

# Incidence of Non Alcoholic Fatty Liver Disease in Patients of Diabetes Mellitus.

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## ABSTRACT

**Background:** Type 2 Diabetes Mellitus patients with NAFLD are more prone to cardiovascular disease. T2DM surges the risk of liver related death by up to 22-fold in NAFLD patients. Diagnosis of NAFLD requires high index of suspicion, mostly in obese patient over the age of 45 years with history of diabetes mellitus. The reason could be that these patients are at high risk of developing cirrhosis. **Methods:** 200 total numbers of cases were included. Out of 200 cases 98 were with fatty liver. This study was conducted in the Department of Medicine C. U. Shah Medical College Gujarat, India. The duration of the study was over a period of six month. **Results:** In this study we were including 200 total numbers of cases. Among all cases 49% cases with fatty liver & 51% cases without fatty liver found in this study. In the present study, 57.1% cases belongs to Grade I followed by Grade II (26.5%) & Grade III (16.3%). On the basis of histopathological examination we were suggested 57.1% cases from steatosis, 38.1% steato hepatitis & 4.8% cirrhosis. **Conclusion:** This study revealed that it is essential to provide proper intervention and management to diabetes mellitus and fatty liver.

**Keywords:** Diabetes mellitus, Fatty liver, Non Alcoholic, Cirrhosis.

## INTRODUCTION

Non-alcoholic fatty liver disease (NAFLD) is usually categorized by accumulation of fat in liver. It changes from simple steatosis to steatohepatitis, cirrhosis and hepato cellular carcinoma (HCC) in absence of excessive alcohol intake.<sup>[1]</sup> NAFLD is distinct by macrovascular steatosis of more than 5% hepatocytes in the absence of inflammation. T2DM patients seem to have a high risk of developing NAFLD than non-diabetic counterparts. They have higher risk of increasing fibrosis and cirrhosis. Type 2 Diabetes Mellitus patients with NAFLD are more prone to cardiovascular disease.<sup>[2]</sup> T2DM surges the risk of liver related death by up to 22-fold in NAFLD patients.<sup>[3]</sup> Diagnosis of NAFLD requires high index of suspicion, mostly in obese patient over the age of 45 years with history of diabetes mellitus. The reason could be that these patients are at high risk of developing cirrhosis.<sup>[4]</sup> Several studies have shown that NAFLD is the hepatic constituent of metabolic syndrome. The main features of metabolic syndrome are the peripheral insulin resistance,

obesity, hypertension, hyperinsulinaemia, and hypertriglyceridemia. These features are the predisposing factors for NAFLD.<sup>[5]</sup> The prevalence of NAFLD is 15 to 40% in western countries and 9 to 40% in Asian countries. Since last two decades, there is an increase in the incidence of diabetes mellitus, obesity and insulin resistance in India, which leads to high risk of NAFLD. Though, there is limited data on the prevalence of NAFLD in India.<sup>[6]</sup>

It has been revealed in cross-sectional studies that 30-40% of NAFLD patients have advanced liver fibrosis at the time of presentation, whereas 10-15% have established cirrhosis.<sup>[7-9]</sup> Progression of liver fibrosis has been confirmed in a third of patients with NASH,<sup>2</sup> with a proportion of patients progressing to end stage liver disease and hepato cellular carcinoma.<sup>[10-12]</sup>

The aim of the present study is to document the prevalence of NASH and the spectrum of the disease in type-2 Diabetes Mellitus.

## MATERIALS AND METHODS

### Study Population

200 total numbers of cases were included. Out of 200 cases 98 were with fatty liver.

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**Study Area**

This study was conducted in the Department of Medicine C. U. Shah Medical College Gujarat, India.

**Study Duration**

The duration of the study was over a period of six month.

**Data Collection**

After obtaining informed consent from each patient, a detailed clinical history and physical examination along with laboratory investigations were conducted. All the patients were subjected to blood sugar (fasting and PP), Blood urea and serum creatinine, routine urine examination, liver function tests, lipid profile, HBs Ag, Anti HCV, USG (Abdomen). In a subset of patients liver biopsy was also done.

**Data Analysis**

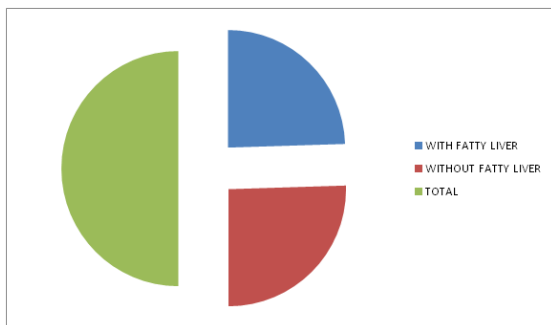
Data were analyzed by using Microsoft excel.

**RESULTS**

In this study we were including 200 total numbers of cases. Among all cases 49% cases with fatty liver & 51% cases without fatty liver found in this study. In the present study, 57.1% cases belongs to Grade I followed by Grade II (26.5%) & Grade III (16.3%). On the basis of histopathological examination we were suggested 57.1% cases from steatosis, 38.1% steato hepatitis & 4.8% cirrhosis.

**Table 1: Distribution of Cases According To Diagnosis.**

Diagnosis	No. Of Cases	Percentage
With Fatty Liver	98	49%
Without Fatty Liver	102	51%
Total	200	100%



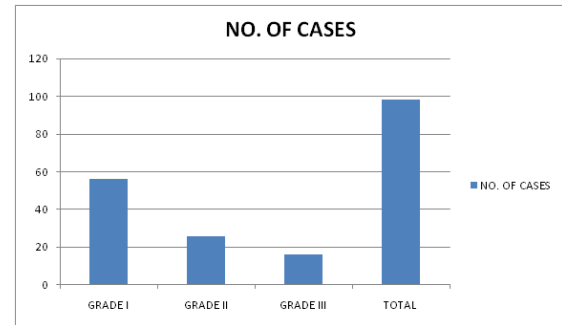
**Figure 1: This Chart Showing Distribution of Cases According To Diagnosis.**

**Table 2: Distribution of Cases According To Grading.**

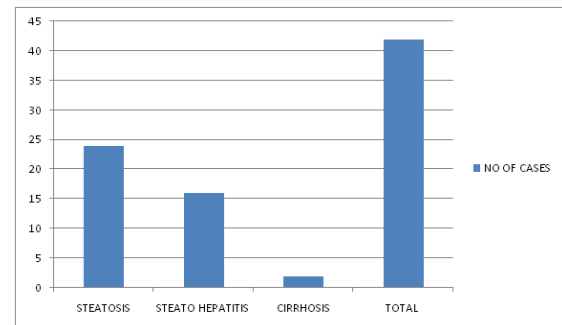
Grading Of Fatty Liver	No. Of Cases	Percentage
Grade I	56	57.1%
Grade Ii	26	26.5%
Grade Iii	16	16.3%
Total	98	100%

**Table 3: Distribution of Cases According To Hp Abnormality.**

Type Of Hp Abnormality	No. Of Cases	Percentage
Steatosis	24	57.1%
Steato Hepatitis	16	38.1%
Cirrhosis	2	4.8%
Total	42	100%



**Figure 2: This Graph Showing Distribution Of Cases According To Grading.**



**Figure 3: This Graph Showing Distribution of Cases According To Hp Abnormality.**

**DISCUSSION**

The present study found, the commonness of fatty liver in type 2 diabetes was 48.61% by ultrasound examination. In our study, ultrasound was very effective in diagnosing fatty liver. It has been reported that the sensitivity and specificity of ultrasound is 83% and 100%, respectively. Though, CT scan and other imaging modalities are similar in sensitivity and specificity but more costly than ultrasound. Therefore, this study used ultrasonography in the diagnosis of fatty liver. Since NASH is diagnosed histologically and changes are precisely reflected in imaging studies, but still liver biopsy remains the gold standard in diagnosis of NASH. This study had performed liver biopsy in those patients with grade 2 and grade 3 fatty liver on USG examination. It was found that in majority of patients with NAFLD had mild steatosis (57%) whereas advanced changes being found only in a minority. NASH was present in 38% and cirrhosis in 4.7%. Increased incidences of liver disease in diabetes mellitus had been observed more than half a century ago. It had been reported earlier that fatty changes in the liver is closely related with diabetes.

Recently, when long term follow up studies of patients with fatty liver started appearing then the significance of these fatty changes were got recognized. The results of these studies revealed that the outcome of fatty liver disease is not linked with alcohol intake. Besides this "diabetic" liver disease, factors related with lifestyle predispose them to the acquisition of hepatitis viruses B and C. lifestyle factors are the most common causes of chronic liver disease in the developing countries. Diabetics are also prone to develop drug induced liver disease, because of the intake of many drugs for diabetes per se and co morbid conditions.

The term NASH was first introduced by Ludwig in 1980. He described the pathological and clinical features of non-alcoholic disease of the liver related with the features seen usually in alcoholic liver disease per se. NASH is the central entity signifying progression, in the spectrum of liver disorders, called non-alcoholic fatty liver disease (NAFLD). It include steatosis through NASH and fibrosis to cirrhosis of liver with fat. It can lead to end stage chronic liver disease and hepatocellular carcinoma. Now a days it is very much clear that metabolic syndrome and insulin resistance with type 2 diabetes are the two most common associations of cryptogenic chronic hepatitis. Furthermore, NAFLD and diabetes mellitus are the major risk factors for hepatocellular carcinoma. Though, obesity is often a mystifying factor, but now it is clear that hepatic fibrosis is more prominent in diabetes with obesity than obesity alone. Its occurrence is as high as 50% in patients with type 2 diabetes and 100% in diabetes with obesity. 50% of patients have NASH and 17% have cirrhosis.

## CONCLUSION

This study concludes that, in type 2 diabetes, presently, NAFLD is considered to be an important cause of morbidity and mortality, expanding the spectrum of organ dysfunction in this condition. In a country like India, data is very limited. It has been reported that India will have a big burden of type 2-diabetes in the coming years. Cirrhosis is caused by nonalcoholic fatty liver disease and nonalcoholic steatohepatitis. Cirrhosis is late-stage scarring (fibrosis) in the liver. As the liver tries to halt inflammation, it produces areas of scarring or fibrosis. Fibrosis spreads to take up more and more liver tissue with continued inflammation. Approximately, 20 percent of people with nonalcoholic steatohepatitis will progress to cirrhosis. This study observed that around 50% of the diabetics were affected with non-alcoholic fatty liver disease which can end up in steatohepatitis and even cirrhosis.

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