

Diabetes Mellitus and Glucose Metabolism

DIABETES COMPLICATIONS AND COMORBIDITIES

The Ratio of Unsaturated to Saturated Fatty Acids is a Distinguishing Feature of NAFLD in Subjects With Metabolic Disease.

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Non-alcoholic fatty liver disease (NAFLD) is a highly prevalent chronic liver disease affecting at least a quarter of the world's population. NAFLD is commonly associated with other metabolic conditions such as insulin resistance, type 2 diabetes, obesity, and dyslipidemia. Given the liver's prominent role in regulating glucose and lipid homeostasis, we hypothesized that subjects with NAFLD have a distinct profile of blood analytes. This investigation examines the association between NAFLD and circulating markers of glucose and lipid metabolism in order to identify a NAFLD-specific metabolite panel that can be used as a predictive biomarker in future studies.

We are performing a cross-sectional study in 500 subjects to identify genetic and hormonal factors that correlate with the presence of NAFLD. This abstract reports a preliminary analysis of the results from the first 45 subjects enrolled. Fasting blood samples were collected from 31 subjects with NAFLD and 14 subjects with other metabolic diseases ('Other') and without radiologic evidence of NAFLD. The following analytes were measured: serum alanine aminotransferase (ALT), total cholesterol, direct-LDL, HDL, triglycerides, ApoB, small dense LDL-C (sdLDL), VLDL, Lp(a), cholesterol absorption/production markers (beta-sitosterol, campesterol, lathosterol, and desmosterol), glucose, insulin, hemoglobin A1C, adiponectin, hs-CRP, and fatty acids (saturated and unsaturated). Homeostasis model assessment of insulin resistance (HOMA-IR) was calculated from glucose and insulin levels, and fatty acids were batched together by structural similarity and reported as indices. The groups were compared using multiple t-tests or the Kolmogorov-Smirnov test when data were non-parametric.

The NAFLD group had a mean age 48.4 ± 12.9 yrs and BMI 32.9 ± 6.6 kg/m². These participants were 61% female and 58% had dyslipidemia, 25% pre-diabetes, and 25% type 2 diabetes. The Other group had a mean age 49.9 ± 12.9 yrs and BMI 39.1 ± 15.6 kg/m². They were 64% female and 57% had dyslipidemia, 14% pre-diabetes, and 21% type 2 diabetes. ALT was higher in the NAFLD group (55 ± 40 vs 27 ± 22 IU/L, $P < 0.001$). Intriguingly, the saturated fatty acid index was elevated in the NAFLD group (32.5 ± 1.9 vs 30.1 ± 2.2 %, $P < 0.05$), and the omega-6 fatty acid index was elevated in the Other group (42.9 ± 3.7 vs 38.5 ± 4.7 %, $P < 0.05$). These changes led to an unsaturated/saturated fatty acid ratio that was significantly lower in the NAFLD group (2.0 ± 0.1 vs 2.3 ± 0.2 , $P < 0.01$). There were

no other significant differences in the blood metabolites and hormones.

In this small sample comparing subjects with metabolic disease with and without NAFLD, levels of ALT and the ratio of circulating unsaturated/saturated fatty acids are distinguishing features of NAFLD. These may be helpful measures to identify subjects with metabolic disease that require further evaluation for NAFLD.

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To Evaluate the Relationship of Risk Factor Between Diabetes Mellitus and Thyroid Dysfunction (Thyrobetes)

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Introduction: Type 2 diabetes and thyroid dysfunction are common endocrine disorder and shown mutually influence each other. As per the GOQii is a smart-tech enabled, integrated preventive healthcare platform headquartered in California, diabetes has increased from 7.1 to 12% this year. "The incidence of diabetes is highest among older adults at 23.81 per cent and seniors at 36.82 per cent." As per the report, 13.5% of Indians have cholesterol issues. This past year, thyroid issues have increased from 6.8% to 10.7%. The thyrobetes illustrates relationship the between thyroid diseases and diabetes mellitus.

Objective of the Study: This study's objectives are as follows: To define the interrelation of factors responsible for the link between diabetes and thyroid disease development; To estimate thyroid hormone TSH, free T3, free T4, lipid profile, blood glucose fasting and PP, HbA1c, S. Insulin, ant-TPO antibodies, and USG neck for some thyroid patients; To describe each factor correlation between developing diabetes and thyroid diseases; and To explain preventive measures for diabetes and thyroid diseases. Research problem of the study There are an increasing number of patients who experience diabetes mellitus, hypothyroidism and other types of thyroid dysfunction, but it is difficult to say which disease occurs first. This study seeks to identify the overlapping risk factor for diabetes and thyroid dysfunction. Review of literature Type 2 diabetes mellitus and thyroid dysfunction (TD) are two major public health endocrine problems. The status of iodine and thyroid with diabetic patients less studied. **Materials and Methods:** The study included 300 patients of diabetes and thyroid dysfunction. The questionnaires were used to record the findings on thyroid hormone TSH, free T3, free T4, lipid profile, blood glucose fasting and PP, and USG neck for some thyroid patients. Inclusion criteria: Sample size -300 patients No limit to the age group New or follow up cases of diabetic mellitus and thyroid disease Exclusion criteria: Patients who had an acute illness that affects thyroid gland activity Patients who consumed drugs that could influence the thyroid hormone status Patients who had fever Data collection and tools for statistical