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Study of association of some gene polymorphisms with metabolic syndrome and its components in Kazakh population

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Purpose of the study: To assess the statistical association of gene polymorphisms with metabolic syndrome (MS) and its components in a sample of Kazakh population. The disturbance of glucose homeostasis in most cases precedes other signs of MS. We hypothesized that genetic risk assessment of beta-cell dysfunction and insulin resistance can indicate its presence before the development of leading signs of MS.

Methods: Anthropometric and biochemical parameters were estimated for 1000 individuals of Kazakh population who had MS signs in accordance with the criteria of the IDF (2005), and compared with similar parameters of 1000 individuals of Kazakh population without MS. A purposeful search has been carried out for some variants of genes that demonstrated their connection with beta-cell dysfunction and insulin resistance in other populations: HNF1A gene and FTO gene. Identification of polymorphisms was carried out using the platform of the open array QuantStudio 12K Flex Real-Time PCR. The influence of polymorphisms on the occurrence of MS was assessed using logistic regression analyzes.

Results: After adjusting for BMI, sex, age, we found an increased risk of MS in the case of rs1169288, rs2464196 and rs735396 of the HNF1A gene (OR 2.08, 95% CI 1.38-3.14, p = 0.032; OR 2.19, 96% CI 1,66-4,20, p = 0,031; OR 1.51, 95% CI 1.03-2.14, p = 0.019 respectively). Also, rs2751812, rs8050136, rs9939609 (OR 1.58, 98% CI 1.22-3.39, p = 0.028; OR 1.52, 97% CI 1.35-3.31, p = 0.022; OR 1.51, 99% CI 0.81-2.34, p = 0.015, respectively) of the FTO gene demonstrate the objective risk of MS, which underlines the special role of obesity in this regard.

Conclusions: The study establishes the relationship of rs1169288, 2464196 and 735396 of the HNF1A and rs2751812, rs8050136, rs9939609 of the FTO with the MS in Kazakh population.

Biography

Gulmira Yermakhanova is from Kazakhstan that is developing and an independent country in Central Asia. Her undergraduate degree is Medical care and Master's degree in Public Health, which was completed in Kazakhstan. Currently, she works as a head of the clinical trials sector at the Medical Center Hospital of President's Affairs Administration of the Republic of Kazakhstan. And, she is involved in the project "Study of the genetic risk characteristics of diseases associated with metabolic syndrome in Kazakh population". Her research interests are metabolic syndrome, age-associated diseases, gerontology, and public health.

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