Bol Med Hosp Infant Mex. 2014;71(1):8-14

RESEARCH ARTICLE

Inflammatory cytokines adiponectin, resistin, IL-6 and IFN-γ are associated with insulin resistance in eutrophic and obese children

Miguel Klünder-Klünder,[a] Miguel Cruz,[b] Rebeca García-Macedo,[b] Samuel Flores-Huerta[a,*]

[a] *Community Health Research Department, Hospital Infantil de México Federico Gómez, Ministry of Health (SSA), Mexico City, Mexico*
[b] *Medical Research Unit in Biochemistry, Unidad Médica de Alta Especialidad Bernardo Sepúlveda, Centro Médico Nacional Siglo XXI, IMSS, Mexico City, Mexico*

Received 2 September 2013; accepted 2 October 2013

Abstract
Background: Obesity, a worldwide health problem, is associated with the increase of noncommunicable diseases. Excess adipose tissue above what is expected produces a cytokine imbalance decreasing adiponectin—an anti-inflammatory cytokine—and increasing those proinflammatory cytokines such as resistin, IL-6 and IFN-γ. This imbalance elicits a low-degree systemic inflammation associated with insulin resistance (IR). Therefore, the aim of this study was to determine the relationship between pro- and anti-inflammatory cytokines levels with IR in eutrophic and obese Mexican children.
Methods: A cross-sectional study was conducted in 183 school-age children classified as obese and 186 children classified as eutrophic. Adiponectin, resistin, IL-6 and IFN-γ, glucose, insulin, high-density lipoprotein cholesterol and triglycerides were determined from a fasting blood sample. Height, weight, waist circumference, and systolic and diastolic blood pressures were measured. Spearman correlation and linear regression analysis were used to assess the association between cytokines and IR.
Results: Anthropometric and metabolic measurements as well as adiponectin concentrations were statistically different between eutrophic and obese children (p <0.001). Adiponectin concentrations were 12.5 ± 5.0 and 10.8 ± 4.2 μg/mL (p <0.018) for obese subjects without IR and obese subjects with IR. Resistin concentrations were 11.7 ± 7.5 and 14.2 ± 7.8 ng/mL (p =0.026), respectively. Linear regression showed that the HOMA-IR decreased −0.04 units (p =0.003) by unit of change of adiponectin. Whereas the association with resistin was opposite, the HOMA-IR units increased 0.02 by unit of change in resistin (p =0.018).
Conclusions: In this sample of eutrophic and obese Mexican children, adiponectin concentrations were inversely related with IR contrary to resistin, whose levels were directly related.

* Corresponding author.
E-mail address: floreshuertamd@gmail.com (S. Flores-Huerta).