

Original Research Article


Prevalence of non-alcoholic fatty liver disease in diabetics in government Dharmapuri Medical College Hospital, Dharmapuri

P. S. Rani^{1*}, P. Sasikumar²

¹Associate Professor, ²Assistant Professor

Department of Medicine, Govt. Dharmapuri Medical College, Tamil Nadu, India

*Corresponding author email: Raniraja.1611@yahoo.co.in

	International Archives of Integrated Medicine, Vol. 4, Issue 6, June, 2017. Copy right © 2017, IAIM, All Rights Reserved. Available online at http://iaimjournal.com/ ISSN: 2394-0026 (P) ISSN: 2394-0034 (O)
	Received on: 19-05-2017 Accepted on: 24-05-2017 Source of support: Nil Conflict of interest: None declared.
How to cite this article: P. S. Rani, P. Sasikumar. Prevalence of non-alcoholic fatty liver disease in diabetics in government Dharmapuri Medical College Hospital, Dharmapuri. IAIM, 2017; 4(6): 60-63.	

Abstract

Introduction: The incidence of diabetes in India is 3.8%³⁴. It is well known that diabetes is a systemic disease; it affects almost all organ systems. Non-alcoholic fatty liver disease (NAFLD) is being increasingly recognized today as a potentially serious complication of diabetes, especially type 2. The spectrum of NAFLD extends from simple steatosis or steatosis with mild inflammation to severe non-alcoholic steatohepatitis (NASH).

Aim of the study: The Aim was to analyse the prevalence of Fatty Liver (Non Alcoholic Fatty Liver Disease) in Patients with Diabetes.

Materials and methods: The study was to be conducted in Government Dharmapuri Medical College Hospital, Dharmapuri, and Tamil Nadu. It was an observational type of study. Interview technique was used to collect information on a predesigned proforma. All diabetes patients both type 1 and type 2. Both male and female patients were included in the study.

Results: Among the 75 diabetics who were studied, fatty liver was found in 31 patients (41.33%). No. of patients with fatty liver was 31. No. of patients without fatty liver was 44. The number of males with fatty liver were 2 (2.6%) and females 29 (38.6%). The number of patients with fatty liver who had central obesity (waist hip ratio >1) was 23 (74.19%). All the patients with fatty liver had central obesity (waist hip ratio >1 in males and >0.85 in females).

Conclusion: The prevalence of non-alcoholic fatty liver disease was 41.3% and it was present mainly in patients with type 2 diabetes mellitus. It occurred more commonly in women (38.66%) than men.

Key words

Non-alcoholic fatty liver disease, Type 2 diabetes mellitus, Non-alcoholic steatohepatitis.

Introduction

The incidence of diabetes in India is 3.8%. It is well known that diabetes is a systemic disease; it affects almost all organ systems. Non-alcoholic fatty liver disease (NAFLD) is being increasingly recognized today as a potentially serious complication of diabetes, especially type 2 [1]. The spectrum of NAFLD extends from simple steatosis or steatosis with mild inflammation to severe non-alcoholic steatohepatitis (NASH). The pathophysiology and treatment remain unclear in many respects, but much progress has been made since the introduction of the terms non-alcoholic steatohepatitis (NASH) in 1980 and non-alcoholic fatty liver disease (NAFLD) in 1986 [2]. Non-alcoholic fatty liver disease (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. Simple steatosis: A type of fatty infiltration (NAFLD) with no or minimal inflammation and no fibrosis. Non-alcoholic steatohepatitis (NASH): A type of NAFLD with inflammation and fibrosis, usually beginning around the central vein and may progress to cirrhosis [3]. Primary NASH This term is occasionally encountered in literature but not widely accepted. It indicates typical NASH associated with central obesity and often type 2DM, but without a specific, additional etiologic factor. The likelihood that many cases of secondary NASH represent unrecognized or exacerbated 'primary' NASH makes the term less useful. Secondary NASH associated with a specific problem such as the effect of a drug or bariatric surgery [4]. Many patients may have exacerbation of underlying NASH, making the distinction less useful. In several epidemiologic and paediatric studies, NASH has been used as presumptive diagnosis because of abnormal liver enzyme levels, negative results of viral studies and echogenic or 'bright' liver at

ultrasonography consistent with fatty infiltration. NASH is one of the most common of all liver diseases. Obesity, type 2 diabetes and hyperlipidaemia have been the most constant conditions associated with steatosis and steatohepatitis and are predictors of more severe histologic disease [5]. Diabetes was also identified as an independent risk factor for NASH. Hypertriglyceridemia is also identified as an independent predictor of steatosis at liver ultrasound imaging. Insulin resistance is common in NASH patients and hyperinsulinemia may play a pathogenic role in the progression of NASH, even in the absence of overt diabetes [6]. It is estimated that as many as 75% of patients with type 2DM have fatty infiltration. 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 [7]. The severity of liver injury worsens with the degree of abnormal glucose metabolism in obese patients. As mentioned earlier, hypertriglyceridemia been identified as a predictor both of steatosis at ultrasound examination and of more extensive fibrosis at biopsy in patients with NASH [8]. It is estimated that two thirds of patients with hypertriglyceridemia and one third of those with hypercholesterolemia have fatty liver. NAFLD and NASH have been described in patients without the classic risk factors of obesity, diabetes and overt hyperlipidaemia [9]. This group appears to contain relatively younger men with milder histologic changes and with visceral or central adiposity and hyperinsulinemia [10].

Materials and methods

The study was conducted in Government Dharmapuri Medical College Hospital, Dharmapuri, and Tamil Nadu. It was an observational type of study. Interview technique was used to collect information on a predesigned

proforma hundred cases of Diabetes patients. All diabetes patients both type 1 and type 2. Both male and female patients with any duration were included.

Exclusion criteria

- Consumption of alcohol.
- Patients on drugs that are proven to cause steatohepatitis (steroids, amiodarone, oral contraceptive pills and other estrogen containing preparations).

Results

Among the 75 diabetics who were studied, fatty liver was found in 31 patients (41.33%). No. of patients with fatty liver was 31. No. of patients without fatty liver was 44. The number of males with fatty liver were 2 (2.6%) and females 29 (38.6%). The number of patients with fatty liver who had central obesity (waist hip ratio >1) was 23 (74.19%). All the patients with fatty liver had central obesity (waist hip ratio >1 in males and >0.85 in females). Waist hip ratio >1 in 23 cases (74.19%). Waist hip ratio <1 in 8 (25.8%) The number of patients who had increased triglycerides >180 among patients with fatty liver was 28 (90.3%). No. of patients who were overweight among the persons detected to have fatty liver was 21 (67.74%). No. of patients with normal BMI among the persons with fatty liver was 10 (32.2%). No. of patients with BMI >25 was 21 (67.74%). No. of patients with BMI <25.0 was 10 (32.2%) No. of patients with increased cholesterol (>200 mg/dl) among patients with fatty liver was 20 (64.5%). Patients with cholesterol >200 were 20 (64.5%). Patients with cholesterol <200 were 11 (35.48%). All the patients showed ultrasound evidence of fatty liver showed, marginally elevated transaminases, and occasionally of serum alkaline phosphatase. There was no alteration in the serum protein or albumin globulin ratio.

Discussion

The prevalence of fatty liver in this study was found to be 41.3%. According to one study, the prevalence of NAFLD was found to be 55%.

According to another study, the prevalence of NAFLD, by ultrasound examination, was found to be 49% [11]. Among the patients with NAFLD the percentage of patients who were overweight was 67.74%. Wanless and Lentz found mild to severe steatosis in approximately 70% of obese patients and 35% of lean patients. One study found NASH in 69% whereas 22% had simple steatosis and only 8% had normal biopsy findings. In another study the presence of NAFLD was highest among obese patients, with BMI of 30 +/- 5.5 kg/m². However, in another study there was no significant difference in body mass index among patients with NAFLD. NASH can exist with only nonspecific symptoms for years in obese patients before manifesting itself either incidentally or with complications of cirrhosis or portal hypertension [12]. The prevalence of fatty liver was found to be higher among women (38.6%) than men. Many studies have found the presence of fatty liver to be higher in women. NAFLD and NASH have been described in patients without the classic risk factors of obesity, diabetes and overt hyperlipidaemia. It has been described in patients with central of visceral adiposity in one study. In another study, fatty liver was strongly correlated with visceral adipose tissue. In this study the percentage of patients with central obesity among patients with fatty liver was 100% and those with a waist hip ratio of >1 was 74%. The no. of patients with increased triglycerides and cholesterol was found to be 90.3% and 64.5% respectively [13]. As mentioned earlier two thirds of patients with hypertriglyceridemia and one third of patients with hypercholesterolemia have fatty liver. In another study, among patients with obesity and fatty liver, approximately 20% have some type of previously identified hyperlipidemia. In other studies, fatty liver was strongly correlated with the degree of dyslipidaemia, especially the level of triglycerides. Hypertriglyceridemia was identified as an important risk factor in the development of NAFLD and NASH; it also correlates well with the histological severity of the disease. 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 [14]. Many lean patients with fatty liver have truncal or central adiposity. The prevalence of NAFLD is more in women than men. Only 10% of consecutively examined obese patients have normal results at liver biopsy. Approximately 5% have cirrhosis and 85% have steatosis and one third of the latter have NASH.

Conclusion

The prevalence of non-alcoholic fatty liver disease was 41.3% and it was present mainly in patients with type 2 diabetes mellitus. It occurred more commonly in women (38.66%) 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. 90.3% of the patients with fatty liver had dyslipidaemia's especially hypertriglyceridemia [15].

References

1. Ludwig J, Viggiano TR, McGill DB. Non alcoholic steatohepatitis. *Mayo Clin Proc.*, 1980; 55: 434 – 438.
2. Schaffner F, Thaler H. Non alcoholic fatty liver disease. *Prog LiverDis.*, 1986; 8283 -8298.
3. Harper's Biochemistry, 25th edition, edited by Murray, Grannes, Mayes, Rodwell; 2000; 214 – 218.
4. Review of Medical Physiology, editor: William F. Ganong , 21st edition, Lange publications, 2003, 336-358.
5. Lonsoli A, Nurjhan N, Capani F, Gerich J. Predominant role of gluconeogenesis in increased hepatic glucose production in NIDDM. *Diabetes*, 1989; 38: 550 – 557.
6. Stone BE, Van Thiel DH. Diabetes mellitus and the liver. *Sem Liver Dis.*, 1985; 5: 8 – 28.
7. Gavin N Levinthal, Anthony S. Liver disease and Diabetes Mellitus. *Clin Diabetes*, 1999; 17: 1- 12.
8. Kautzsch E. Leberbefunde bei diabetes mellitus. *Med Mschr.*, 1963; 17: 229-34.
9. Robbers H, Stohfeldt P. Differentia diagnose de diabetischen undalkoholischen fettleber: untersuchungen and 171 Diabetikern und 100 patienten mit alkoholabusus. *Deutsch Med Wschr.*, 1968; 93: 112 – 113.
10. Chatila R, West AB. Hepatomegaly and abnormal liver tests due toglycogenesis in adults with diabetes. *Med Balt.*, 1996; 75: 327 – 33.
11. Bockus HL. *Gastroenterology*, vol III. Philadelphia: Saunders, 1946, 385 – 392.
12. Stephen H Caldwell, Tri H Le, Stacey M Anderson. Schiff's diseases of the Liver, 9th edition, edited by Eugene Schiff, Michael F Sorrell, Willis C Maddrey, Lippincott Williams and Wilkins pub, 2003, p. 1261 – 1280.
13. Payne JH, De Wind LT, Commons RR. Metabolic observations in patients with jejuncolic shunts. *Am J Surg.*, 1963; 106: 273 -289.
14. Moxley RT, Pozefsky T, Lockwood DH. Protein nutrition and liverdisease after jejunio ileal bypass for morbid obesity. *N Engl J Med.*, 1974; 290: 921 – 926.
15. McGill DB, Humphreys SR, Baggenstoss AH, et al. Cirrhosis anddeath after jejunioileal shunt. *Gastroenterology*, 1972; 63: 872 – 877.