Genetic Association For Early Detection Of NAFLD As Indirect Complication Of T2DM Among Emirati Population

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Introduction

Non-alcoholic fatty liver disease (NAFLD) is a type of metabolic syndrome marked by high blood lipids including cholesterol and triglycerides, which build up in liver cells. NAFLD and Type 2 Diabetes Mellitus (T2DM) are recognized to frequently coexist and work together to raise the risk of negative (hepatic and extra-hepatic) clinical outcomes. The study's major goals to find the genetic association between NAFLD with T2D among Emirati population, as well as the most critical related factors.

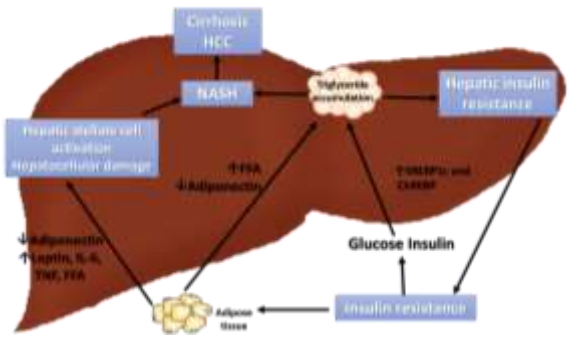

Figure 1: represent Nonalcoholic fatty liver disease (NAFLD) pathway in Type 2 Diabetes Mellitus patients (T2DM).
NAFLD and T2D share the pathogenic abnormalities of excess adiposity and insulin resistance.

Methods

- Total of 42 Local patients who are diagnosed with T2DM were recruited from Dubai Diabetes Center.
- Demographic data table generated using information collected from questionnaire (Age, Gender and BMI)
- Sample of venous blood collected for DNA extraction and genotyping.

Results

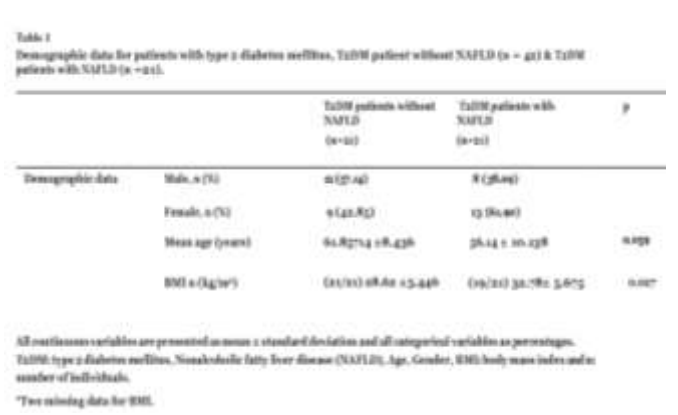

Table 1:. Demographic table that represents Different variable (Gender, Age and BMI) in T2D population with and without NAFLD.

CHR	SNP	BP	A1	F_A	F_U	A2	CHISQ	P	OR
4	rs2236786	1719294	G	0.5263	0.1053	A	15.59	7.87E-05	9.444
10	rs7077164	7.2E+07	A	0.4524	0.4524	G	0	1	1
12	rs6487679	9371332	G	0.2895	0.2857	A	0.00138	0.9704	1.019
19	rs58542926	1.9E+07	A	0.04762	0.04762	G	0	1	1
20	rs6079395	1.4E+07	A	0.4524	0.3333	G	1.248	0.264	1.652
22	rs738409	4.4E+07	G	0.2143	0.1429	C	0.7304	0.3927	1.636

Table 2: Represents six SNPs that associated with NAFLD in European population and only rs2236786 contribute with our cohort.

- Males represent a higher percentage in group 1 (T2D without NAFLD) while females represent a higher percentage in group 2 (T2D with NAFLD).
- Group 1(T2D without NAFLD) has a higher average age than Group 2 (T2D with NAFLD).
- Group 2 (T2D with NAFLD) has a higher BMI compared to group 1 (T2D without NAFLD).
- One SNP (rs2236786, SLBP gene, chr4:1717567) was found to be associated with NAFLD in Emirati population.

Conclusion

- NAFLD is found to be both age and gender related in postmenopausal women. BMI is considered as a strong factor in developing NAFLD for diabetes patients due to rise in fatty acids and lipidation in the liver. Women with T2DM are more likely to develop the condition than men.
- A literature study was conducted on SNPs linked to NAFLD in the European population, but no such link was found in the Emirati community. However, in the Emirati community, an SNP not identified in other ethnic groups (rs2236786, SLBP gene, chr4:1717567) was shown to be linked to NAFLD (P=7.87E-05, OR=9.444).
- In conclusion, more studies are required to analyze more factors contributing to the association between T2DM and NAFLD and to understand the underlying mechanism.