EFFECT OF 6-MONTH LIFESTYLE INTERVENTION ON GHRELIN AND ADMA IN OBESE ADOLESCENTS

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Introduction: Ghrelin is involved in the control of food intake and energy metabolism. Recently, ghrelin levels have been postulated to be related to insulin resistance. The methylated L-arginine metabolite asymmetrical dimethyl-L-arginine (ADMA) is a competitive NO synthase antagonist. The plasma concentrations of ADMA could be used to monitor early changes in the L-arginine/NO metabolism and endothelial dysfunction. Objectives: To assess the effect of 6-month lifestyle intervention in obese adolescents on ghrelin and ADMA. Methods: Sixty-six obese adolescents aged 10 to 16 years were assigned to a 6-month intervention and twenty-two adolescents with normal weight were enrolled as a comparison group. The levels of serum ghrelin and ADMA were measured by ELISA method. Results: Compared with subjects with normal weight, obese adolescents at baseline demonstrated significantly higher levels of triglycerides, cholesterol, glucose, insulin and HOMA-IR. Serum ghrelin levels in obese adolescents were significantly lower than those in controls (844.0±232.9 vs. 1034.4±161.5 pg/ml) while serum ADMA levels were significantly higher (0.75±0.24 vs. 0.54±0.09 µmol/L) in obese subjects. After 6-month intervention, obese adolescents showed significant decreases in glucose, insulin, and HOMA-IR. The levels of ghrelin increased significantly (844.0±232.9 vs. 987.4±274.2 pg/ml) while ADMA decreased significantly (0.75±0.24 vs. 0.65±0.23 µmol/L) after six-month lifestyle intervention. Moreover, the changes in ghrelin associated with change of BMI, heart rate and systolic blood pressure in negative way. Conclusion: The present study demonstrated decreased ghrelin and increased ADMA in obese adolescent, which is in part reversible by a 6-month lifestyle intervention.