

NON-ALCOHOLIC FATTY LIVER DISEASE (NAFLD)/NON-ALCOHOLIC STEATOHEPATITIS (NASH) AND TYPE 2 DIABETES MELLITUS (T2 DM)

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Abstract

Background/Aim. NAFLD/NASH, the common liver disease, represents a worldwide health problem. It has gained considerable attention for the fascinating relation between insulin resistance and slow-evolving course towards the end stage liver disease. We aimed to know the prevalence of NAFLD/NASH in patients with type 2 DM and to assess the correlation between the severity of fatty liver changes and anthropometric and biochemical parameters of the subjects.

Methods. A total of 127 patients with type 2 DM, 60 (47.2%) male and 67 (52.8%) female, with median age 59.3 ± 9.3 years old, attending a specialized policlinic center care in Tirana during the period between January 2011 and July 2012 were included in current study. Subject giving a history of alcohol abuse (> 0 gr/daily) and who were found to have evidence of hepatitis B or C, autoimmune hepatitis, drug toxicity, tuberculosis or concomitant steroid therapy were excluded. Blood samples were drawn for measurements of alanin aminotransferase (ALT), aspartat aminotransferase (AST), fasting blood glucose, insulin, cholesterol and triglycerides. It was assumed insulin resistance (IR) when HOMA-IR > 3.9 and BMI > 28 kg/m². Fatty liver was diagnosed by ultrasonography and NASH was based on the most accepted criteria. The scoring system was used in order to graduate the severity of the liver. Univariate and multivariate analysis were used to compare the study parameters between the subjects with and without NAFLD (group 1 vs group 2) and to assess the correlation between the severities of fatty liver infiltration and study parameters.

Results. NAFLD was present in 94/127 (74%) of the patients with type 2 DM. Mild, moderate and severe degree of fatty liver changes were found in 39/94 (41.5%), 45/94 (47.9%) and 10/94 (10.6%),

respectively. NASH was seen in 29/127 (23%) of the subjects. Univariate analysis revealed that BMI ($p=0.001$), abdominal perimeter (0.01), ALT level ($p=0.034$), cholesterol ($P=0.008$) triglycerides ($p=0.004$) and HOMA-IR ($p=0.001$) were significantly associated with the presence of NAFLD. Although there were no statistical difference, the mean \pm SD of age, AST level, fasting blood glucose, insulin, HbA1c were higher in diabetic patients with NAFLD than those without liver steatosis. Multivariate analysis revealed a positive association between severity of fatty liver infiltration and age ($p=0.036$), BMI ($p=0.001$), abdominal perimeter ($p=0.001$), HbA1c ($p=0.031$) and HOMA-IR ($p=0.001$).

Conclusions. NAFLD/NASH are frequent among patients with type 2 DM. Age, BMI and insulin resistance are the strongest independent predictors for developing NAFLD/NASH in these subjects.

Keywords: Non-alcoholic fatty liver, Non-alcoholic steatohepatitis, Type 2 Diabetes mellitus, insulin resistance, metabolic syndrome

Introduction

NAFLD/NASH represent a worldwide health problem, concerning approximately 20%-30% of the adult population in both development and developing countries (1,2,3). The rising prevalence of obesity and diabetes influence evidently in an increasing prevalence of NAFLD regardless of alcohol and viruses (4,5). This trend is of particular concern in the pediatric population where the reported increase in obesity will undoubtedly result in a higher incidence and prevalence of pediatric and adult NAFLD in the future (6).

Cases of fatty liver disease with inflammation that resembles alcoholic liver pathology but occurring in nondrinkers were described 30 years ago (7,8), but