

ADIPOKINES AND BONE HEALTH IN HISPANIC CHILDREN

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Background: Leptin and adiponectin are adipocytokines with important metabolic functions. Leptin to adiponectin ratio is a marker of adipose tissue dysfunction which is associated with insulin resistance and cardiometabolic risk. We previously reported a negative effect of adiposity on bone health. In this analysis, we examined the relationship of adipokines to bone mass in a large cohort of Hispanic youth. We hypothesized that adipocytokine dysregulation in childhood may contribute to adverse bone health in children with obesity.

Materials/Methods: We studied 501 (237 males and 264 females) children and adolescents from the Viva la Familia Study. They were all pubertal; mean age (SD) 14.1 (2.5) years; 27% were normal weight (NW), 20% overweight (OW) and 53% obese (OB). They underwent measurement of body composition, total body less head bone mineral content (BMC) and density (BMD) by DXA scan; fasting leptin and adiponectin. The leptin to adiponectin ratio was calculated.

Results: Leptin concentration and leptin to adiponectin ratio were higher in OW and OB compared to NW ($p < .001$) whereas adiponectin was lower in OW and OB compared to NW ($p < .001$). After adjusting for sex, age, Tanner stage and lean mass, BMC was inversely related to leptin ($r = -0.15$, $p = .001$) and leptin to adiponectin ratio ($r = -0.20$, $p < .001$) but positively related to adiponectin ($r = 0.12$, $p = .007$). Similar relationships were found for BMD. In a regression model with BMC as the dependent variable, independent of sex, age, Tanner stage, lean mass and fat mass, leptin to adiponectin ratio negatively contributed ($\beta = -0.060$, $p = .002$) to the variance of BMC ($R^2 = 0.877$, $p < .001$). Similar findings were seen with BMD as the dependent variable.

Conclusions: Adipose tissue dysfunction has a negative relationship with BMC and BMD. This suggests that adipokine dysregulation may influence bone health in children.

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