ORIGINAL ARTICLE

Frequency of Dyslipidemia in Non Alcoholic Fatty Liver Disease Patients

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ABSTRACT

Aim: To determine the frequency of dyslipidemia in non-alcoholic fatty liver disease patients.
Methods: We enrolled a total of 100 cases with non-alcoholic fatty liver disease of either gender for at least 6 months from the multi-centers Medical Outpatient Department of Gastroenterology, Lahore General Hospital Lahore and Sandeman Provincial Hospital Quetta from 01-07-2016 to 31-12-2016. Demographic profile was recorded including age, gender and address. All biochemical parameters which included fasting serum total cholesterol, triglycerides, HDL-LDL-cholesterol, blood sugar fasting, blood sugar random and ALT by a direct quantitative method was obtained. The outcome i.e. dyslipidemia was recorded as presence/absence.
Results: 68(68%) were between 20-50 years of age while 32(32%) were between 51-70 years of age with mean was 44.68±11.57 years, 55(55%) were male and 44(44%) were females. Frequency of dyslipidemia in non-alcoholic fatty liver disease was recorded in 29(29%) while 71(71%) had no findings of the morbidity.
Conclusion: The frequency of dyslipidemia is higher in patient with non-alcoholic fatty liver disease.
Keywords: Non-alcoholic Fatty liver disease, Dyslipidemia, Frequency

INTRODUCTION

Non-alcoholic fatty liver disease is rapidly becoming the most common liver disease worldwide and the prevalence of fatty liver disease in the general population of Western countries is 20-30%.[1] Fatty liver disease is estimated to affect 20–45% of the US population and risk of fatty liver in persons with metabolic syndrome is 4 to 11 times higher than that of persons without insulin resistance.[2]

Approximately 70% of cases with non-alcoholic fatty liver disease also have concurrent dyslipidemia making treatment with a lipid-lowering medication appear to be a reasonable approach.[3] Type 2 diabetes mellitus, insulin resistance, obesity and dyslipidemia are strongly associated with fatty liver diseass.[4] These cases tend to have higher levels of plasma triglyceride and/or low plasma high-density lipoprotein cholesterol concentrations and hypertension.[5]

Histologically, fatty liver disease is further categorized into nonalcoholic fatty liver disease (NAFLD) and nonalcoholic steatohepatitis (NASH). Previously, the rate of fatty liver disease with those having dyslipidemia is recorded as 50%.[6]

Male cases were more prone to dyslipidemia as compared to females. Sawant et al[7] 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. From these patients HDLC was significantly lower in 64.2% males and 33.8% in females. In another study dyslipidemia was found in 46(36.22%) patients of non-alcoholic fatty liver diseass.[8]

PATIENTS AND METHODS

This descriptive study was carried out at multi-centers, Medical Outpatient Department of Gastroenterology, Lahore General Hospital Lahore and Sandeman Provincial Hospital Quetta from 1st July 2016 to 31st December 2016. A total of 100 cases between 20-60 years of age of either gender having non-alcoholic fatty liver disease for at least 6 months were enrolled in our study. We excluded those cases with diabetes mellitus, hepatitis C genotype 3 infections, ischemic heart disease, taking drugs i.e. amiodaone, antiviral drugs (nucleoside, analogues), corticosteroids, methotrexate, tamoxifen, tetracycline and valproate, taking lipid modifying drugs and with raised ALT, AST >40Iu/L. Demographic profile was recorded including age, gender and address. All data was recorded on structured Performa. All biochemical parameters which included fasting serum total cholesterol, triglycerides, HDL- LDL-cholesterol, blood sugar fasting, blood sugar random and ALT by a direct quantitative method was obtained. The outcome i.e. dyslipidemia was recorded as presence/absence. All

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this information was noted on predesigned proforma by the researcher himself.

RESULTS

Patients were distributed according to age showing that 68(68%) were between 20-50 years of age while 32(32%) were between 51-70 years of age with mean was 44.68±11.57 years (Table 1). Patients were distributed according to gender showing that 55(55%) were male and 45(45%) were females (Table 2) Frequency of dyslipidemia in non-alcoholic fatty liver disease was recorded in 29(29%) while 71(71%) had no findings of the morbidity (Table 3).

Table 1: Frequency and percentage of age (n = 100)

Age	No.	Percentage
20 – 50	68	68
51 – 70	32	32

Table 2: Gender distribution (n=100)

Gender	No.	Percentage
Male	55	55
Female	45	45

Table 3: Frequency of dyslipidemia in non-alcoholic fatty liver disease (n = 100)

Dyslipidemia	No.	%
Yes	29	29
No	71	71

DISCUSSION

In developed world, non-alcoholic fatty liver disease (NAFLD) is considered as leading chronic hepatic illness and increasing rapidly among adolescents and adult population. The current study was planned to find the frequency of dyslipidemia in non-alcoholic fatty liver disease. In the present study, 101 (67.33%) were between 20-50 years of age while 49(32.67%) were between 51-70 years of age with mean was 43.12±12.43 years, 83(55.33%) were male and 67(44.67%) were females, frequency of dyslipidemia in Non-Alcoholic fatty liver disease was recorded in 47(31.33%) while 103(68.67%) had no findings of the morbidity.

In previous literature, the prevalence of dyslipidemia was observed to be higher in males then in females. Sawant et al[7] 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. From these patients high density lipoprotein cholesterol was abnormally low in 64.2% males and 33.8% in females. In another study, dyslipidemia was found in 46(36.22%) patients of non-alcoholic fatty liver diseass[8]. 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[9]. 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 lower levels of HDL-C[10,11].

A positive correlation is recorded between insulin resistance and metabolic dyslipidemia in T2DM. 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[12,13]. Consequently, this physiological dysfunction may increase the risk for development of atherogenesis, thereby predisposing patients to cardiovascular diseases. A recent study reveals that dyslipidemia may play a role in the development of steatosis[14].

Various studies highlighted the association between NAFLD and numerous causes of metabolic syndrome (MS), particularly abdominal obesity, insulin resistance, high levels of serum triglycerides and low HDL and small dense LDL. It has also been demonstrated that NAFLD cases could be considered the hepatic manifestation of MS. Frequency of the MS in NAFLD is found to be varied as 18% in normal-weight while 67% in obese cases[15]. Furthermore, accumulation of liver fat is common in T2DM and having a strong relation with abdominal ectopic fat accumulation and hypertension. There are various studies which correlates the liver enzymes ALT and GGT with the rate of diabetes. It is revealed that insulin resistance is more common in NAFLD as compared to controls while it may also cause abnormal metabolism of glucose i.e., prediabetes or T2DM, while these cases are unaware with it. Various epidemiological studies reveal that it may cause the higher risk of cardiovascular disease[16].

CONCLUSION

We concluded that the frequency of dyslipidemia is higher in non-alcoholic fatty liver disease in patients.

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