Journal of Advanced Medical and Dental Sciences Research

@Society of Scientific Research and Studies

Journal home page: www.jamdsr.com doi: 10.21276/jamdsr

(e) ISSN Online: 2321-9599; (p) ISSN Print: 2348-6805 SJIF (Impact factor) 2017= 6.261; Index Copernicus value 2016 = 76.77

Original Article

Assessment of Association of Lipid Profile with Severity of the Disease in Liver Cirrhosis Patients

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ABSTRACT:

Background: Cirrhosis is frequently indolent, asymptomatic and unsuspected until complications of liver disease present.The Child-Pugh Class A patients usually show a good median survival term without OLT unless other events. The aim of the present study is to assess association of lipid profile with severity of the disease in liver cirrhosis patients. **Materials and methods:** The present prospective study was conducted in the medicine department of Government medical college, Patiala. Classification of all the patient's were done on the basis of child pugh's criteria. A complete demographic detail and medical history of all the subjects were noted. Student t test was used for analysis. P value of less than 0.05 was regarded as significant. **Results:** The mean age in cirrhotic group was 50.5 +/- 6.36 years and the mean age in control group was 50.26+/- 6.58 years. Mean LDL cholesterol levels were 106±20.68 in Child group A, 80.74±5.47 in Child group B and 72.14±5.40 in Child group C. Mean HDL cholesterol levels were 36.28±2.72 in Child group C, 40.06±2.54 in Child group Band 41.31±3.32 in Child group A. **Conclusion:** The study has shown that total cholesterol, VLDL, HDL, Triglycerides and LDL content decreases as the severity of disease/cirrhosis increases and it was statistically significant as the p value was <.00001.

Key words: Cholesterol, Cirrhosis, Triglycerides.

Received: 20 November 2017 Revised: 30 November 2017 Accepted: 12 December 2017

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This article may be cited as: Singh J, Sachdeva S, Goyal S, Singh G, Nagpal A, Aggarwal R. Assessment of Association of Lipid Profile with Severity of the Disease in Liver Cirrhosis Patients. J Adv Med Dent Scie Res 2018;6(2):78-81.

INTRODUCTION

Cirrhosis is frequently indolent, asymptomatic and unsuspected until complications of liver disease present. A sizable proportion of these patients never come to clinical attention, and previously undiagnosed cirrhosis is still frequently found at autopsy.[1] Cirrhosis and its associated vascular distortion are traditionally considered to be irreversible but recent data suggest that cirrhosis regression or even reversal is possible. The etiology of cirrhosis can usually be identified by the patient's history combined with serologic and histologic evaluation. Simple hepatic steatosis is the commonest histological finding and occurs in 90% of heavy drinkers but is rapidly reversible with abstinence. Alcoholic hepatitis or ASH occurs in up to 35% of heavy drinkers and is usually a precursor of cirrhosis.[2] 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. It was in 1978 that Neil McIntyre studied the levels of plasma lipoproteins patterns in liver diseases.[3] They are important because of application of adequate therapy and prioritization of transplantation lists, particularly because of the fact that there is an increasing discrepancy between the number of cirrhotic patients on waiting lists for orthotopic liver transplantation (OLT) and the number of available liver donors.[4] The Child-Pugh score is still considered the cornerstone in prognostic evaluation of cirrhotic patients although it was formulated more than 30 years ago. Nevertheless, it has some drawbacks such as the subjectivity of clinical parameters and a limited discriminatory ability.[5-6] The Child-Pugh Class A patients usually show a good median survival term without OLT unless other events (such as hepatocellular carcinoma, uncontrolled bleeding due to portal hypertension, etc) occur.[4,7] The aim of the present study is to assess association of lipid profile with severity of the disease in liver cirrhosis patients.

MATERIALS AND METHODS

The present prospective study was conducted in the medicine department of Government medical college, Patiala. The study was conducted from November 2015 to October 2017.The study included a total of 150 subjects, out of which 100 had liver cirrhosis and 50 were controls. All the subjects with liver cirrhosis who were diagnosed on the basis of history, ultrasound, UGI endoscopy were included in the study. ASA grade 2 and 3 subjects were excluded from the study. The study was approved by the Institute's ethical board and all the subjects were informed about the study and a written consent was obtained from all in their vernacular language. Classification of all the patient's were done on the basis of child pugh's criteria. A complete demographic detail and medical history of all the subjects were noted. Information about their past and present medications were also obtained. In vitro enzymatic colorimetric kit test was used for the estimation of serum triglyceride and cholesterol. Phosphotungstate and magnesium chloride was used for the estimation of high density lipoproteins. All the results obtained were arranged in a tabulated form and analysed using SPSS software. Student t test was used for analysis. P value of less than 0.05 was regarded as significant.

RESULTS

Table 1 shows distribution of subjects according to Child pugh's criteria. There were 21 subjects of Class A. 50 subjects belonged to Class B and 29 subjects belonged to Class C of child pugh's criteria.

Table 2 shows the classification of two groups according to mean age. The mean age in cirrhotic group was 50.5 +/- 6.36 years and the mean age in control group was 50.26+/- 6.58 years. On applying student t test, the p value came out to be 0.58 indicating no significant difference between the two groups.

Table 3 shows the comparison of lipid profile in cirrhotic patients according to Child's Pugh criteria. Mean Total cholesterol levels were 171.90±21.07 in Child group A, 144.22±6.15 in Child group B and 134.76±4.69 in Child group C. The comparison showed that the total cholesterol content decreases as the severity of disease/cirrhosis increases and it was statistically significant as the p value was < .00001. Mean LDL cholesterol levels were 106±20.68 in Child group A, 80.74±5.47 in Child group B and 72.14±5.40 in Child group C. The comparison showed that the LDL cholesterol content decreases as the severity of disease/cirrhosis increases and it was statistically significant as the p value was < .00001. Mean VLDL cholesterol levels were 29.62±3.34 in Child group A, 23.42±2.93 in Child group B and 21.31±1.81 in Child group C. The comparison showed that the VLDL cholesterol content decreases as the severity of disease/cirrhosis increases and it was statistically significant as the p value was < .00001. Mean HDL cholesterol levels were 36.28±2.72 in Child group C, 40.06±2.54 in Child group Band 41.31±3.32 in Child group A. The comparison showed that the HDL cholesterol content decreases as the severity of disease/cirrhosis increases and it was statistically significant as the p value was < .00001. Mean Triglycerides in cirrhotic patients was compared according to the Child Pugh criteria. Mean triglyceride levels were 147.04±16.66 in Child group A, 116.72±14.38 in Child group B and 107±9.11 in Child group C. It was statistically significant as the p value was < .00001.

Table 1: Classification of cirrhotic patient according to the Child's Pugh classification

Class	No of Patients	N (%)
Class A	21	21
Class B	50	50
Class C	29	29

Table 2: Classification of two groups according to the mean Age

Group	Mean age	Standard deviation	' t ' test	P value
Cirrhotic group	50.5	6.360389	0.215	0.58507
Control group	50.26	6.589447		

Table 3: Comparison of lipid profile in cirrhotic patients according to Child's Pugh criteria

Lipid (mg/dl)	Child A (N=21) Mean ± S.D.	Child B (N=50) Mean± S.D.	Child C (N=29) Mean±S.D.	ANOVA test F-ratio	P-value
Total cholesterol	171.9048 ±21.0687	144.22 ±6.1488	134.7586 ±4.6954	75.85865	< .00001
LDL cholesterol	106 ±20.6857	80.74 ±5.4765	72.1379 ±5.3966	66.00074	< .00001
VLDL cholesterol	29.619 ±3.3388	23.42 ±2.9283	21.3103 ±1.8147	58.59861	< .00001
HDL cholesterol	41.3103 ±3.3177	40.06 ±2.5428	36.2857 ±2.7229	20.44564	< .00001
Triglycerides	147.0476 ±16.6628	116.72 ±14.3783	107 ±9.1183	55.99578	< .00001

DISCUSSION

In a study conducted by Abbasi et al in 2012 found that serum cholesterol (total) and triglycerides had significant association with Child-Pugh class ($p = 0.0001$ and $p = 0.004$ respectively) suggesting that as severity of liver dysfunction increases; serum cholesterol and triglycerides levels decrease. Results also revealed that males were significantly more hypocholesterolemic than females ($p = 0.006$). Hypocholesterolemia is a common finding in decompensated chronic liver disease and has got significant association with Child-Pugh class. It may increase the reliability of Child-Pugh classification in assessment of severity and prognosis in chronic liver disease patients.[8]

The cirrhotic patients were classified as per Child Pugh criteria. 21 patients were in class A, 50 patients were in class B and 29 patients were in class C. Nangliya et al[9] classified cirrhotic patients as per Child Pugh criteria. 34% patients were in class A, 33.3% patients were in class B and 32.7% patients were in class C. In similar Previous Study by Suman et al[10] The cirrhotic patients were classified as per Child Pugh criteria. 18% patients were in class A, 48% patients were in class B and 34% patients were in class C. According to them, VLDL cholesterol levels were 24.90±7.53 mg/dl in Child group A, 23.02±5.69 mg/dl in Child group B and 18.19±5.43 mg/dl in Child group C in cirrhotic patients. According to Nangliya et al[9] Total cholesterol levels were 147.13±19.54 mg/dl in Child group A, 142.43±22.48 mg/dl in Child group B and 134.32±24.39 mg/dl in Child group C. The comparison showed that the total cholesterol content decreases as the severity of disease/cirrhosis increases and it was statistically significant as the p value was <0.05.In another study by Mandal et al[11] Total cholesterol levels were 139.8±36.56 mg/dl in Child group A, 146.7±50.38 mg/dl in Child group B and 134.1±45.61 mg/dl in Child group C. The comparison showed that the total cholesterol content decreases as the severity of disease/cirrhosis increases and it was statistically significant as the p value was <0.05.In similar study by Ghadir et al[12] Total cholesterol levels were 166.5±37.9 mg/dl in Child group A, 161.2±71.5 mg/dl in Child group B and 121.2±31.7 mg/dl in Child group C. The comparison showed that the total cholesterol content decreases as the severity of disease/cirrhosis increases and it was statistically significant as the p value was <0.05. HDL cholesterol levels were 49.0±21.6 mg/dl in Child group A, 40.0±14.3 mg/dl in Child group B and 37.4±15.5 mg/dl in Child group C. The comparison showed that the HDL cholesterol content increases as the severity of disease/cirrhosis increases and it was statistically significant as the p value was <0.05. According to conducted by Vere et al in 2012 observed significantly lower values for serum lipids (543.5 and 549.37 mg/dl in the HBV and HCV cirrhosis subgroups, compared with 649.9 mg/dl in controls), total cholesterol (143.6 and 147.9 vs. 198.0 mg/dl, respectively), cholesteryl esters (83.6 and 80, compared to 147.9 mg/dl, respectively), LDL cholesterol (91.6 and 88.5 vs. 132.4 mg/dl) in both cirrhosis groups when compared with controls ($p < 0.001$), as well as HDL cholesterol (32.1 and 36.9 vs. 47.3 mg/dl, $p < 0.05$). However, TG and VLDL cholesterol values of controls and cirrhosis groups were similar ($p > 0.05$). They did not register any differences between the two cirrhosis groups ($p > 0.05$) .Data showed that both HCV and HBV cirrhosis severely impaired liver lipid metabolism. Late stages of the disease resulted in a pseudo normalization of VLDL cholesterol and TG values.[13] A study conducted by Venturini I et al in 1999 found Cholesterol was higher in hepatocellular carcinoma patients when compared with Child-Pugh class matched cirrhotic controls. In Child-Pugh class A, B and C with uncomplicated liver cirrhosis these values were, respectively, 142.0±2.5, 117.3±2.5, 97.4±2.9 vs 172.5±4.7, 163.8±7.9, 153.5 ±8.0 mg/dl in patients with hepatocellular carcinoma ($p < 0.001$).[14]

CONCLUSION

The study has shown that total cholesterol, VLDL, HDL, Triglycerides and LDL content decreases as the severity of disease/cirrhosis increases and it was statistically significant as the p value was <.00001. However, further larger studies are required to validate predictive value of dyslipidemia in assessing the progression of cirrhosis.

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Source of support: Nil **Conflict of interest:** None declared