



Association of transcription factor 7-like 2 (*TCF7L2*) gene polymorphism with posttransplant diabetes mellitus in kidney transplant patients medicated with tacrolimus

Mateusz Kurzawski¹, Krzysztof Dziewanowski², Karolina Kędzierska³, Anna Wajda¹, Joanna Lapczuk¹, Marek Drożdżik¹

¹Department of Pharmacology, Pomeranian Medical University, Powstańców Wlkp. 72, PL 70-111 Szczecin, Poland

²Clinical Department of Nephrology and Dialysis, Regional Hospital, Arkońska 4, PL 71-455 Szczecin, Poland

³Department of Nephrology, Transplantation and Internal Medicine, Pomeranian Medical University, Powstańców Wlkp. 72, PL 70-111 Szczecin, Poland

Correspondence: Marek Drożdżik, e-mail: drozdzyk@sci.pam.szczecin.pl

Abstract:

New onset posttransplant diabetes mellitus (PTDM) has a high incidence after kidney transplantation in patients medicated with tacrolimus. PTDM can adversely affect patient and graft survival. The pathophysiology of PTDM closely mimics type 2 diabetes mellitus (T2DM). One of the possible genetic factors predisposing individuals to PTDM might be a polymorphism in the transcription factor 7-like 2 gene (*TCF7L2*). This polymorphism has previously been associated with increased risk of T2DM in the general population. Therefore, the present study aimed to evaluate *TCF7L2* polymorphisms in PTDM in kidney transplant patients medicated with tacrolimus.

Non-diabetic kidney transplant patients medicated with tacrolimus (n = 234) were genotyped for the presence of *TCF7L2* gene variants (rs12255372 and rs7903146) using TaqMan probes. Of the 234 patients, 66 patients had developed PTDM and 168 had not. Frequencies of the studied single nucleotide polymorphisms (SNPs) did not differ significantly between the study groups. Moreover, haplotype analyses failed to detect any associations between *TCF7L2* haplotypes and PTDM. However, in late-onset PTDM (developed later than 2 weeks from transplantation), frequencies of the rs7903146 TT genotype and T minor allele were significantly increased compared to non-PTDM controls (17.9% vs. 5.9%, p = 0.017, OR: 4.13, 95% CI: 1.19–14.33 for TT genotype, 39.3% vs. 25.9%, p = 0.038 for T allele). If the application of *TCF7L2* rs7903146 SNPs as a marker for PTDM is confirmed by further independent studies, replacing tacrolimus with other immunosuppressants could be warranted in patients at high risk of PTDM, as diagnosed by *TCF7L2* genotyping.

Key words:

posttransplant diabetes mellitus (PTDM), *TCF7L2*, genetic polymorphism
