ORIGINAL ARTICLE

Non-alcoholic Fatty Liver & its Anthropometric Measurment

Azmeri Alam[1], M.Al Masudur Raihan[2], Salma Sadiya[3], Asma Begum[4], Zebunnessa Zeba[5]

[1]Assistant Professor, Department of Biochemistry, Green Life Medical College, Dhaka, [2]Lecturer, Department of Anatomy, Rajshahi Medical College, Rajshahi, [3] Assistant Professor, Department of Biochemistry, Dhaka Shishu Hospital, Dhaka, [4]Assistant Pprofessor, Department of Forensic Medicine, Ibne Sina Medical College, Dhaka, [5]Fello, BIRDEM, Dhaka.

Abstract

Non-alcoholic fatty liver disease is a common chronic condition of which diabetic fatty liver accounts for a large proportion with 50% to 75% of the subjects demonstrating fat in the liver on ultrasound. As a result of epidemic increase in obesity, the prevalence of non-alcoholic fatty liver disease in the general population is increasing. This study was conducted a study to determine anthropometric parameters in diabetic patients with non-alcoholic fatty liver disease. Anthropometric parameters in diabetic patients with fatty liver were compared with diabetic patients without fatty liver. 256 patients with type 2 diabetes mellitus attending BIRDEM participated in the study. 127 diabetic patients had fatty liver and 129 diabetic patients without fatty liver acted as controls. History and thorough clinical examination including anthropometry (waist-hip ratio and BMI) and laboratory investigations were done. Ultrasound abdomen was done to detect fatty liver. Diabetic patients with fatty liver had high BMI, elevated when compared to diabetic patients without fatty liver ($p<0.05$). This was found be statistically significant. BMI may act as early anthropometric indicators in prediction of non-alcoholic fatty liver disease in type 2 diabetic patients.

Key words : Non-alcoholic fatty liver disease (NAFLD), Type 2 Diabetes mellitus, Anthropometry.

IBMC J 2011; 2(1) : 14-16

Introduction

Non-alcoholic fatty liver disease (NAFLD) represents the most common cause of liver disease in industrialized countries.[1] In two large population-based cohort studies (Dionysos Study from Italy and the Dallas Heart Study from the USA) its prevalence ranged between 25% and 30%. In Greece, the prevalence of NAFLD in blood donors, based on elevated liver enzymes, was recently reported to be 18%.[2] The severity of NAFLD varies widely ranging from simple steatosis to steatohepatitis, advanced fibrosis and cirrhosis.[3] NAFLD is considered to be the hepatic manifestation of metabolic syndrome. Its prevalence increases with age and it is far more common among obese subjects and among subjects with type 2 diabetes mellitus (T2DM).[4] In particular in obese subjects with T2DM, NAFLD is an almost universal finding.[9,10] The higher prevalence of NAFLD in obese individuals and its association with the metabolic syndrome, the disease may also be present in the lean population. Study reported that 22% of diabetic NAFLD patients had normal body mass index (BMI). However, the proportion of NAFLD patients with normal BMI among all NAFLD patients coming for evaluation in outpatient clinics and their characteristics in comparison with the overweight or obese NAFLD patients have not been completely clarified.[8] Therefore, the aim of this study was to evaluate the characteristics of a large cohort of patients with NAFLD focusing on those with normal BMI. So, physicians should be made aware of NAFLD & non-alcoholic steatohepatitis (NASH).

Materials and Methods

This case-control study was conducted at BIRDEM. The study subjects were 256 T2DM patients. 127 patients had fatty liver and 129 without fatty liver were acted as control. Written informed consent was taken from all the study subjects. Exclusion criteria were e.g., patients consuming alcohol, patients with congestive cardiac failure and renal failure, patients on hepatotoxic drugs, patients with history of extensive small bowel resection and patients on

Address for Correspondence : Azmeri Alam, Assistant Professor Department of Biochemistry, Green Life Medical College, Dhaka, Bangladesh. E-mail : greenlife.mc@gmail.com

insulin. History & thorough clinical examination including anthropometry (waist-hip ratio and BMI) were done.

Statistical methods

Statistical analysis was done by comparing diabetic patients with fatty liver and diabetic patients without fatty liver. $p<0.05$ was considered as the level of statistical significance.

Results

256 patients participated in the study. Data of 127 diabetic patients with fatty liver was compared with 129 diabetic patients without fatty liver. The results are as follows.

Demographic profile and anthropometry:

Age (mean±SD) of T2DM patients with fatty liver and without fatty liver were 43.33±6.36 and 42.89±5.85 respectively. The value did not show any statistically significant difference. (p=0.559) BMI (mean±SD) of T2DM patients with fatty liver and without fatty liver were 26.19±3.69 and 25.32±3.47 respectively. This value show statistically significant difference. (p=0.05) Waist-hip ratio (mean±SD) of T2DM patients with fatty liver and without fatty liver were 0.923±.06 and 0.918±.074 respectively. This value did not show any statistically significant difference. (p=0.589)

Table I : Anthropometric measurement of the study subjects

Variables	Fatty Liver(n= 127)	Control (n= 129)	t/p values
			Fatty liver vs Control
Age (yrs)	43.33±6.36	42.89±5.85	0.585/0.559
BMI (kg/m²)	26.19±3.69	25.32±3.47	1.945/0.053
Waist-hip ratio	0.923±.060	0.918±.074	0.540/0.589

Results were expressed as mean+SD. Unpaired students 't' test was performed to compare between groups.

Discussion

In our study, it was found that anthropometric parameter like BMI had significant association with occurrence of NAFLD. Obesity and in particular central obesity has been described as one of the strongest risk factors for NAFLD and fibrosis with NASH being prevalent in 18.5% of the obese patients.[6] Goland at al have showed that patients with NAFLD had a significantly higher BMI.[10] Marchesani et al showed that 80% of patients with NAFLD were obese.[3] In our study BMI was high in diabetic patient with NAFLD thereby implying role of abdominal obesity and pathogenesis of fatty changes in liver. So these patients need weight control.

Our study had some limitations. The important limitation of this study is that subjects did not have a liver biopsy and histological examination, the gold standard technique for identifying statuses.

Conclusion

Increased BMI may act as early anthropometric indicators in prediction of NAFLD in T2DM patients.

Reference

01. Bellentani S, Mefino M. Epidemiology and natural history of non-alcoholic fatty liver disease (NAFLD). Ann Hepato 2009; 854-8.

02. Targher G, Day CB, Bonora E. Risk of cardiovascular disease in petients with non-alcoholic fatty liver disease. N Engl J Med 2010; 363:134-50.

03. Marchesini G, Brizi M, Mosell-labate AM, Banchi G, Bugianesi E, McCullough Al et al. Association of nonalcoholic fatty liver disease with insulin resistance. Am J Med 1999; 107: 450-5

04. Younossi M, Gramlich T, Metteoni CA, Boparai N, McCullough Al et al. Non-alcoholic fatty liver disease in patients with type 2 diabetics. Clinical Gastroenterology and Hepatology 2004; 2: 262-5.

05. Angulop J. Non-alcoholic fatty liver disease. N Engl J Med 2002; 346 : 122-31.

06. Bruwning l, Secrepamiar l, Dobbins R, Naremberg P, Horton JD, Caben JC et al. Prealence of hepatic steatosis in an United States impact of ethnicity. Hepatology 2004; 401: 387-95.

07. Weston SR, Leyden W, Murphy R, Bass NM Bell BP, Menos MM et al. Racial and ethnic distribution of non-alcoholic fatty liver in persons with newly diagnosed chronic liver diseases. Hepatology 2005; 41: 372-9.

08. Ludwig l, Viggano TR, McGill D, Ott BJ. Non-alcoholic steatohepatitis maya clinic experiences with a hitherto unnamed disease maya. Clinproc 1980; 55: 434-8.

09. Lavine JE, Schwimmer JB. Non-alcoholic fatty liver disease in the pediatric population. Clin Liver Dis 2004; 8: 549-58.

10. Golumd S, Shimoni S, Zomitzki, Knobler H, Azoulai O. Lutaty Grt alcarilac menifestations-A new manifestation of NAFLD. Journal Clinical Gastroenterology 2006; 40: 949-55.