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Role of procalcitonin as inflammatory marker in a sample of Egyptian children and adolescent with simple obesity

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Introduction & Aim: Obesity is a multifactorial disease, associated with metabolic disorders and chronic low-grade inflammation. Circulating Procalcitonin (PCT) is produced by adipose tissue and several cell types following cytokine stimulation. Procalcitonin is well known as a biomarker of infection, sepsis and severe systemic inflammation. Recently it has a potential as a marker for chronic low-grade inflammation in obese population. We aim in the current study to evaluate the role of serum PCT as an inflammatory biomarker in diagnosis of obesity-related low-grade inflammation.

Method: In this case control study, 50 obese and 50 normal weight children and adolescents aged 6-16 years were enrolled. Anthropometric parameters and blood pressure were measured in all study subjects. The body composition was evaluated by Body Mass Index (BMI), body circumferences and skinfold thickness. Fasting blood samples were collected for measurement of lipid profile, blood glucose, insulin, High sensitivity-CRP (Hs-CRP) and serum procalcitonin. Serum PCT levels were assessed using enzyme linked immunosorbent assay. Insulin resistance was represented as the Homeostatic Model Assessment value (HOMA-IR).

Results: Obese participants had increased (BMI) z-score, blood pressure, insulin resistance (HOMA-IR) and higher concentrations of serum PCT, total cholesterol, triglycerides, glucose and Hs-CRP than control group. On correlation analysis, procalcitonin had significant positive correlation with (BMI) z-score ($P=0.03$), waist circumference (WC) ($P=0.05$), Hs-CRP ($P=0.02$), total cholesterol ($P=0.04$), triglycerides ($P<0.001$) and (HOMA-IR) ($P<0.001$) in obese group.

Conclusion: The increased serum procalcitonin concentrations were closely related to measures of adiposity, Hs-CRP and insulin resistance, suggesting that PCT may be an excellent biomarker for obesity related chronic low-grade inflammation in children and adolescents.

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