Association between TGF-β1 gene polymorphisms with type 2 diabetes mellitus with or without diabetic kidney disease in Saudi patients

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Abstract

Background and Objectives:
Transforming growth factor-beta1 (TGF-β1) is one of the pro-fibrotic cytokines and causes fibrosis progression in DN and can be affected by the polymorphisms of the genes.
The objective of this study is to determine the relationship between TGFB1 gene polymorphisms and the risk of T2DM and DN.

Methods:
This case control study involved 132 cases and 77 controls samples. DNA extraction and genotyping were done by Taqman assay specific for (rs1800469) to determine genotype of the samples.

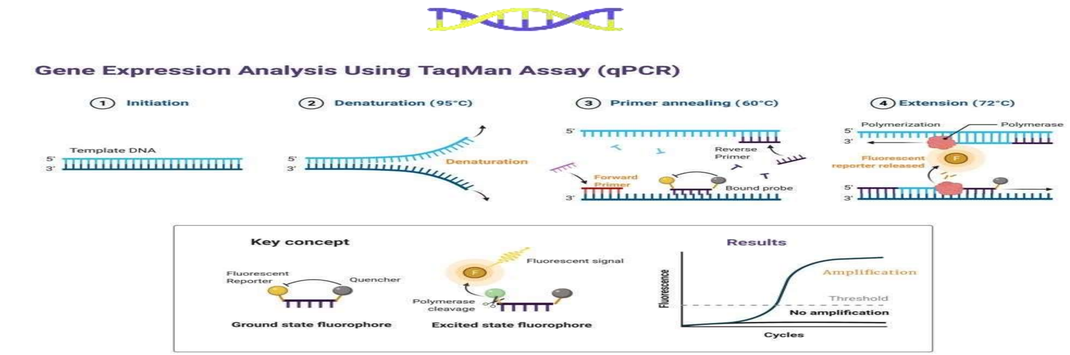
Results:
We found that the tested Single Nucleotide Polymorphism (SNP) in TGF-β1rs1800469were consistent with the Chi^2 test in both patients and controls. It shows the in-significant differences of TGF-β1gene polymorphisms between T2DM, DN patients, and healthy controls. Non-significant differences were detected between T2DM patients and controls in the frequencies of TGF-β1rs1800469 alleles and genotypes.

Conclusion:
Our results indicated that TGF-β1rs1800469 is not significantly associated with T2DM and DN in Saudi patients.

Introduction

Diabetes mellitus and DN impact multiple hereditary and environmental influences (1). The optimum ability of individual cytokine output has a large genetic component (2,3). TGF-β is an anti-inflammatory cytokine which inhibits the activation of macrophages. It is a family composed of 33 cytokines that exert their effects through a formation of type I and type II complex seriene/therionine kinase receptor (4). This complex phosphorylates Smad family which translocate to the nucleus and regulate genes expression (5).

Methodology



Results

TGF-β1 rs1800469	T2DM n=82	DKD patient n=48	Control n=77
GG	n=7	n=3	n=9
GA	n=39	n=18	n=32
AA	n=36	n=27	n=36

Table1: Genotype and allele frequency of TGF-β1rs1800469

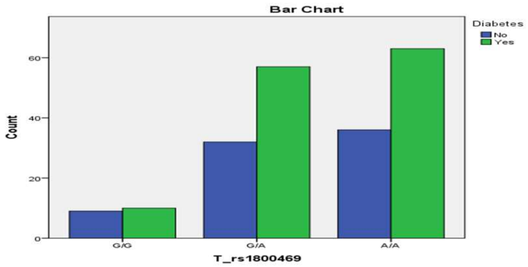


FIGURE1: The distributions of TGF-β1rs1800469 in T2DM case and control. Chi^2 (0.930) ;P-value Not significant p<0.05

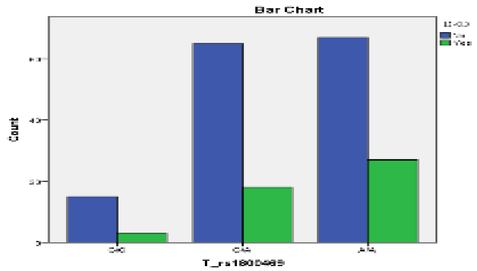


FIGURE2: The distributions of TGF-β1rs1800469 in DKD case and control. Chi^2 (1.851) ;P-value Not significant p<0.05

Discussion

There is mounting evidence that the ability of an individual to produce high or low levels of TGF-β1 may be genetically predetermined(6,7). Altered TGF-β1 expression due to polymorphisms affects a wide variety of normal cellular and disease processes (8). Few studies were investigating the dual effects of TGF-β1rs1800469 polymorphisms in the onset of T2DM and DN complications.

Conclusion

In our study, we chose to study TGF-β1rs1800469 to evaluate its relation to diabetes and diabetic nephropathy. Based on the 132 samples we tested it shows There is no association between TGF-β1 and T2DM.

References