

Frequency of dyslipidemia and mean lipid profile in liver cirrhosis

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ABSTRACT

Aim: To determine the frequency of dyslipidemia in patients of liver cirrhosis and the mean lipid profile in patients of liver cirrhosis.

Methods: This cross sectional study was conducted at Department of Medicine, BVH, Bahawalpur from January 2013 to June 2013. In this study, 171 patients with cirrhosis of liver were included.

Results and Conclusion: Out of 171 cirrhotic patients, dyslipidemia was found in 143(83.6%) patients. Dyslipidemia was found commonly in liver cirrhotic patients. Dyslipidemia worsens with severity of liver cirrhosis i.e. mild cirrhosis (29.4%) & severe cirrhosis (100%) according to child-Pugh classification.

Keywords: Cirrhosis, dyslipidemia, lipid profile, 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.¹In fact both hepatitis B virus (HBV) and hepatitis C virus (HCV) infections have become endemic in our community². Child pugh classification is used to predict survival in patients with cirrhosis³.

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.⁴ Therefore, an abnormal lipid profile in those with severe liver dysfunction is expected. 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 diseases⁵. So a study was conducted to determine overall frequency or magnitude of dyslipidemia in cirrhosis and the mean lipid profile in liver cirrhosis as there is a high prevalence of chronic liver disease in Pakistan.

METHODOLOGY

This cross sectional study was conducted at Department of Medicine at BVH, Bahawalpur from January 2013 to June 2013. Total 171 cirrhotic

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patients were recruited in this study. Patients with established cirrhosis of liver either male or female having age 15 to 65 were included in this study. Patients with co-morbid diseases such as diabetes mellitus, hypertension and ischaemic 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.

Fasting blood samples of all the patients will be taken for PT, INR, albumin, bilirubin and fasting lipid profile. Blood sample will be sent to laboratory for analysis. Age, gender, lipid profile and Child-pugh Grading was noted on a specially designed Performa. All the data will be entered and analyzed by using SPSS version 16.

RESULTS

Among 171 cirrhotic patients, dyslipidemia was found in 143 (83.6%) patients (Fig 1). Dyslipidemia was found in 86(82.7%) male patients out of 104 and in 57(85.1%) female patients out of 67 and no association was found between dyslipidemia and gender ($P > 0.05$) (Table 2). After age distribution, two groups were made Age Group I consisted on patients having age from 15 to 40 years and Age group II consisted on patients having age from 41 to 65 years. In Age Group I, there were total 90(52.6%) patients and dyslipidemia was found only in 76(84.4%) patients while in Age Group II, out of 81(47.4%) patients, dyslipidemia was found in 67(82.7%) patients and there is no association between dyslipidemia and age group ($P > 0.05$) (Table 3). After stratification for severity of liver cirrhosis, mild cirrhosis was found in 34(19.9%) patients and among these patients dyslipidemia was found in 10(29.4%) patients. Moderate liver cirrhosis

was found in 50(29.2%) patients and dyslipidemia was found in 46(92%) patients. Out of 87(100%) patients with severe liver cirrhosis, dyslipidemia was found in 100% patients. There is highly significant relation between dyslipidemia and severity of liver cirrhosis (Table 4).

Table 1: Mean ±SD of lipid profile

Lipid Profile	Mean± SD
HDL	40.2± 3.0
LDL	138.1± 9.7
TC	203.6± 24.2
TG	197.9± 71.2

Fig 1: Frequency of dyslipidemia among patients of liver cirrhosis

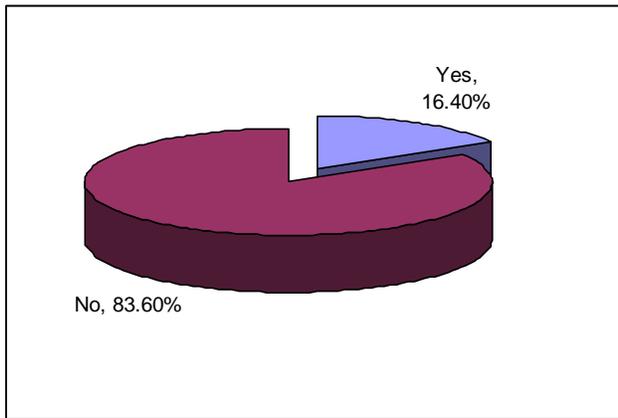


Table 2: Gender distribution

Gender	Dyslipidemia		Total (%)
	Yes	No (%)	
Male	86 (82.7%)	18 (17.3%)	104 (60.8)
Female	57 (85.1%)	10 (14.9%)	67 (39.2)
Total	143 (83.6)	28 (16.4)	171(100%)

Pvalue: 0.6801

Table 3: Age distribution

Ages group	Dyslipidemia		Total
	Yes	No	
15-40	76 (84.4%)	14 (15.6%)	90 (52.6%)
41-65	67 (82.7%)	14 (17.3%)	81 (47.4%)
Total	143(83.6%)	28 (16.4%)	171

P value: 0.7642

Table 4: Stratification for child-pugh score

Child-pugh Score	Dyslipidemia		Total
	Yes	No	
Mild Cirrhosis	10(29.4%)	24(70.6%)	34(19.9%)
Moderate Cirrhosis	46(92%)	4(8%)	50(29.2%)
Severe Cirrhosis	87(100%)	0	87(50.9%)
Total	143(83.6%)	28(16.4%)	171(100)

P value: 0.000

DISCUSSION

In this study, dyslipidemia was observed in liver cirrhotic patients. Most of them belonged to middle age group. Among the age group I (15 to 40 years) dyslipidemia was found in 76(84.4%) cases while in age group II (41-65 years), dyslipidemia was found in 67(82.7%) cases. Dyslipidemia is observed in 143(83.6%) cirrhotic patients. Only 16.4% cirrhotic patients had normal lipid profile. These finding of dyslipidemia are comparable with the study of Roesch DF et al⁶ which showed 76.9% dyslipidemia but Shimizu H¹² found lower dyslipidemia rate i.e.61% in patients of liver cirrhosis.

Severity of the liver cirrhosis as according to child pugh class dyslipidemia occurred more in severely affected ones. Here in my study almost 100% severely affected patients had dyslipidemia as compared to mildly affectedly i.e. 29.4%. Sposti et al⁸ 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 EL-Khabbany ZA⁹. 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.

In this study, mean values for HDL, LDL, TC, TG were 40.2±3, 138.1±9.7, 203.6±24.2 and 197.9±71.2 respectively. Study by Sen A et al¹⁰ was in contrast with my findings reporting mean values for HDL, LDL, TC, TG as 55.6±26.7, 104.2±41.4, 141±78.6 and 141.7±79.5 respectively. In a study conducted by Ghadir MR et al⁴. It was concluded that LDL, HDL and cholesterol levels in patients with cirrhosis are inversely correlated with severity of cirrhosis (p<0.05).

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.

CONCLUSION

Dyslipidemia was found commonly in patients of liver cirrhosis. Dyslipidemia worsens with severity of liver cirrhosis according to child- Pugh classification but has no significant relation with age and gender.

REFERENCES

1. Anderson RN, Smith BL. "Deaths: leading causes for 2001". National vital statistics reports: from the Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System 2003;52:1-85.
2. Hamid S, Tabassum S, Jafri W. Hepatitis C has replaced hepatitis B as major cause of chronic liver disease in Pakistan. *Hepatology* 1990; 30:212.
3. Bacon BR. Cirrhosis and its complications. In: Fauci, Braunwald, Kasper, Hauser, Lango, Jamson, editor, et al. *Harrison's Principles of Internal Medicine*. New York: Mc Graw Hill; 2008. P. 1971-80.
4. Ghadir MR, Riahin AA, Havasupai A, Nooranipour M, Habibinejad AA. The relationship between lipid profile and severity of liver damage in cirrhotic patients. *Hepat Mon* 2010;10(4):285-8.
5. Halsted CH. Nutrition and alcoholic liver disease. *Semin Liver Dis.* 2004;24(3):289-304.
6. RoeschDF, Pérez-Morales A, Melo-Santisteban G, Díaz-Blanco F, Martínez-Fernández S, Martínez JA, et al. [Frequency and clinical, biochemical and histological characteristics of nonalcoholic fatty liver disease in patients with gallstone disease]. *Cir Cir.* 2008 Feb;76(1):37-42.
7. Shimizu H, Phuong V, Maia M, Kroh M, Chand B, Schauer PR, et al. Bariatric surgery in patients with liver cirrhosis. *Surgery for Obesity and Related Diseases.* 2013 Jan;9(1):1-6.
8. Sposito AC, Vinagre CG, Pandullo FL et al. Apolipoprotein and lipid abnormalities in chronic liver failure. *Braz J Med Biol Res.* 1997; 30: 1287-90.
9. EL-Kabbany ZA, Hamza RT, Ibrahim SA, Mahmoud NH. Dyslipidemia and hyperinsulinemia in children and adolescents with chronic liver disease: relation to disease severity. *Int J Adolesc Med Health* 2013;2:1-7.
10. Sen A, Kumar J, Misra RP, Uddin M, Shukla PC. Lipid profile of patients having non-alcoholic fatty liver disease as per ultrasound findings in north Indian population: A retrospective observational study. *J Med Allied Sci.*2013;3(2):59-62.