ORIGINAL RESEARCH PAPER
Volume - 10 | Issue - 02 | February - 2021 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

DYSLIPIDEMIA IN NON ALCOHOLIC FATTY LIVER DISEASE

Biochemistry

Dr. Ruby Kumari* 3rd Year PG Resident, Department Of Biochemistry, Rajendra Institute Of Medical Sciences, Ranchi, Jharkhand. *Corresponding Author

Prof. (Dr.) Santosh Kumar Professor And Head, Department Of Biochemistry, Rajendra Institute Of Medical Sciences, Ranchi, Jharkhand.

Dr. Debarshi Jana Young Scientist (DST), Institute Of Post-Graduate Medical Education And Research, A.J.C. Bose Road, Kolkata-700020, West Bengal, India.

ABSTRACT

Background: NAFLD is a major alarming public health problem in current scenario. Still there is lack of wide research data in context of NAFLD, in our institute and state (Jharkhand) so we felt the need to do this research to assess dyslipidemia in cases of NAFLD. **Material and methods:** 100 patients (18-70 yrs) age Group, were included in the study. 50 diagnosed cases of Fatty Liver disease (FLD) by USG were enrolled in study. Subjects were divided in two equal groups, NAFLD and controls. Lipid profile was done in both groups. **Result:** Data obtained during research was statistically analyzed by using SPSS version 20. Student t test for independent samples was used to determine statistical significance, p-value <0.05 was considered statistically significant. serum Triglyceride, serum LDL-C and VLDL-C was significantly raised and HDL-C significantly decreased in NAFLD group compared to control. **Conclusion:** Dyslipidemia was obtained in NAFLD group.

KEYWORDS

FLD, NAFLD, Dyslipidemia

INTRODUCTION

Nonalcoholic fatty liver disease (NAFLD) is a major cause of chronic liver disease, occurring when fat is deposited in the liver, not due to excessive alcohol use. NAFLD is the most common liver disorder in the Western world. It's incidence is increasing in both adults and children and now being recognized as major health burden. The prevalence of fatty liver in India has shown to be high 15-30%. It encompasses a spectrum of liver disease, ranging from nonalcoholic fatty liver (NAFL) to nonalcoholic steatohepatitis (NASH) and cirrhosis. It is generally believed that NAFL is benign from the liver standpoint with minimal risk of cirrhosis whereas NASH can progress to cirrhosis, liver failure, and liver cancer. Patients with NAFLD are heavily enriched with metabolic risk factors such as obesity, type2 diabetes, and dyslipidemia. The pathological hallmark of NAFLD is lipid accumulation in hepatocytes suggesting close link between abnormal lipid metabolism and NAFLD. Dyslipidemia in patients with NAFLD is atherogenic in nature and it is characterized by increased levels of serum triglycerides, increased oxidized LDL and decreased levels of HDL cholesterol . Studies have suggested that inflammation, oxidative stress, insulin resistance, dyslipidemia and endothelial dysfunction are the link factors which link NAFLD and CVD. Therefore both the Liver and cardiovascular system should be closely managed in NAFLD.

AIMS AND OBJECTIVES

1. To study dyslipidemia in cases of Non Alcoholic Fatty Liver Disease.
2. To evaluate the utility of serum lipid profile in diagnosis of Non Alcoholic Fatty Liver Disease.

MATERIAL AND METHODS

Study of "Dyslipidemia in NAFLD" was conducted in the department of Biochemistry, Rajendra Institute of Medical Sciences, Ranchi with the prior approval of ethics committee.

Type of study: Observational Cross sectional study
Period of study: 1 year
Sample size : 100

Subjects were divided into two groups:-
Group I- 50 newly diagnosed case of NAFLD
Group II- 50 normal healthy individuals of same age group

INCLUSION CRITERIA

1. Age of the patients 18-70 yrs
2. Newly diagnosed cases of NAFLD and controls of same age group
3. Those who readily gave consent to participate in the study were included

EXCLUSION CRITERIA

1. Use of corticosteroids, tamoxifen, methotrexate or high dose of estrogen
2. Jejunoileal by pass or extensive bowel resection
3. Malignancy
4. Pregnancy
5. Autoimmune disease
6. Hepatitis B,C

Lipid Profile was estimated in both groups. Instrument used for biochemical analysis was biochemical Autoanalyser. Data was analyzed in SPSS version 20 using Student t test for independent samples. All results were expressed in Mean ± Standard Deviation (Mean ±SD) . P value <0.05 was considered statistically significant.

RESULT

Table

NAFLD Group	Mean ±SD (mg/dl)	Reference Range
1] Serum Total Cholesterol	189.16±36.21	<200 mg/dl Desirable
2] Serum Triglyceride	163.40±31.48	<150 mg/dl Normal
3] Serum HDL	38.72±3.18	< 40 mg/dl Low
4] Serum LDL	117.70±37.34	<100mg/dl Optimum
5] Serum VLDL	32.74±6.31	up to 30mg/dl Normal

DISCUSSION

Non-alcoholic fatty liver disease (NAFLD) is considered as leading chronic hepatic illness and it's increasing prevalence represents significant burden to human health because of it's numerous and often serious complications. The current study was planned to assess dyslipidemia in non-alcoholic fatty liver disease. In the present study, 100 cases of 18-70 years age group were taken and divided in two groups. Group I- 50 newly diagnosed case of NAFLD and Group II- 50 normal healthy individuals of same age group. Sawant et al demonstrated that applying American diabetic association guidelines it was found that nearly 80% patients of the fatty liver disease had at least one abnormal parameter of dyslipidemia. Among these patients high density lipoprotein cholesterol was abnormally low in 64.2% males and 33.8% in females. These findings are in agreement with our study.

Atherogenic dyslipidemia is the commonest form of dyslipidemia, it is further characterized by high LDL-C levels, low HDL-C levels and hypertriglyceridemia. Long- term dyslipidemia may adversely affect the lipid profiles and lipoprotein synthesis in the liver, including higher levels of TG, LDL, very low-density lipoprotein (VLDL) levels and low levels of HDL-C. Insulin resistance may develop the increase in free fatty acid (FFA) flux. The higher free fatty acid level boosts

triglycerides and production of LDL-C as well as triggers oxidative stress and lipid peroxidation, all of which are closely associated with the development of NAFLD. Consequently, this physiological dysfunction may increase the risk for development of atherogenesis, therebypredisposes patients to cardiovascular diseases. A recent study reveals that dyslipidemia may play a role in the development of steatosis . In our study we observed that mean value of serum Triglyceride ,VLDL-C, LDL-C was significantly higher and HDL-C was significantly lower than control group. Hypertriglyceridemia has been strongly correlated with liver fat accumulation (Angulo P et al,1999). Bajaj et al 2009) also reported that subjects with NAFLD had significantly higher values of Serum Triglyceride. Serum HDL-C was found to be low in NAFLD Group which is in concordance with study done by Roli Agrawal et al (2009). Our study is concordant with study of A Duseja et al (2010) who reported increased Triglyceride and decreased HDL-C were in 53% and 66% patients of NAFLD respectively. Dyslipidemia in NAFLD is characterized by increased serum Triglyceride and low HDL-C (Chatrath et al 2012). Various epidemiological studies reveal that it may cause the higher risk of cardiovascular disease.

CONCLUSION

There was significant increase in Serum Triglyceride, LDL-C, VLDL-C and significant decrease in HDL-C in NAFLD Group as compared to control group. Dyslipidemia characterized by increased TG, LDL-C, VLDL-C and decreased HDL-C is obtained in NAFLD group which predisposes patients to atherosclerosis. Abnormal lipid profile can be used as biomarker for early identification and diagnosis of NAFLD and their better management

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