



A STUDY OF CLINICAL PROFILE OF NON ALCOHOLIC FATTY LIVER DISEASE (NAFLD) PATIENTS AT TERTIARY CARE CENTRE, KARWAR.

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ABSTRACT

Introduction: Non-alcoholic fatty liver disease (NAFLD) is one of the types of fatty liver which occurs when fat is deposited in the liver due to causes other than excessive alcohol use. NAFLD is the most common liver disorder in developed countries. NAFLD is related to Diabetes mellitus and the metabolic syndrome. Up to 80% of obese people have the disease. Non-alcoholic steatohepatitis is the most extreme form of NAFLD, and is regarded as a major cause of cirrhosis of the liver of unknown cause. Most people have a good outcome if the condition is caught in its early stages. **Material & Methods:** This was a hospital based descriptive study of 6 months duration i.e. from March 2020 to August 2020. This study was conducted at Department of General Medicine, KRIMS, Karwar & 100 patients diagnosed as fatty liver disease by abdominal Ultra sonography aged more than 18 years were included in the study. Detailed history, socio demographic profile and serum markers including haemoglobin, lipid profile, ALT, AST, fasting blood sugar, serum uric acid were estimated in each patient. Diagnosis of NAFLD was made using ultrasonography and patients were grouped. **Results:** A total of 50 cases ultrasonographically diagnosed as NAFLD were included in the study, 62% were male and 38% female and reports showed 70%, 22% and 8% of cases had grade I, II, and III fatty liver. **Conclusion:** Symptoms and signs of NAFLD are non-specific and occur later in the course of the disease, hence the physician should have a high index of suspicion in order to detect NAFLD early in the course of the disease. Early detection would help not only in modifying the disease course and delaying its complications.

KEYWORDS : Fatty Liver, Non Alcoholic Fatty Liver disease, NAFLD, Clinical Profile.

INTRODUCTION

Metabolic disorders, particularly Diabetes Mellitus, is considered to be an important public health threat globally. Of these 90% have Type 2 Diabetes, the hallmark of which is a patho- physiological state called Insulin resistance. Long considered to be a disease of affluence and accompanying development, a progressively increasing segment of the population of developing countries are afflicted with diabetes, obesity, hypertension and dyslipidaemia, conditions which often coexist and comprise the enigmatic syndrome X. The vascular problems arising in Diabetes has long acquired the central place in discussions and research in Diabetes. Thus, Diabetes has largely been considered a vascular disease. Only recently has liver disease been focused as a complication of diabetes, particularly type 2 diabetes. The e standardized mortality rate due to cirrhosis in Diabetes exceeds that due to cardiovascular disease. The most common metabolic liver disease, non-alcoholic fatty liver disease (NAFLD), is associated with insulin resistance (IR) and type2 diabetes is the most common underlying disease causing this syndrome.¹

The largest organ of our body located in upper right quadrant of the abdomen and tucked underneath the ribs is liver, which is vital for life and weighs approx 1.5 kg. The accumulation of triglycerides and other fat cells in the liver results in a condition known as fatty liver which occurs in all age groups. It is normal for liver to store some fat by itself. In some patients excess fat in liver may be accompanied by hepatic inflammation and liver cell death also referred to as hepatic steatosis. Steatohepatitis can lead to cirrhosis (fibrosis, scarring and hardening of liver). The fatty liver disease is classified into two types, NAFLD (Non-Alcoholic Fatty Liver Disease) and AFD (Alcoholic Fatty Liver Disease). The pathophysiology includes increase in endogenous fatty acid synthesis, decreased mitochondrial fatty acid beta oxidation and deficiency in incorporation of triglycerides as very low density lipoprotein [VLDL].²

Fatty liver is reversible at an early stage but it sometimes progresses to advanced liver disease. The causes of fatty liver are obesity, Insulin resistance, high intake of refined carbohydrates, Impaired gut health. Symptoms may include fatigue and weakness, elevated levels of liver enzymes,

elevated insulin and triglyceride levels. Excess alcohol consumption results in alcoholic fatty liver / simple steatosis. Steatosis in early stages is reversible with weight loss, cessation of alcohol consumption, Steatohepatitis may progress to liver fibrosis and cirrhosis can result in liver morbidity and mortality.³ Treatment mostly includes lifestyle changes to reverse fat accumulation i.e exercise and gluten free diet in NAFLD patients and in AFD patients abstaining alcohol is essential.

MATERIALS AND METHODS

This was a hospital based descriptive study of One Year duration i.e. from oct 2019 – sept 2020. This study was conducted at Department of General Medicine, Krims, Karwar. & 100 patients diagnosed as fatty liver disease by abdominal Ultra sonography aged more than 18 years were included in the study.

Exclusion Criteria

1. Patients with a history of alcohol intake more than 30 grams/day in males and more than 20 grams/day in females
2. Patients with a history of jaundice or HBsAg positive
3. Patients with history of following drug intake - steroids, synthetic estrogens, heparin, and calcium channel blockers, amiodarone, valproic acid, antiviral agents.
4. Unwilling patients.

Detailed history, socio demographic profile and serum markers including haemoglobin, lipid profile, ALT, AST, fasting blood sugar, ppbs, serum uric acid were estimated in each patient. Diagnosis of NAFLD was made using ultrasonography and patients were grouped. Approval was taken from the Institutional Ethics Committee of KRIMS, Karwar.

Statistical Analysis

Data were presented in the form of statistical Tables and charts. SPSS software version 20 was used for statistical analysis & p value of <0.05 was considered significant.

RESULTS

Total of 50 cases, ultrasonographically diagnosed as NAFLD were included in the study and showed 70%, 22% and 8% of

cases had grade I, II and III fatty liver respectively. Average age in both males & females is 44.5 years. This study includes 62 % males and 38 % females. The biochemical profile showed Average FBG is 110.43 mg/dl, PPBS 161.22 mg/dl was observed in patients with NAFLD. Average Hypertriglyceridemia observed in patients with NAFLD was (mg/dl) 254.38 & average Cholesterol was 196.23 mg/dl. The Average HDL, LDL, VLDL was 43.18, 122.48, 44.18 (mg/dl).

Table 1. Demographic Characteristics

S.No	Parameter	Frequency
1	Average Age in years	44.5
2	Average BMI	24.23
3	Males	31
4	Females	19
5	Low Socio economic status	16
6	Middle Socio economic status	25
7	High Socio economic status	9

Table 2. Radiological (USG) Profile.

Grade	Parameter	Frequency	%
1	Mild Fatty Liver	35	70
2	Moderate Fatty Liver	11	22
3	Severe Fatty Liver	4	8

Table 3. Biochemical Profile.

S.No	Parameter	Average value
1	FBS (mg/dl)	110.43
2	PPBS (mg/dl)	161.22
3	T.Bilirubin (mg/dl)	1.12
4	SGOT (U/L)	49.18
5	SGPT (U/L)	62.44
6	SAP (U/L)	237.58

Table 4. Lipid Profile Values.

S.No	Parameter	Average value
1	TG (mg/dl)	254.38
2	Cholesterol (mg/dl)	196.23
3	HDL (mg/dl)	43.18
4	LDL (mg/dl)	122.48
5	VLDL (mg/dl)	44.18
6	TC/HDL (mg/dl)	5.53

DISCUSSION

Non-alcoholic fatty liver disease (NAFLD) is defined as the accumulation of fat in the liver in the absence of alcohol consumption and other causes of chronic liver disease such as viral hepatitis or drugs. NAFLD has emerged as the most commonest liver problem around the world and is found in up to one-third of the general population. The prevalence of fatty liver in the general population of western countries is 20-30%. The prevalence of NAFLD among United States children is 3-10%, rising up to 40-70% among obese children. Taken together, the prevalence of fatty liver in obese children in China, Italy, Japan, and the United States has been reported to be between 10% and 77%.^{4,5,6} The present study showed NAFLD to be a disease of middle age with Average age of 44.50 years at presentation and men predilection - three-fourths being male. The prevalence of NAFLD was two-folds higher among men. Mohan et al.⁷ too have reported the preponderance of men. To estimate the prevalence and clinical profile of Non-Alcoholic Fatty Liver Disease (NAFLD) among patients at a tertiary care diabetes center in India. A total of 50 cases ultrasonographically diagnosed as NAFLD were included in the study. 62% were male and 38% female and reports showed 70%, 22% and 8% of cases had grade I, II, and III fatty liver respectively. In the present study, it was observed that average age of the patient was 44.50 years. On physical examination findings showed the average BMI was 24.23/m², with different socioeconomic statuses with 32% belonging to low, 50% to middle and 18% to high socioeconomic statuses. The patients also profiled based on radiological examination into 3 different parameters. With

highest 70% belonging to mild fatty liver, 22% to moderate fatty liver and lowest 8% to severe fatty liver (USG) category. Biochemical tests shows that average Fasting plasma glucose (mg/dl) 110.43 was observed in patients with NAFLD with metabolic syndrome. These findings are similar to study by Shivaram Prasad Singh et al and Kwon YM et al.^{8,9} while average PPBS is 161.22 mg/dl was observed in patients with NAFLD with metabolic syndrome and the difference was not significant. Average Hypertriglyceridemia (mg/dl) 254.38 was observed in patients with NAFLD with metabolic syndrome. The correlation was significant for fasting plasma glucose, PGBS, triglycerides, high-density lipoprotein similar to studies by Rakesh Gaharwar et al, Animesh Deb et al and Younossi ZM.^{10,11,12}

CONCLUSION

From our study, it can be concluded that symptoms and signs of NAFLD are non-specific and occur later in the course of the disease hence the physician should have a high index of suspicion in order to detect NAFLD early in the course of the disease. Higher prevalence of all the components in cases of NAFLD was observed. Liver biopsy is considered the gold standard for diagnosing NAFLD but is not practical and most patients are not willing to undergo the test. Thus, patients must be evaluated for the presence of NAFLD by abdominal Ultrasonography. Early detection would help in modifying disease course & delaying its complications.

Conflict Of Interest: Nil

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REFERENCES

1. Zimmet P, Alberti KG, Shaw G. Global and societal implications of the diabetes epidemic. *Nature*; 2001; 414: 782-787.
2. Ajgaonkar SS. Ancient Indian Medicine and diabetes mellitus. In Bajaj JS Ed: *Diabetes Mellitus in developing countries*. New Delhi Interprint 1984. 1-10.
3. King H, Rewers, M. WHO Ad hoc diabetes reporting group : Global estimates for prevalence of diabetes and impaired glucose tolerance in adult
4. Bellentani S, Scaglioni F, Marino M, Bedogni G (2010) Epidemiology of non-alcoholic fatty liver disease. *Dig Dis* 28: 155-161.
5. Franzese A, Vajro P, Argenziano A, Puziello A, Iannucci MP, et al. (1997) Liver involvement in obese children. Ultrasonography and liver enzyme levels at diagnosis and during follow-up in an Italian population. *Dig Dis Sci* 42: 1428-1432.
6. Tazawa Y, Noguchi H, Nishinomiya F, Takada G (1997) Serum alanine aminotransferase activity in obese children. *Acta Paediatr* 86: 238-241.
7. Strauss RS, Barlow SE, Dietz WH (2000) Prevalence of abnormal serum aminotransferase values in overweight and obese adolescents. *J Pediatr* 136: 727-733.
8. Singh SP, Kar SK, Panigrahi MK, Misra B, Pattnaik K, Bhuyan P, et al. Profile of patients with incidentally detected non-alcoholic fatty liver disease (IDNAFLD) in coastal Eastern India. *Tropical Gastroenterol*. 2013;34(3):144-52.
9. Kwon YM, Oh SW, Hwang SS, Lee C, Kwon H, Chung GE. Association of non-alcoholic fatty liver disease with components of metabolic syndrome according to body mass index in Korean adults. *Am J Gastroenterol*. 2012;107(12):1852-8.
10. Gaharwar R, Trikha S, Margekar SL, Jatav OP, Ganga PD. Study of clinical profile of patients with nonalcoholic fatty liver disease and its association with metabolic syndrome. *J Assoc Phy Ind*. 2015;63:12-16.
11. Deb A, Chattopadhyay A, Hassan K, Bhattacharya J, Basu M. Clinical profile of patients with nonalcoholic fatty liver disease and its association with metabolic syndrome: a cross-sectional study. *IOSR J Dent Med Sci (IOSR-IDMS)*. 2015;14(12):11-15.
12. Younossi ZM, Otgonsuren M, Venkatesan C, Mishra A. In patients with the non-alcoholic fatty liver disease, metabolically abnormal individuals are at a higher risk for mortality while metabolically normal individuals are not. *Metabol*. 2013;62(3):352-60.