American Journal of Clinical Nutrition, Vol. 86, No. 1, 25-32, July 2007

ORIGINAL RESEARCH COMMUNICATION

Variations in the preproghrelin gene correlate with higher body mass index, fat mass, and body dissatisfaction in young Japanese women[1,2,3]

Tetsuya Ando, Yuhei Ichimaru, Fujiko Konjiki, Masayasu Shoji and Gen Komaki

[1] From the Department of Psychosomatic Research, National Institute of Mental Health, National Center of Neurology and Psychiatry, Kodaira, Tokyo, Japan (TA, MS, and GK); the Department of Nutrition, Tokyo Kasei University, Itabashi, Tokyo, Japan (YI); and the Department of Clinical Psychology, Tokyo Kasei University, Sayama, Saitama, Japan (FK)

Background: Ghrelin is an endogenous peptide that stimulates growth hormone secretion, enhances appetite, and increases body weight and may play a role in eating disorders.

Objective: The purpose was to determine whether any preproghrelin gene variants are associated with anthropometric measures, circulating ghrelin, lipid concentrations, insulin resistance, or psychological measures relevant to eating disorders in young women.

Design: This cross-sectional study compared outcome measures between preproghrelin genotypes. The participants in the study included 264 Japanese women [university students with a mean (±SD) age of 20.4 ± 0.7] with no history of eating disorders. The main outcomes were responses to the Eating Disorder Inventory-2 (EDI-2), anthropometric measures, measures of depression and anxiety, and fasting blood concentrations of acylated or desacyl ghrelin, lipids, glucose, and insulin.

Results: Two single nucleotide polymorphisms (SNPs) whose minor allele frequencies were >0.05—the Leu72Met (408 C→A) SNP in exon 2 and the 3056 T→C SNP in intron 2—were used for association analysis. The *3056C* allele was significantly associated with a higher acylated ghrelin concentration ($P = 0.0021$), body weight ($P = 0.011$), body mass index ($P = 0.007$), fat mass ($P = 0.012$), waist circumference ($P = 0.008$), and skinfold thickness ($P = 0.011$) and a lower HDL-cholesterol concentration ($P = 0.02$). Interestingly, the *3056C* allele was related to elevated scores in the Drive for Thinness–Body Dissatisfaction (DT-BD) subscale of the EDI-2 ($P = 0.003$).

Conclusion: Our findings suggest that the preproghrelin gene 3056T→C SNP is associated with changes in basal ghrelin concentrations and physical and psychological variables related to eating disorders and obesity.

Key Words: Eating disorders • ghrelin • body mass index • body dissatisfaction • polymorphisms • obesity • HDL cholesterol • Eating Disorder Inventory-2

This article has been cited by other articles:

Carcinogenesis HOME

L. Dossus, J. D. McKay, F. Canzian, S. Wilkening, S. Rinaldi, C. Biessy, A. Olsen, A. Tjonneland, M. U. Jakobsen, K. Overvad, *et al.*
Polymorphisms of genes coding for ghrelin and its receptor in relation to anthropometry, circulating levels of IGF-I and IGFBP-3, and breast cancer risk: a case-control study nested within the European Prospective Investigation into Cancer and Nutrition (EPIC)
Carcinogenesis, July 1, 2008; 29(7): 1360 - 1366.
[Abstract] [Full Text] [PDF]