groups were made, age group 1840 years and age group 41-65 years. In age group 18-40 years, out of 99 patients, dyslipidemia was noted in 89(89.8%) patients. Out of 101 patients of age group 41-65 years, dyslipidemia was noted in 71 (70%) patients. Insignificant (P=0.8472) between age of the pts. and dyslipidemia was noted. Distribution of patients according to the severity of liver cirrhosis was done. Total 40(20%) patients were found with mild liver cirrhosis followed by 58(29%) moderate and 102(51%) with severe liver cirrhosis. Dyslipidemia was found in 13(33.5%) patients with mild liver cirrhosis, 53(91.38%) moderate liver cirrhosis and 92.1% with severe liver cirrhosis. Statistically significant (P=0.000) association of severity of liver cirrhosis with dyslipidemia was noted. **Conclusion:** Dyslipidemia is common in chronic liver disease. Our study concluded that there is decrease in lipid profile parameters in cirrhotic patients, more severe the cirrhosis, there is greater fall in lipid profile parameters. We can use lipid profile parameters in all the cirrhotic patients to assess severity of disease.

Keywords—Cirrhosis, Cholesterol, Hepatitis, Prevalence Of Chronic Liver Disease.

I Introduction

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. Frequently multiple etiological factors contribute to the development of cirrhosis, as exemplified in epidemiological studies that identified regular (moderate) alcohol consumption, age above 50 years, and male gender as risk factors in chronic hepatitis. Due to the high prevalence of chronic liver disease in our country, we conducted this study to determine lipid profile in patients with cirrhosis. Lipids are essential component of biological membranes, free molecules and metabolic regulators that control cellular function and homeostasis [1]. 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. Dyslipidemia seen in chronic liver disease differs from that found in most of the other causes of secondary dyslipidemias because circulating lipoproteins are not only present in abnormal amount but they also frequently have abnormal composition, electrophoretic mobility and appearance [2]. The liver plays a key role in several metabolic pathways. The most important among these is the metabolism of plasma lipids and lipoproteins. Therefore, it is reasonable to expect an abnormal lipid profile in patients with severe liver dysfunction. Cirrhosis of liver is defined as a chronic disorder of liver characterized by degeneration of liver cells followed by fibrosis and disordered regenerating nodules leading to portal hypertension and its complications. Chronic liver diseases due to various causes are often associated with dramatic reductions in plasma triglyceride and cholesterol level due to reduced lipoprotein biosynthetic capacity. Cholestasis is associated with hypercholesterolemia as the major excretory pathway of cholesterol is blocked in this disorder. Apart from the various complications seen in cirrhotic patients, chronic dyslipoproteinemia is one which can lead to alterations in cellular membrane lipids, that result in formation of abnormal RBCs, such as echinocytes, and alterations in membrane function with potential pathophysiologic consequences. There is prominent decline in plasma cholesterol and triglyceride (TG) levels in patients with severe hepatitis and hepatic failure because of reduction of lipoprotein biosynthesis [3]. For reduced liver biosynthesis capacity, low levels of TG and cholesterol is usually observed in chronic liver diseases [4]. As there is a high prevalence of chronic liver disease in our country, we conducted this study to determine lipid profile in patients with cirrhosis and to assess if it relates to the severity of chronic liver disease. Over the years, many clinical and biochemical parameters have been suggested in order to predict more accurately the prognosis of cirrhotic patients and correctly assess their survival rate. Due to the high prevalence of chronic liver disease in our country, we conducted this study to determine lipid profile in patients with cirrhosis.

II Aims And Objectives

a) Study of lipid profile in patients with cirrhosis.
b) To assess if it relates to the severity of chronic liver disease.

III Material And Methods

This cross sectional study conducted at Department of Medicine Sheikh Russel National Gastroliver Institute & Hospital, Mohakhali, Dhaka, Bangladesh from January 2020 to July 2020. Total 200 patients of liver cirrhosis either male or female and having age from 18-65 years were recruited. An approval was taken from institutional review committee before commencing the study and written informed consent was taken from every patient. Patients with co-morbid diseases such as diabetes mellitus, hypertension and ischemic heart disease, patients on lipid lowering drugs or hepatotoxic drugs, patients with acute hepatitis, patients with end stage renal disease acute pancreatitis, recent parenteral nutrition and acute gastrointestinal bleeding, were excluded from the study. Fasting blood samples of all the patients were taken and sent to laboratory for lipid profile and findings were noted on pre-designed proforma along with demographic profile of the patients. All the collected data was entered and analyzed by using SPSS version 16. Mean and standard deviation was calculated for numerical variables and frequencies and percentages was calculated for categorical variable. Chi-square/fisher exact test was applied to see the level of significance. P. value ≤ 0.05 was considered as statistically significant.

IV Results

Total 200 patients of liver cirrhosis were selected for this study. Dyslipidemia was noted in 160 (80%) patients. Total 140 (70%) were males and 60 (30%) were females. Dyslipidemia was in 120 (85%) male patient 40(66.6%) female patients. Age distribution of the patients was done and two groups were made, age group 1840 years and age group 41-65 years. In age group 18-40 years, out of 99 patients, dyslipidemia was noted in 89(89.8%) patients. Out of 101 patients of age group 41-65 years, dyslipidemia was noted in 71 (70%) patients. Insignificant (P=0.8472) between age of the pts. and dyslipidemia was noted. Distribution of patients according to the severity of liver cirrhosis was done. Total 40(20%) patients were found with mild liver cirrhosis followed by 58(29%) moderate and 102(51%) with severe liver cirrhosis. Dyslipidemia was found in 13(33.5%) patients with mild liver cirrhosis, 53(91.38%) moderate liver cirrhosis and 92.1% with severe liver cirrhosis. Statistically significant (P=0.000) association of severity of liver cirrhosis with dyslipidemia was noted.

Table-1: Age distribution of the patients (N=200)

	Dyslipidemia		
Gender	Yes	No	Total
18-40	89(89.89%)	10(10.1%)	99
41-65	71(70%)	30(29.7%)	101
Total	160	40	200

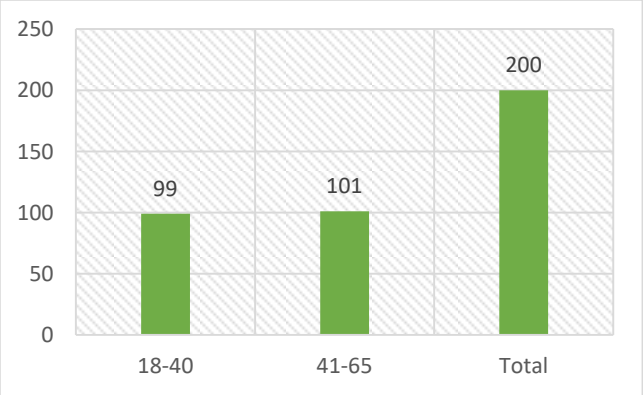

Figure-1: Age distribution of the patients.

Table-2: Gender distribution of patients (N=200)

	Dyslipidemia		
Gender	Yes	No	Total
Male	120(85%)	20(15%)	140
Female	40(66.6%)	20(33.3%)	60
Total	160	40	200

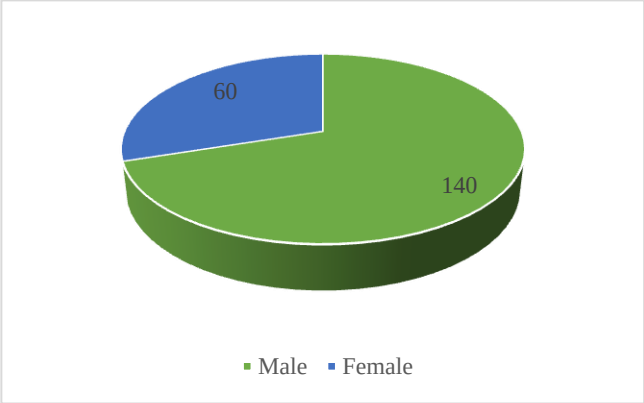

Figure-2: Gender distribution of patients.

Table-3: Distribution of patients according to severity (N=200)

	Dyslipidemia		
Severity	Yes	No	Total
Mild	13(33.5%)	27(67.5%)	40(20%)
Moderate	53(91.3%)	5(8.62%)	58(29%)
Severe	94(92.1%)	8(7.84%)	102(51%)
Total	160	40	200

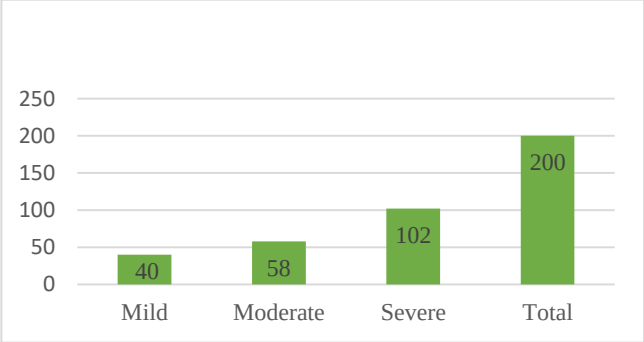

Figure-3: Distribution of patients according to severity.

V Discussion

Derangement of serum lipid profile is a common observation in cirrhotics. To the best of our knowledge, there are very few studies on dyslipidemia in cirrhosis in Bangladesh, but this subject has been dealt in detail worldwide. This study was conducted to document any derangement in lipid profile in cirrhotic patients and whether this derangement has any correlation to severity of liver damage. Hypolipidemia is also seen in various other medical conditions like malnutrition, malabsorption, hyperthyroidism, renal failure, malignancy and immunoglobulin disorders [5] .So we excluded patients suffering from these disorders from our study. One study conducted by Brier C et al. [6] on lipoproteins in the plasma of patients with post alcoholic liver cirrhosis, showed that in alcoholic cirrhosis, total cholesterol, HDL, VLDL, HDL-cholesterol were all decreased. LDL from cirrhotic patients contained more triglycerides and less esterified and free cholesterol. Selimoglu and colleagues [4], in their study showed that with the exception of serum triglyceride levels, other variables like serum HDL, LDL level decreased in cirrhotics. This finding has some similarity with our results and hypolipidemia is expected in severe liver disease due to decline in synthetic function. However most of the studies conducted elsewhere showed all the lipid fragments in cirrhotics were lower than in control [7,8]. Similar studies conducted by Edith N.Okeke. [9], and Mohammad Reza Ghadr showed significant derangement of lipid level in cirrhotics and a negative relation to extent of liver damage. Furthermore, our study was a hospital based study, which might have introduced some bias in patient selection. Hypolipidemia, in particular decreased HDLC level is also an important risk factor for cardiovascular disease and vascular events. Abbas et al. [9], also found that hypocholesterolemia is a common finding in decompensated chronic liver disease and has got significant association with Child-Pugh class. Serum cholesterol is a routinely measured parameter, which has independent prognostic value in patients with liver cirrhosis [10].

VI Conclusion

Dyslipidemia is common in chronic liver disease. Our study concluded that there is decrease in lipid profile parameters in cirrhotic patients, more severe the cirrhosis, there is greater fall in lipid profile parameters. We can use lipid profile parameters in all the cirrhotic patients to assess severity of disease.

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