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IL-18, An Indicator of Insulin Resistance?

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IL-18 is a fundamental pro-inflammatory cytokine, and its levels are increased in obese subjects. Adipose tissue expression of IL-18 is increased in obesity but not affected by weight loss, indicating that changes in plasma IL-18 are related to insulin resistance rather than changes in obesity *per se*. Therefore determination of plasma IL-18 levels may be important for understanding onsets of metabolic diseases such as type 2 diabetes in obesity.

The study is designed to detect the level of IL-18 and to determine its correlation with insulin resistance and inflammation in both morbidly obese and normal subjects.

This study was conducted on 35 morbidly obese individuals with BMI (Body Mass Index) $>35\,kg/m^2$ and FBS (fasting blood glucose) >100 mg/dL attending the outpatient clinic in Ahmad Maher Hospital. Patients' group was compared to a control group comprising 35 healthy matched by age and sex. Quantitative analysis of high sensitivity CRP (hs-CRP), IL-18, Homeostasis Model Assessment–Insulin Resistance Index (HOMA-IR), fasting insulin was performed for both patients and the control group.

IL-18 was significantly higher in patients than in the control group ($P<0.001$). There was also a statistically significant correlation between IL-18 and hs-CRP ($P<0.05$) and a statistical correlation between IL-18 and insulin and HOMA ($P<0.05$). Receiver-operating characteristic (ROC) curve analysis was applied to assess the performance of IL-18 as predictor of insulin resistance. The area under curve (AUC) was 0.890, and the optimum cut-off level was 171 pg/mL. This had a diagnostic sensitivity 100%, specificity 71.9%, negative predictive value (NPV) 100%, positive predictive value (PPV) 80.9%, and diagnostic efficacy of 87.1%.

In conclusion, we have shown that high levels of IL-18 are associated with an increased risk of insulin resistance, and that this is independent of obesity, hs-CRP, triglycerides and cholesterol. Further studies are required to test whether IL-18 should be considered as an early marker of insulin resistance and diabetes risks.