

Case Study

Evaluation of liver cirrhosis: A case Study

¹Tatianna Popkov and ²Jaroslow Beletskiaia

¹Medical officer, Gvt hospital, Siberia

²Incharge Medical Officer, E.B. quarter, Siberia

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ABSTRACT:

Objectives: To evaluate dyslipidemia in cases of liver cirrhosis.

Methods: The present study was conducted in the Department of Medicine, Gvt. Hospital on 135 patients with liver cirrhosis and 50 age, sex matched healthy controls, who were admitted to medical wards during the period of study (November 2019-october 2020). All the adult patients with liver cirrhosis diagnosed previously on the basis of history were included in the study.

Then they were subjected to detailed history taking, clinical examination and relevant investigations as per case requirement using a Performa specially designed for this study. Patients with history of taking lipid lowering drugs and those with history of hyperlipidemia were excluded from the study.

Conclusion: Results of this study reveals that dyslipidemia was found frequently in patients of liver cirrhosis. Dyslipidemia worsens with severity of liver cirrhosis according to child Pugh classification. But has no statistically significant association with age and gender.

Keywords: Child paugh class, liver cirrhosis, dyslipidemia, lipid profile, Hepatitis, Hepatitis B, Hepatitis C

INTRODUCTION

Dyslipidemia is common in the general population and increases the risk for cardiovascular disease. Treatment of dyslipidemia is effective in decreasing morbidity from cardiovascular disease. Because the liver is the primary source of cholesterol and other lipids in the body, medications for dyslipidemia, such as statins, target genes in the liver. April 2018, the American Gastroenterology Association (AGA) published a clinical practice update on management of dyslipidemia in individuals with liver dis-ease.(1) Liver disease impacts on hepatic synthesis of lipoproteins and lipogenesis but data on

dyslipidemia during disease progression are limited.

Liver cirrhosis is a chronic disorder described as degeneration of liver cells that further progress as fibrosis as well as disorders involving regeneration of nodules that progress in to portal hypertension and complications related to it.(2) Around 1 million deaths because of complications of liver cirrhosis are reported annually from around the world. Presently, cirrhosis is the eleventh commonest cause of global mortality.(3)

Frequent visits to healthcare facilities as well as hospitalizations are required to manage patients with live cirrhosis and its complications.(4,5)

Total of 200 patients presented with cirrhosis of liver of age 15-65 years and both genders were included. Patients with lipid lowering drugs or hepatotoxic drugs, acute hepatitis, hypertension, diabetes mellitus, ischaemic heart disease and chronic renal failure were excluded. 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.(6) In 2001 cirrhosis liver was the 10th leading cause of death in men and 12th for women in the United States resulting in about 27,000 deaths.(6) In developing countries like Iran cirrhosis liver is more prevalent compared to developed countries.(7) In fact both hepatitis B virus (HBV) and hepatitis C virus (HCV) infections have become endemic in our community.(8) About 2-3% individuals of world's population infected by Hepatitis C.(9) Chronic alcoholic liver disease accounts for 40% of deaths due to cirrhosis of liver. For the management of cirrhosis of liver and its complications, such patients need frequent hospital visits. Child pugh classification is used to predict survival in patients with cirrhosis.(10,11) Lipids are one of the necessary components which control cellular functions and homeostasis. Liver plays an essential role in lipid metabolism, several stages of lipid synthesis and transportation.(12) Therefore, it is reasonable to expect an abnormal lipid profile in those with sever liver dysfunction. 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. For reduced liver biosynthesis capacity, low levels of TG and cholesterol is usually observed in chronic liver diseases.(13) Although several studies have been done on dyslipidemia in cirrhotics worldwide there is a paucity of data in this regard in our local population. So a study was conducted to determine overall frequency or magnitude of dyslipidemia in cirrhosis and the mean lipid profile values in liver cirrhosis as there is a high

prevalence of chronic liver disease in Iran. 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.

MATERIAL AND METHODS:

The present study was conducted in the Department of Medicine, Gvt. Hospital on 135 patients with liver cirrhosis and 50 age, sex matched healthy controls, who were admitted to medical wards during the period of study (November 2019-october 2020). All the adult patients with liver cirrhosis diagnosed previously on the basis of history were included in the study.

Then they were subjected to detailed history taking, clinical examination and relevant investigations as per case requirement using a Performa specially designed for this study. Patients with history of taking lipid lowering drugs and those with history of hyperlipidemia were excluded from the study.

Presence of all was labeled as liver cirrhosis; Liver cirrhosis defined as: 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.

Presence of any one was labeled as dyslipidemia; When fasting lipid profile (after an overnight fast of 12 hours) is outside the following range (Triglycerides <150 mg/dl, HDL <40 mg/dl, LDL 100 – 129 mg/dl, total Cholesterol <200 mg/dl). 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.

STATISTICAL ANALYSIS

All the data was arranged in a tabulated form and analysed using SPSS software. Student t test was used as a test of significance. Probability value of less than 0.05 was regarded as significant.

RESULTS:

In our study comparison of mean total cholesterol in cirrhotic patients and control group was done.

In present study mean age of the patients was 39.65 ± 12.45 . Dyslipidemia was noted in 130/200 (65%) patients. Total 100/200 (50%) were males and 100/200 (50%) were females. Dyslipidemia was in 80/100 (80%) male patient 50/100 (50%) female patients. Insignificant ($P = 0.5$) association of gender with dyslipidemia was noted. Table 1.

Age distribution of the patients was done and two groups were made, age group 15-40 years and age group 41-65 years. In age group 15-40 years, out

Table 1: Gender distribution of the patients

Gender	Dyslipidemia		Total (%)	P. value
	Yes (%)	No (%)		
Male	80 (40)	20 (10)	100 (50)	0.5
Female	50 (25)	50 (25)	100 (50)	
Total	130 (65)	70 (35)	200	

Table No.2: Age distribution of the patients

Age Group	Dyslipidemia		Total (%)	P. value
	Yes (%)	No (%)		
15-40	40 (20)	18 (9)	58 (29)	0.812
41-65	132 (66)	10 (05)	142 (71)	
Total	172 (86)	28 (14)	200	

Table No.3: Distribution of patients according to severity of liver cirrhosis

Severity of liver cirrhosis	Total (%)	P. value
Mild	10 (5)	0.67
Moderate	110(55)	
Severe	52 (26)	
Total	172	

DISCUSSION:

Chronic liver disease due to different reasons is commonly linked with dramatic decline in plasma TG and cholesterol levels which could be because of declined synthesis of lipoprotein.(15) Hypercholesterolemia occurs as the main excretory pathways of cholesterol are blocked in CLD.(14)

Synthesis of many apolipoproteins takes place in liver. The apolipoproteins are required for the assembly and structure of lipoproteins.

of 40/200 (20%) patients, dyslipidemia was noted Out of 132/200 (66%) patients of age group 41-65 years, dyslipidemia was noted in 132/200 (66%) patients. Insignificant ($P = 0.8$) between age of the patients and dyslipidemia was noted. Table 2. Distribution of patients according to the severity of liver cirrhosis was done. Total 10/200 (5%) patients were found with mild liver cirrhosis followed by 110/200 (55%) moderate and 52/200 (26%) with severe liver cirrhosis. Statistically significant ($P = 0.000$) association of severity of liver cirrhosis with dyslipidemia was noted. Table 3

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 (16,17)

In present study dyslipidemia was observed in 84% patients of liver cirrhosis. Most of them belonged to middle age group and the mean age

was found 39.65 ± 12.45 years. Among the age 15 to 40 years, dyslipidemia was found in 83.18% patients while in age group 41-65 years, dyslipidemia was found in 84.95% patients. These finding of dyslipidemia comparable with the study of Roesch-Dietlen et al(18) which was showing dyslipidemia as 76.92% but Shimizu H(19) at Ohio USA found lower dyslipidemia rate as 61% in patients of liver cirrhosis.

Cirrhotic patients need frequent visits and multiple hospitalizations for management of cirrhosis or its complications. However, choosing the proper treatment plan depends on the severity, type of liver damage and possibility of assessing its extent. To evaluate cirrhosis, Child-Turcotte-Pugh criteria can be used.(17)

Severity of the liver cirrhosis as according to child pugh class dyslipidemia occurred more in severely affected ones. Here in our study almost 100% severely affected patients had dyslipidemia. Spostiet al(20) also found that there was a positive correlation between Child Paugh classification of each group (A, B, C) and the HDL-c: Apo A1 ratio and liver function. The differences in the HDL-c: Apo A1 ratio between the groups A and C, and the groups B and C were statistically significant. In a study conducted by EL-Khabbany ZA,(21) 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.(21) Abbas et al(22) 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.(22)

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:

Results of this study reveal that dyslipidemia was found frequently in patients of liver cirrhosis. Dyslipidemi a worsens with severity of liver cirrhosis according to child Pugh classification. But has no statistically significant association with age and gender.

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