Abstract

Objective: To test the hypothesis that overweight adolescents have higher plasma total homocysteine (tHcy) levels than non-overweight adolescents and to explore the association between plasma tHcy levels with folate, vitamin B12 and some risk factors for CVD in both groups. Methods: A case-control study conducted with 239 adolescents aged 15-19 years in the city of São Paulo, Brazil; 86 overweight and 153 non-overweight frequency matched by age, gender, pubertal and socioeconomic status. tHcy, folate, vitamin B12, lipid profile, glucose, insulin and insulin resistance were measured. Results: No significant differences were found in tHcy, folate and vitamin B12 levels between overweight and non-overweight groups. The geometric means of tHcy were elevated in both groups (overweight: 11.8 mol/L; non-overweight: 11.6 mol/L) higher for boys than for girls (P < 0.001). Folate deficiency was identified in 68.6% of the total studied population. Triglycerides, LDL cholesterol, insulin resistance were higher and HDL cholesterol was lower in overweight than non-overweight adolescents. In the multiple linear regression model, in overweight group, tHcy was independently associated with age (P = 0.041), sex (P = 0.004) and folate (P = 0.022) and in non-overweight group, with age (P = 0.049), sex (P < 0.001), folate (P = 0.018) and vitamin B12 (P = 0.030). Conclusions: Obesity was not a determinant factor of tHcy levels. Age, sex and folate were independent determinants of plasma tHcy levels. The high prevalence of folate deficiency may have been responsible for the elevated tHcy levels in these adolescents, increasing the risk for future development of CVD.

Keywords