Abstract

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KCNQ1 rs2237895 polymorphism is associated with the therapeutic response to sulfonylureas in Iranian type 2 diabetes mellitus patients

Siavash Shakerian, Homeira Rashidi, Maryam Tahmasebi Birgani, Alihossein Saberi

1. Department of medical genetics, Faculty of Medicine, Ahvaz Jundishapur University of medical sciences, Ahvaz, Iran
2. Diabetes Research Center, Health Research Institute, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
3. Imam Khomeini Hospital, Department of diabetes, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

Abstract

Next to metformin, sulfonylureas (SUs) are the most secondary prescribed oral anti-diabetic drugs. Thus, understanding the genetic role involved in the pharmacodynamics of these drugs can elucidate a considerable knowledge about personalized treatment in type 2 diabetes. This study aimed to investigate the impact of KCNQ1 variants on the response of sulfonylureas among the type 2 diabetes Iranian patients. 100 patients were recruited with type 2 diabetes who failed to achieve glycemic control with metfo rmin monotherapy and have been under sulfonylureas therapy for 6 months since. Regarding SUs response, 50 responder and 50 non-responder patients have been selected. KCNQ1 rs2237892(C>T) and rs2237895 (A>C) polymorphisms were determined by restriction fragment length polymorphism (RFLP) and assessed their role on response to the treatment retrospectively. Patients with rs2237895 CC and AC genotypes demonstrated a significant decrement in FBS and HbA1c after treatment over patients with AA genotypes (All $P < 0.001$). Compared to the A allele, the odds ratio for treatment success between carriers with rs2237895 C allele was 4.22-fold ($P < 0.001$). Patients with rs2237892 CT heterozygous genotype exhibit a higher reduction rate in HbA1c and FBS than CC homozygotes ($P=0.064$ and $P=0.079$, respectively). The rs2237892 T allele carriers showed an odds ratio equals to 2.83-fold over C allele carriers in the responder group compared to the non-responder group ($p=0.081$). In conclusion, current findings suggest that the KCNQ1 rs2237895 polymorphism is associated with the sulfonylureas response on Iranian type 2 diabetes patients.

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Biography

Siavash Shakerian received the B.Sc. degree in Cellular & Molecular Biology from Islamic Azad University of Shahrekord, Iran in 2016, and the M.Sc. degree in Human Genetics from Ahvaz Jundishapur University of Medical Sciences, Iran in 2021. His research interests include personalized medicine, Pharmacogenetics, and molecular diseases. Recently, he has been cooperating in a research entitled “Crosstalk between ferroptosis and the epithelial-mesenchymal transition: Implications for inflammation and cancer therapy” .His current work is on the evaluation of copy number variation in Spinal muscular atrophy on southwest Iranian families in the Student Research Committee of Ahvaz Jundishapur University of Medical Sciences, Iran.