



PREVALENCE OF NON ALCOHOLIC FATTY LIVER DISEASE IN PATIENTS WITH DIABETES IN A TERTIARY CARE HOSPITAL – AN OBSERVATIONAL STUDY

General Medicine

Dr K Shyam Kumar

Final year Postgraduate, Department of General Medicine.

Dr Hanuma Kumar

Assistant Professor, Department Of General Medicine, Santhiram Medical College And General Hospital.

ABSTRACT

Background: Glucose homeostasis in the body is regulated within narrow limits. During fasting blood glucose levels are 3.3-3.9mmol/L after ingestion of a carbohydrate meal level rises to 6.5-7.2mmol/L. Blood glucose is derived from direct, gluconeogenesis and glycogenolysis. Role of liver in glucose homeostasis – Dietary carbohydrates contain glucose, galactose and fructose. Galactose and fructose are readily covered to glucose by the liver. During starvation amino acids are transported from muscles to liver for gluconeogenesis. In type 2 diabetes excessive hepatic glucose output constitutes to the fasting hyperglycemia. Increased gluconeogenesis is the predominant mechanism for this Increased output, while glycogenolysis has not been shown to be increased in patients with type 2 diabetes. Liver disease as complication diabetes mellitus: Excess glycogen accumulation in the liver is seen in 80% of diabetic patients. Glycogen synthesis in the liver is impaired in diabetes due to defective activation in glycogen synthase. Long standing insulin deficiency may actually facilitate synthase activity. This and enhanced gluconeogenesis may account for the net accumulation of glycogen in diabetes. It is postulated that glycogen is actually synthesized in the nucleus and has been found in 60 – 75% of diabetic patients. The finding of glycogen nuclei in a patient with fatty liver is useful confirmatory evidence that fatty liver is secondary to diabetes even if the glucose tolerance test is normal. **Aim:** The aim of the study is to analyse the prevalence of fatty liver (Non alcoholic fatty liver disease) in patients with diabetes. **Materials And Methods:** A Hospital-based observational study was conducted in the Department of General Medicine, Santhiram Medical College, and General Hospital for six months. A total of 100 cases of diabetes mellitus type 1 and type 2 patients that were admitted to the hospital during this period were taken into the study. **Results:** The prevalence of fatty liver disease was found to be 55%. The number of patients with fatty liver who had central obesity (waist hip ratio >1) – 42(76.3%). No. of patients who were overweight among the persons detected to have fatty liver -36(65.4%). No. of patients with normal BMI among the persons with fatty liver -19(34.5%). The number of patients who had increased triglycerides >180 among patients with fatty liver 49(89%). No. of patients with increased cholesterol (>200 mg%) among patients with fatty liver –35(63.3%). All the patients with ultrasound evidence of fatty liver showed, marginally elevated transaminases. **Conclusion:** Non Alcoholic fatty liver disease was significantly associated with diabetes. The occurrence of non alcoholic fatty liver was found to be higher in patients who are overweight or obese and also in patients who had dyslipidemias (triglycerides)

KEYWORDS

INTRODUCTION:

NAFLD Sometimes referred to as non alcoholic fatty liver. Indicates the presence of fatty infiltration of the liver defined as exceeding 5% weight and frequently taken as fat in >5% of hepatocytes. Includes non alcoholic steatohepatitis. Obesity, type 2 diabetes and hyperlipidemia have been the most constant conditions associated with steatosis and steatohepatitis and are predictors of more severe histologic disease. Insulin resistance is common in NASH patients and hyper insulinemia may play a pathogenic role in the progression of NASH, even in the absence of overt diabetes. Fatty infiltration also has been found to precede the development of overt diabetes. The progression to more overt diabetes in these patients may depend on additional factors such as peripheral fat metabolism, pancreatic islet cell vitality and the stage of liver fibrosis. The severity of liver injury worsens with the degree of abnormal glucose metabolism in obese patients. This study helps us in identifying the prevalence of non alcoholic fatty liver disease in patients of diabetes.

AIM:

The aim of the study is to analyse the prevalence of fatty liver (Non alcoholic fatty liver disease) in patients with diabetes

MATERIALS AND METHODS:

A Hospital-based observational study was conducted in the Department of General Medicine Santhiram Medical College, and General Hospital for six months after approval from the Hospital Ethics and Research Committee.

Duration Of The Study: From July 2023 to December 2023

Sample Size: 100

METHODS OF DATA COLLECTION:

A total of 100 diabetics (both type 1 and type 2) were studied during this period. Both outpatients and inpatients who are admitted to Santhiram medical college and general hospital, Nandyal, fulfilling the inclusion criteria, were taken for study after taking prior informed consent.

- Information is collected through a pre-structured proforma for each study subject
- The study was carried out on patients with diagnosed with diabetes type 1 and type 2

Qualifying study subjects will be undergoing detailed history, clinical examination, and laboratory investigations.

Inclusion Criteria:

Presence of diabetes mellitus (types 1 or 2) of any duration. Patients who are willing to participate and will give informed and written consent.

Exclusion Criteria :

- Consumption of alcohol
- Seropositivity to HIV ELISA
- Seropositivity of HbsAg and anti HCV antibody
- Patients on drugs that are proven to cause steatohepatitis (steroids, amiodarone, oral contraceptive pills and other estrogen containing preparations.
- Patients who are not willing to participate and willing to give written informed consent

RESULTS:

Among the 100 diabetics who were studied, fatty liver was found in 55 patients (55%)

No of patients with fatty liver	No of patients without fatty liver
55(55%)	45

The number of males with fatty liver were 4(7.2%) and females 51(92.7%)

Sex	Fatty liver present	Fatty liver absent
Male	4(7.2%)	41
Female	51(92.7%)	55

Patients with fatty liver who had central obesity (waist hip ratio >1)

Waist hip ratio >1	Waist hip ratio <1
42(76.3%)	13(23.6%)

No of patients with BMI >25 among patients with fatty liver -

36(65.4%) and with BMI <25 19(34.5%)

No of patients with BMI>25	No of patients with BMI<25
36(65.4%)	19(34.5%)

No of patients with triglycerides >180 among the patients of fatty liver

No of patients with TGL>180	No of patients with TGL<180
49(89%)	6(10.9%)

No of patients with increased cholesterol (200mg%) among patients with fatty liver – 35(63.3%)

Patients with cholesterol>200	Patients with cholesterol<200
35(63.3%)	20(36.3%)

DISCUSSION:

This research aims to investigate the relation between diabetes mellitus and NAFLD in patients of diabetes. Among the patients that were studied with diabetes mellitus it was found that 55% had fatty liver.

Among patients with NAFLD 76.3% were obese and patients with increased triglycerides and cholesterol were 89% and 63.3% respectively signifying the importance of obesity and dyslipidemia as the important risk factors in the development of NAFLD and NASH.

In summary obesity and type 2 diabetes are the best characterized risk factors, with older age and presence of hypertriglyceridemia, are predictors of the severity of underlying histologic changes. Many lean patients with fatty liver have truncal or central adiposity. The prevalence of NAFLD is more in women than men.

List Of Abbreviations

AST: ASPARTATE AMINO TRANSFERASE

ALT: ALANINE AMINO TRANSFERASE

T Chol: TOTAL CHOLESTEROL

HDL: HIGH DENSITY LIPOPROTEIN

LDL: LOW DENSITY LIPOPROTEIN

VLDL: VERY LOW DENSITY LIPOPROTEIN

RBS: RANDOM BLOOD SUGAR

CONCLUSION:

- The prevalence of non-alcoholic fatty liver disease was 55% and it was present mainly in patients with type 2 diabetes mellitus.
- It occurred more commonly in women than men.
- The occurrence of non-alcoholic fatty liver was found to be higher in patients who were overweight/ obese and in those with central obesity.
- 89% of the patients with fatty liver had dyslipidemias especially hypertriglyceridemia.