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EVALUATION OF DYSLIPIDEMIA IN CASES OF LIVER CIRRHOSIS

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ABSTRACT

Objectives: To evaluate dyslipidemia in cases of liver cirrhosis. **Methods:** This cross sectional study was conducted at Department of Medicine, Sheikh Zayed Hospital Rahimyarkhan from January 2017 to June 2017. Total 200 cases of liver cirrhosis were selected. **Results:** In present study, mean age of the patients was 39.65 ± 12.45 years. Dyslipidemia was found in 168/200 (84%) patients. Significant association of dyslipidemia with severity of liver cirrhosis was noted. **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 Pugh class, liver cirrhosis, dyslipidemia, lipid profile, Hepatitis, Hepatitis B, Hepatitis C.

INTRODUCTION

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.[1] 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.[1] In developing countries like Pakistan cirrhosis liver is more prevalent compared to developed countries.[2] In fact both hepatitis B virus (HBV) and hepatitis C virus (HCV) infections have become endemic in our community.[3] About 2-3% individuals of world's population infected by Hepatitis C.[4] 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.[5] 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.[7] Therefore, it is reasonable to expect an abnormal lipid profile in those with severe 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.[8] Although several studies have been done on dyslipidemia in cirrhotic 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 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.

MATERIAL AND METHODS

This cross sectional study was conducted at Department of Medicine Sheikh Zayed Hospital Rahimyarkhan from January 2017 to June 2017. Total 200 patients of liver cirrhosis either male or female and having age from 15-65 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 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.

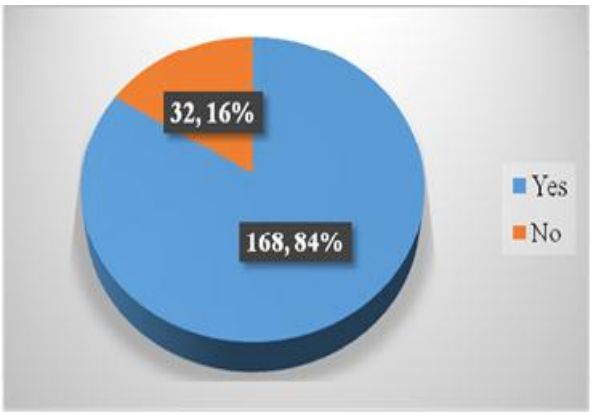

Fig. 1: Frequency of Dyslipidemia.

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.

RESULTS

In present study mean age of the patients was 39.65 ± 12.45. Dyslipidemia was noted in 168/200 (84%) patients. Total 120/200 (60%) were males and 80/200 (40%) were females. Dyslipidemia was in 100/120 (83.33%) male patient 68/80 (85%) female patients. Insignificant (P = 0.8450) 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 of 107/200 (53.5%) patients, dyslipidemia was noted in 89/107 (83.18%) patients. Out of 93/200 (46.5%) patients of age group 41-65 years, dyslipidemia was noted in 79/93 (84.95%) patients. Insignificant (P = 0.8472) between age of the patients and dyslipidemia was noted. Table 2. Distribution of patients according to the severity of liver cirrhosis was done. Total 40/200 (20%) patients were found with mild liver cirrhosis followed by 58/200 (29%) moderate and 102/200 (51%) with moderate liver cirrhosis. Dyslipidemia was found in 13/40 (33.5%) patients with mild liver cirrhosis, 53/58 (91.38%) moderate liver cirrhosis and 102/102 (100) with severe liver cirrhosis.

Statistically significant (P = 0.000) association of severity of liver cirrhosis with dyslipidemia was noted. Table 3.

Table 1: Gender distribution of the patients.

Gender	Dyslipidemia		Total (%)	P. value
	Yes (%)	No (%)		
Male	100 (83.33)	20 (16.67)	120 (60)	0.8450
Female	68 (85)	12 (15)	80 (40)	
Total	**168 (84)**	**32 (16)**	**200**	

Table 2: Age distribution of the patients.

Age Group	Dyslipidemia		Total (%)	P. value
	Yes (%)	No (%)		
15-40	89 (83.18)	18 (16.82)	107 (53.5)	**0.8472**
41-65	79 (84.95)	14 (15.05)	93 (46.5)	
Total	**168 (84)**	**32 (16)**	**200**	

Table 3: Distribution of patients according to severity of liver cirrhosis.

Severity of live cirrhosis	Dyslipidemia		Total (%)	P. value
	Yes (%)	No (%)		
Mild	13 (33.5)	27 (67.5)	40 (20)	0.000
Moderate	53 (91.38)	5 (8.62)	58 (29)	
Severe	102 (100)	0	102 (51)	
Total	**168 (84)**	**32 (16)**	**200**	

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.[9,10]

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,[11] which was showing dyslipidemia as 76.92% but Shimizu H[12] 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.[10]

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,[13] also found that there was a positive correlation between Child Pugh 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 ELKhabbany ZA,[14] 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 hypercholestrolemia, 13(32.5%) had hypertriglyceridemia, 17(42.5%) had low HDL and 9(22.5%) had high LDL.[14] Abbas et al,[15] also found that hypocholestrolemia 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 hypocholestrolemic than females.[15] 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. Dyslipidemia 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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