

2. Chang JS, Bai CH, Huang ZC, **Owaga E**, Chao KC, Chang CC, Chiou HY (2014). Interleukin 10 and clustering of metabolic syndrome components in pediatrics. *Eur J Clin Invest* 44: 384-394.

ABSTRACT

Background Interleukin 10 (IL-10) has multifaceted anti-inflammatory properties that are known to regulate insulin sensitivity and atherosclerotic development. However, studies in children are limited and have yielded conflicting results. The aim of this study was to evaluate whether changes in this circulating anti-inflammatory cytokine is a marker for metabolic syndrome.

Materials and methods This cross-sectional study involved children and young adolescents from eight elementary schools and two junior high schools located in Taipei and New Taipei City. A total of 553 children ages 8, 11 and 13 years old were included in the analysis. Parameters for obesity, anti- and pro-inflammatory cytokines, and metabolic risk profiles were evaluated.

Results Overweight/obese children had lower serum IL-10 concentrations compared with normal weight children in the same age group (all $P < 0.001$). IL-10 quartiles were negatively associated with body mass index (BMI) and percentage (%) body fat (all $P < 0.05$). Multivariate regression analysis showed significant inverse relationship between IL-10 concentrations and % body fat ($\beta = -0.009$, $P < 0.0001$), and total cholesterol ($\beta = -0.726$, $P = 0.003$), and a small positive correlation between IL-10 and systolic blood pressure ($\beta = 0.980$, $P = 0.027$). In normal weight children, IL-10 concentrations were independently associated with fasting plasma insulin ($\beta = 0.2912$, $P = 0.001$) and waist circumference ($\beta = 0.0069$, $P = 0.022$). By contrast, % body fat ($\beta = -0.016$, $P = 0.0009$) was independently associated with IL-10 concentrations in overweight and obese children. Association between IL-10 and fasting plasma insulin concentrations was weaker in overweight/obese children compared with normal weight ($\beta = 0.283$, $P = 0.011$ vs. $\beta = 0.2912$, $P = 0.001$).

Conclusion Our data indicate that changes in circulating IL-10 concentrations are marker of metabolic risk in children.

Keywords Fasting plasma insulin, interleukin 10, metabolic syndrome, obese children, percentage body fat, total cholesterol.

Eur J Clin Invest 2014; 44 (4): 384–394