FACTORS ASSOCIATED WITH HEPATIC STEATOSIS IN ADULT GREEK SUBJECTS WITH TYPE 2 DIABETES MELLITUS (#0005)

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ABSTRACT

BACKGROUND: NAFLD is dramatically increasing in parallel with the development of Type 2 Diabetes Mellitus.

OBJECTIVES: To investigate factors affecting hepatic steatosis in adult Greek individuals with established Type 2 Diabetes Mellitus.

METHODS: We investigated 140 consecutive subjects with Type 2 Diabetes attending the Diabetic Outpatient Clinic at an Academic Hospital in Athens, Greece. All of them had demographic, clinical and biochemical data recorded. HS was estimated by Magnetic Resonance Imaging determined by Proton Density Fat Fraction Software (MRI-PDFF) and defined as the percentage of total liver fat divided by the liver volume. Hepatic Steatosis of >5% was considered abnormal. The PNPLA3 (I148M) variant was evaluated as a genetic factor by standard molecular techniques. FIBROMAX™ was also useful to identify people needed specific strategies to prevent and detect liver fibrosis and its complications.

RESULTS: Of the 140 participants, median age was 61.7, 46% were females, diabetes duration was 10 years and HbA1c was 6.7%. The median value of Hepatic Steatosis was 7.8. The PNPLA3 rs 738409 CC/CG/GG genotype frequencies were 54.2%, 35%, and 10.8% respectively. In multivariate analysis, duration of diabetes was considered abnormal. The PNPLA3 (I148M) variant was confirmed by standard molecular techniques. FIBROMAX™ was also evaluated as a genetic factor by standard molecular techniques. FIBROMAX™ was also evaluated as a genetic factor by standard molecular techniques. FIBROMAX™ was also evaluated as a genetic factor by standard molecular techniques. FIBROMAX™ was also evaluated as a genetic factor by standard molecular techniques. FIBROMAX™ was also evaluated as a genetic factor by standard molecular techniques. FIBROMAX™ was also evaluated as a genetic factor by standard molecular techniques. FIBROMAX™ was also evaluated as a genetic factor by standard molecular techniques. FIBROMAX™ was also evaluated as a genetic factor by standard molecular techniques. FIBROMAX™ was also evaluated as a genetic factor by standard molecular techniques.

CONCLUSION: Hepatic Steatosis in Type 2 Diabetes is the sum of interplay of both genetic and epigenetic factors exerting a positive or negative effect, the most prominent among them being abdominal obesity and PNPLA3 molecular variability.

INTRODUCTION

Non alcoholic fatty liver disease (NAFLD) has attracted the particular interest of medical research over the last two decades, as it affects more than 70% of people with Type 2 Diabetes are estimated to have NAFLD and 20-30% to have non-alcoholic steatohepatitis (NASH). As with most other metabolic syndromes, the phenotypic patterns and severity of NAFLD appear to be the outcome of multiple interactions between genetic, epigenetic and environmental factors.

In this study we aimed to investigate factors associated with HS as measured by proton density fat fraction in magnetic resonance imaging (MRI PDFF) in Greek subjects with Type 2 Diabetes selected for NAFLD.

RESULTS /

In a univariate analysis HS was directly correlated with ActtTest (r 0.507, p<0.001), NashTest2 (r 0.532, p<0.001), VLDL cholesterol (r 0.219, p=0.016) and triglycerides (r 0.262, p=0.004). HS was also directly correlated with BMI (r 0.379, p<0.001), waist circumference (r 0.290, p<0.001), metabolic syndrome (r 0.199, p<0.029), ALT (r 0.377, p<0.001), AST (r 0.509, p<0.001), GGTT (r 0.494, p<0.001) and the G-allele of PNPLA3 rs 738409 (CC vs CG/GG p<0.001) and inversely but significantly correlated with age (r -0.286, p=0.002) and duration of diabetes (r -0.277, p=0.002).

Furthermore, a statistically significant difference was found between sex and HS; the median of HS was 10.8% in males and 46% in females.

DISCUSSION

Our findings confirm the association, among lipid profile parameters examined, of specifically serum triglycerides and VLDL cholesterol with HS. A predominant association between women- and fatty liver is a liver manifestation of metabolic syndrome. In multivariate analysis, duration of diabetes was also identified as independent predictor of HS. One possible explanation is that the significantly increased level of hyperinsulinemia in early Type 2 Diabetes drives uptake of free fatty acids by hepatocytes.

SUMMARY

Our study confirms the clinical and lipid profile of subjects with Type 2 Diabetes at risk of developing NAFLD and suggests that PNPLA3 rs 738409 is a major determinant of liver steatosis that might be a useful screening tool for them.

CONCLUSION

Hepatic Steatosis in Type 2 Diabetes is the sum of interplay of various factors exerting a direct or an inverse association, the most prominent among them being abdominal obesity and PNPLA3 molecular variability.