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THE GENETIC VARIATIONS OF BONE MORPHOGENETIC PROTEIN 7 (BMP7) IS ASSOCIATED TO OBESITY IN XINJIANG OLD UYGUR PEOPLE

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Objectives There are some studies to show that bone morphogenetic protein 7 (BMP7) is a key factor regulating brown adipogenesis and has a significant impact on the regulation of energy expenditure and obesity. And human BMP7 maps to chromosome 20q13, a susceptibility locus for obesity. BMP7 represents a strong biological and positional candidate for a susceptibility factor for obesity.

Objective To investigate the association between the genetic variations of functional region in Bone Morphogenetic Protein (BMP7) gene and obesity in Uygur population.

Methods The case-control study was conducted based on epidemiological investigation. The all exons, segmental introns and the promoter regions of BMP7 gene were sequenced in 48 Uygur obese patients. Representative variations were selected according to the minor allele frequency (MAF) and linkage disequilibrium and genotyped using the TaqMan PCR method in 1063 Uygur individuals, a relatively isolated general population in a relatively homogeneous environment and a case-control study was conducted to analyse the association between genetic variations of BMP7 gene and obesity.

Results The five novel and eight known variations in the BMP7 gene were identified. All genotype distributions were tested for deviations from Hardy-Weinberg equilibrium (p>0.05). There were no significant differences of genotype distribution of rs6025422 between obese and control groups in general and young adults (age<60 years) p<0.0125), but there were significant differences in
old adults (age≥60 years) \((p>0.05)\). And the means of fasting body mass index (BMI), waist circumference (WC) and waist-to-hip ratio (WHR) significantly decreased in individuals with AA, AG and GG genotypes of rs60254222 in old adults \((p<0.05)\), but not in general and young population \((p>0.05)\). The logistic regression analysis showed that GG genotype of rs60254222 variation might be a obesity protective factor in old adults \((OR=0.578, 95\% CI 0.401 to 0.833, p=0.003)\).

**Conclusions.** The present study suggests rs60254222 polymorphism in the BMP7 gene may be associated with obesity in old Uygur Chinese.
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