USE OF QUANTITATIVE INSULIN SENSITIVITY CHECK INDEX (QUICKI) IN THE
SCREENING OF HYPERINSULINEMIA IN OVERWEIGHT CHILDREN AND ADOLESCENTS
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BACKGROUND: Obesity in children and adolescents is a risk factor for development of type 2 diabetes
later in life. Early detection of hyperinsulinemia with a simple but reliable clinical test is highly desirable.
OBJECTIVE: To evaluate the quantitative insulin sensitivity check index (QUICKI) as a screening tool
for hyperinsulinemia in a group of non-diabetic overweight children and adolescents in a clinical setting.
METHODS: This study included 598 children and adolescents with a body mass index (BMI) ≥ 95%
percentile, referred to our risk factor reduction program for nutrition and healthy habits counseling. Fasting
blood samples, for determination of glucose and insulin levels, were obtained early in the morning, during
the first visit to the program. Quicki was calculate as follow: 1/(log [insulin mIU/L] + log [glucose
mg/dL]). The receiver operating characteristic (ROC) curve was constructed using the upper value of the
normal range for clinical laboratory values of insulin (17 mIU/L). T test and binary nominal correlation was
used for statistical analysis. RESULTS: There were 358 boys and 240 girls, mean age: 10.7 years (range:
2-18), mean BMI Z-Score: 2.52 ± 0.58, ethnic distribution: Hispanic: 50%, Caucasian: 33%, African-
American: 11% and other races: 6%. Area under ROC curve was: 99% (95% confident interval: 0.987 –
0.999). The best cut-off value of QUICKI for diagnosis of hyperinsulinemia was: 0.317, Sensitivity: 97.7%,
Specificity: 93.0%, Positive likelihood ratio: 14.04. Those patients with a QUICKI ≤ 0.317 had statistically
significant higher mean fasting insulin serum values than those with a QUICKI > 0.317 (31.8 ± 15.9 vs.
10.8 ± 4.4 mIU/L, p < 0.001). Clinical diagnosis of hyperinsulinemia was highly correlated with
hyperinsulinemia diagnosed by QUICKI (Phi coefficient correlation: 0.27, p < 0.0001). CONCLUSIONS:
In this group of overweight children and adolescents QUICKI showed a high correlation with the clinical
diagnosis of hyperinsulinemia. At a cut-off value of ≤ 0.317 in this group of subjects the index had high
predictive diagnostic values.