Association Between PPAR-\(\gamma\) and RXR-\(\alpha\) Gene Polymorphism and Metabolic Syndrome Risk: A Case-Control Study of a Chinese Han Population.


Source

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Abstract

BACKGROUND:

Polymorphisms in peroxisome proliferator activated receptor-\(\gamma\) (PPAR-\(\gamma\)) and retinoid X receptor-\(\alpha\) (RXR-\(\alpha\)) gene may alter metabolic syndrome (MetS) risks by increasing or decreasing the human adiponectin promoter activity in cells. To test this statement, three potentially functional SNPs of PPAR-\(\gamma\) and four SNPs of RXR-\(\alpha\) with minor allele frequency (MAF) \(\geq 0.05\) in the Chinese Han population were identified from NCBI dbSNPs database to evaluate their associations with MetS.

METHODS:

TaqMan assay was performed to test the genotypes in MetS patients (\(n = 901\)) and normal controls (\(n = 1009\)). Serum adiponectin concentration was measured by ELISA kit.

RESULTS:

The variant genotypes rs2920502CG and CG/CC, rs4240711GG and AG/GG, rs4842194CC and CT/CC, rs3132291CT, CC and CT/CC were associated with MetS. Furthermore, in the haplotype of PPAR-\(\gamma\) gene, compared with the most common haplotype GC, haplotype CC was associated with an increased risk of MetS (crude \(p = 0.017\)). In the haplotype of RXR-\(\alpha\) gene, haplotype GCGC was associated with a significant protective effect for MetS [adjusted \(p = 0.002\), OR (95% CI) = 0.718 (0.585-0.882)] compared with the most common haplotype GTAT. After taking smoking, alcohol consumption and physical activity as environmental adjustment factors into the analysis, the result showed A1 A2 A4 A5 A6 A7 B1 (rs3856806, rs2920502, rs180128,
rs1045570, rs3132291, rs4240711, rs4842194) was the best model (cross-validation consistency 10/10, p = 0.0107).

**CONCLUSIONS:**

The present study suggested that the variant genotypes in PPAR-γ gene could increase the risk of MetS; however, genotypes in RXR-α gene could decrease the risk of MetS in a Chinese Han population.