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The exon 8 deletion polymorphism of the UCP2 gene is associated with severe obesity in a Saudi Arabian case-control study

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Obesity is a major health concern in Saudi Arabia. The Uncoupling protein 2 (UCP2) seems to play a major role in regulation of human metabolism, therefore genetic polymorphisms in the UCP2 gene might contribute to obesity in part of the world. The main objective of the current study was to establish whether 45-bp insertion (I)/deletion (D) polymorphisms in Uncoupling protein 2 (UCP2) are associated with moderate and/or severe obesity in a Saudi Arabian population. The aim of this study is to test the association between the UCP2 45-bp insertion/deletion polymorphism and moderate or severe obesity in Saudi Arabian population. 151 male and female Saudi Arabian volunteers from eastern province were participated in this study. They were divided as; non-obese, moderately and severely obese. Genomic DNA was extracted from all subjects and subjected to UCP2 gene insertion/deletion polymorphism genotyping using a standard PCR procedure. The overall frequency of the UCP2 45-bp insertion/deletion genotypes was 58.3 %, 36.4 % and 5.3 % for the D/D, I/D and I/I genotypes respectively. The D/D genotype was highly prevalent in the severely obese group (82.9 %) compared to non-obese (46.2 %) or moderately obese (53.3 %). In a dominant model, logistic regression analysis showed no significant association between the insertion allele and moderate obesity (OR = 0.75, 95% CI: 0.35 - 1.59, P = 0.585), however, a strong inverse association was found with severe obesity (OR= 0.18, 95% CI: 0.07 - 0.44, P = 0.0004). The study presented the frequency of the UCP2 45-bp ins/del polymorphism in Saudis from eastern region. We also reported a strong association between the del/del genotype and severe obesity in our population.

Keywords— Uncoupling protein 2, UCP2 insertion/deletion polymorphism, Obesity.