
Format: Abstract


SYNE1-QK1 SNPs, G × G and G × E interactions on the risk of hyperlipidaemia.

Zheng PF1, Yin RX1,2,3, Liu CX1, Deng GX1, Guan YZ1, Wei BL1.

Author information

Abstract

This study aimed to assess the relationship of 3 spectrin repeat containing nuclear envelope protein 1 (SYNE1) and 4 KH domain containing RNA binding (QK1) single nucleotide polymorphisms (SNPs), their haplotypes, gene-gene (G × G), gene-environment (G × E) interactions and hypercholesterolaemia (HCH) and hypertriglyceridaemia (HTG) in the Chinese Maonan minority. The genetic make-up of the SYNE1-QK1 SNPs in 1932 unrelated subjects (normal, 641; HCH, 649; and HTG, 642) was obtained by next-generation sequencing technologies. The genotypic frequencies of following SNPs were suggestively distinctive between the control and HCH groups (rs2623963, rs7745725, rs9459317, rs16897566), or between the control and HTG groups (rs2623963, rs1358317, rs7745725, rs1923608, rs16897566 SNPs; P < .05, respectively). Multiple-locus linkage disequilibrium analysis indicated that the identified SNPs were not inherited independently. Several haplotypes and gene-gene interaction haplotypes among the detected SNPs may be related with an increased morbidity of HCH (C-G-A, C-G-G and C-G-G-T-C-A-T) and HTG (C-G-G, G-T-G-C, C-G-G-G-T-G-C and C-G-G-T-C-A-T), whereas others may be related with a decreased risk of HCH (G-A-A, G-C-A-T, C-A-A-T-C-A-T and G-A-A-G-C-A-T) and HTG (G-A-A, G-C-A-T, C-A-A-T-C-A-T and G-A-A-G-C-A-T). The association evaluation based on haplotypes and gene-gene interactions could improve the power of detecting the risk of dyslipidaemia than anyone of SNP alone. There was significant three-locus model involving SNP-SNP, haplotype-haplotype/environment and G × G interactions (P < .05-0.001) that were detected by GMDR in HCH and HTG groups. Different interactions between genetic and environmental factors would produce different redundancy or synergy effects on the morbidity of HCH and/or HTG.
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**KEYWORDS:** KH domain containing RNA binding gene; environmental factor; haplotype; hyperlipidaemia; interaction; single nucleotide polymorphism; spectrin repeat containing nuclear envelope protein 1

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