Analysis of polymorphisms associated with type 2 diabetes in the Kazakh population

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Introduction: The increasing prevalence of type 2 diabetes (T2D) underlines the urgent need for proactive strategies to prevent and control T2D. A fairly large number of studies show that T2D is a complex metabolic disease caused by lifestyle, environment and genetic factors.

The aim of this study was to search for genetic markers associated with the development of T2D in individuals of the Kazakh population.

Materials and methods: The study included 139 patients with type 2 diabetes. The established WHO diagnostic criteria were used to diagnose T2D. The control group was a random sample of 100 patients with no signs of T2D. The samples were ethnically homogeneous and consisted of Kazakh individuals. The genotyping was performed on a new generation QuantStudio 12K Flex instrument, Life Technologies. Statistical analysis was performed using the Statistica for Windows 7.0 software (StatSoft, USA).

Results: Of the 25 previously tested SNPs, we identified eight (rs17584499, rs7903146, rs7756992, rs7754840, rs 2237892, rs4712524 ($P < 0.001$), rs1333051 and rs7901695 ($P < 0.01$)) statistically significant SNPs. In addition, seven of the tested SNPs (rs 2237896, rs 2237897, rs2383208, rs1575972 rs4402960, rs1470579, rs163184) showed a nominal connection with T2D, (OR) from 1.7 - 2.6, ($P < 0.05$), which suggests that these options could potentially be used in the Kazakh population for prognostic testing of T2D. It should be specially noted that some of the studied polymorphic genetic markers (rs10460009, rs6583826, rs9295474, rs8181588, rs3888647, rs8050136, rs4712523, rs3773506, rs1049549, rs11642841) did not demonstrate a connection with T2D. The odds ratio varied between 0.7-2.93, CI (0.41-1.19 to 0.77-5.71). In summary, the results of this study represent a preliminary understanding of T2D pathogenesis in Kazakhs, what helps can improve preventative measures to reduce its risk.

Biography

Almagul Nagimtaeva has the experience as a doctor - genetics, improved her skills in conducting differential syndromic diagnostics, methods of medical and genetic counseling for pregnant women and families at risk of hereditary and congenital pathologies. Along with clinical activities, research work was carried out. The study of a genetic predisposition is important, as it provides an understanding of the potential mechanisms related to the early stages in the pathogenesis of multifactorial diseases. The implementation of the scientific research results will ensure a decrease in mortality rates and growth in survival rates by increasing the effectiveness of early diagnosis and personalization of treatment and will make a significant contribution to the development of healthcare in the Republic of Kazakhstan.

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