IJABR

International Journal of Advanced Biotechnology and Research (IJABR)
ISSN 0976-2612, Online ISSN 2278–599X,
Vol-9, Issue-4, 2018, pp415-419
http://www.bipublication.com

Research Article

A cross sectional study on lipid profile in cases of liver cirrhosis

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[Received: 15/11/2018; Accepted: 09/12/2018; Published: 12/12/2018]

ABSTRACT

Objectives: To study the lipid profile in cases of cirrhosis of liver presenting at THQ Hospital, Jahanian.

Material and methods: This was a cross sectional study which was conducted at Department of Medicine, THQ Hospital, Jahanian from January 2018 to June 2018. 5ml of blood sample was taken from every cirrhotic patient and send to laboratory for lipid profile. Findings of laboratory was noted on pre-designed performa.

Results: Mean age of the patients was 38.96 ± 13.893 years and mean HDL, LDL, TC, TG was 40.22 ± 3.001mg/dl, 138.08 ± 9.713mg/dl, 203.64 ± 24.219mg/dl and 197.99 ± 71.270mg/dl respectively. Altered lipid was seen in 143 (83.6%) patients out of 171 cirrhotics.

Conclusion: Findings of present study showing a high percentage of altered lipids. Insignificant association of dyslipidemia with age and gender was observed but significantly associated with child-pugh class.

Key Words: Cirrhosis, dyslipidemia, lipid profile, Hepatitis

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 12thfor 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 needs 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 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.[8]

MATERIAL AND METHODS

This was a cross sectional study which was conducted at Department of Medicine, THQ

Hospital, Jahanian from January 2018 to June 2018. Total 171 patients of liver cirrhosis having age 15-65 years either male or female were selected. Patients 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 was taken and send to laboratory for lipid profile and finding were entered on pre-designed performa.All the data will be entered and analyzed by using SPSS version 16. Mean and standard deviation was calculated for numerical variable 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 significant.

RESULTS

Mean age of the cirrhotic patients was 38.96 ± 13.893 and mean and standard deviation for Triglycerides, HDL, LDL and total cholesterol was 197.99 ± 71.270, 40.22 ± 3.001, 138.08 ± 9.713 and 203.64 ± 24.219 respectively.As shown in figure among 171 cirrhotic patients dyslipidemia was found in 143 (83.6%) patients.After gender distribution of patient as shown in table No.2, dyslipidemia was found in 86 (82.69%) out of 104 (60.82%) male patients and in 57 (85.07%) female patients out of 67 (39.18%) and no association was found between dyslipidemia and gender. (P. value ≥ 0.05).

After age distribution of all 171 cirrhotic patients, two group were made Age Group A consisted on patients having age from 15 to 40 years and Age group B consisted on patients having age from 41 to 65 years. In Age Group A there were total 90 (52.63%) patients and dyslipidemia was found only in 76 (84.44%) patients while in Age Group B out of 81 (47.37%) patients, dyslipidemia was found in 67 (82.72%) patients and results were showing that there is no association between dyslipidemia and age group. (P. value ≥ 0.05). See table No.3

After stratification for severity of liver cirrhosis, mild cirrhosis was found in 34 (19.88%) patients and among these patients dyslipidemia was found in 10 (29.41%) patients. Moderate liver cirrhosis was found in 50 (29.24%) 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. See table No.4

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

Fig:1 Frequency of Dyslipidemia among patients of liver cirrhosis

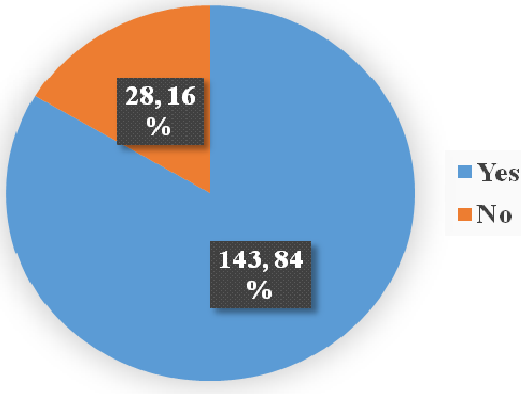

Table No.2: Stratification for Gender

Gender	Dyslipidemia		Total (%)	P. value
	Yes (%)	No (%)		
Male	86 (82.69)	18 (17.31)	104 (60.82)	0.6801
Female	57 (85.07)	10 (14.93)	67 (39.18)	
Total	**143 (83.62)**	**28 (16.37)**	**171**	

Table No.3: Stratification for age

Age Group	Dyslipidemia		Total (%)	P. value
	Yes (%)	No (%)		
15-40 Age Group 1	76 (84.44)	14 (15.56)	90 (52.63)	**0.7642**
41-65 Age Group 2	67 (82.72)	14 (17.28)	81 (47.37)	
Total	**143 (83.62)**	**28 (16.37)**	**171**	

Table No.4: Stratification for child class

Severity of Child pugh Class	Dyslipidemia		Total (%)	P. value
	Yes (%)	No (%)		
Mild	10 (29.41)	24 (70.59)	34 (19.88)	0.000
Moderate	46 (92)	4 (8)	50 (29.24)	
Severe	87 (100)	0	87 (50.88)	
Total	**143 (83.62)**	**28 (16.37)**	**171**	

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 my study dyslipidemia was observed in liver cirrhotic patients. Most of them belonged to middle age group and the mean age was found 38.96 ± 13.893. Among the age group I (15 to 40 years) dyslipidemia was found 84.44% while in age group II (41-65 years) dyslipidemia was found in 82.72%. On an average dyslipidemia observed 83.62% of the total cirrhotic patients. Only 16.37% cirrhotic patients had normal lipid profile. These finding of dyslipidemia comparable with the study of Roesch-Dietlen F et[11] al which is showing dyslipidemia as 76.92% but Shimizu H[12] at Ohio USA found lower dyslipidemia rate 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 my study almost 100% severely affected patients had dyslipidemia as compare to mildly affectedly who had only 29.41% dyslipidemia. Spostiet al[13] 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,[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 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 hypocholestrolemic than females.[15]

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 al[16] 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 etl 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 al[17] 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,[7] 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[18] al 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

Findings of present study showing a high percentage of altered lipids. Insignificant association of dyslipidemia with age and gender was observed but significantly associated with child-pugh class.

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. Ullah F, Khan S, Afridi AK. Frequency of different Causes of Cirrhosis Liver in local

population. Gomal Journal of Medical Sciences [Internet]. 2012 [cited 2014 Mar 6];10(2). Available from: http://gjms.com.pk/ojs786/index.php/gjms/article/view/773.

3. 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.
4. Bostan N, Mahmood T. An overview about hepatitis C: a devastating virus. Crit Rev Microbiol. 2010;36(2):91-133.
5. 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.
6. Ghany M, Hoofnagle JH. Approach to patients with liver disease. In: Fauci, Braunwald, Kasper, Hauser, Lango, Jamson, editor, et al. Harrison's Principles of Internal Medicine. New York: Mc Graw Hill; 2008. P. 1918-23.
7. 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.
8. Halsted CH. Nutrition and alcoholic liver disease. *Semin Liver Dis*. 2004;**24**(3):289-304.
9. Xu W, Liu W, Shao X, Jiang G, Li X. Effect of Trichlorfon on Hepatic Lipid Accumulation in Crucian Carp Carassiusauratusgibelio. J AquatAnim Health. 2012 Sep;24(3):185–94.
10. Mehboob F, Ranjha FA, Masud S. Changes in Serum Lipid Profile Among Patients Suffering From Chronic Liver Disease. Annals of King Edward Medical University [Internet]. 2010 [cited 2014 Jul 15];13(3). Available from: http://www.annalskemu.org/journal/index.php/annals/article/viewArticle/113.
11. Roesch-Dietlen F, 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.
12. 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.
13. 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.
14. 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.
15. Abbasi A, Bhutto AR, Butt N, Lal K, Munir SM. Serum cholesterol: could it be a sixth parameter of Child-Pugh scoring system in cirrhotic due to viral hepatitis? J Coll Physicians and Surg Pak 2012;22(8):484-7.
16. 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.
17. Mandal SK, Sil K, Chatterjee S, Ganguly J, Chatterjee K, Sarkar P, et al. A Study on Lipid Profiles in Chronic Liver Diseases. Issues. 2011;2012:2013
18. Subhan F, Khan I, Arif R, Khan A, Khan A. Serum lipid profile as an indicator of the severity of liver damage in cirrhotic patients. Rawal Medical Journal. 2012;37(4):387–9.