ASSOCIATION OF TRIGLYCERIDE/HDL-CHOLESTEROL RATIO WITH INSULIN RESISTANCE INDICES IN OBESE CHILDREN.


Background Previous studies in adults have shown that an elevated triglyceride/HDL-cholesterol ratio (Tg/HDL-c) may be related to coronary artery or cerebro-vascular events. It has shown that the Quicki and glucose/insulin ratio indices are bio-markers of insulin resistance (IR) in children.

Objectives To assess the relationship between Tg/HDL-c ratio with Quicki and glucose/insulin ratio in non-diabetic obese children.

Methods The study included 623 non-diabetic children with BMIs greater than the 95\textsuperscript{th} percentile referred to our risk factor reduction program from February 2001 to April 2004. Fasting glucose, insulin levels and lipid profile were obtained. BMIs were assessed using 2000 CDC growth charts. Tg/HDL-c ratio and two indices of IR were calculated: glucose/insulin ratio and Quicki (1 / (log insulin + log glucose in mg/dl)). A glucose/insulin ration of < 6 and a Quicki index < 0.357 were considered as consistent with IR.

Results There were 257 females and 366 males, with a mean age of 11.2 years (range: 4-18 years) Simple linear regression analysis showed a statistically significant relationship between Tg/HDL-c ratio with fasting glucose/insulin ratio ($r = -0.20 \ P \text{ value} < 0.005$), and Quicki ($r = -0.22, \ P \text{ value} < 0.005$). Furthermore, simple linear regression analysis showed a significant relationship between Tg/HDL-c ratio and fasting mean insulin ($r = 0.17, \ P \text{ value} < 0.05$).

For patients classified as IR the mean Tg/HDL-c ratio (3.46 units, SD: 2.1) was significantly higher (2.44 units, SD: 2.9) than the mean Tg/HDL-c ratio of those classified as normal ($P \text{ value} < 0.005$).

For patients with Tg/HDL-c $\geq 3.0$ units mean fasting insulin level (164.6 pmol/L, SD: 109.5) was significantly higher than the mean fasting insulin level (130.9 pmol/L, SD: 97.1) of those with Tg/HDL-c $< 3.0$ units ($P \text{ value} < 0.01$).

Conclusions In a group of children whose BMI were greater than the 95\textsuperscript{th} percentile; there was a significant relationship between an elevated Tg/HDL-c ratio and indices of insulin resistance. Tg/HDL-c ratio $\geq 3$ units could identify children with BMI’s greater than the 95 \textsuperscript{th} percentile who also have insulin resistance.