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Risk factors predicting insulin resistance in obese adolescents

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Background: Obesity is a hazard mark that associated with insulin resistance (IR). This study aimed to detect which risk factors might provide the greatest predictive value for IR in obese adolescents aged thirteen to seventeen years.

Patient and Methods: One hundred obese adolescents with IR and matched age and sex 100 obese healthy controls without IR were included. Anthropometry, serum lipids and metabolic biomarkers were measured. Homeostasis Model Assessment of Insulin Resistance (HOMA-IR) was used to determine insulin Resistance.

Results: Significant increase in serum lipids and metabolic parameters in obese cases with IR compared to those without. Positive correlations were observed between obesity measurements and metabolic risk markers including increase of waist to hip ratio (WHR), sum of skin folds, blood pressure, insulin, HOMA-IR, TC, TG and LDL-C levels and decrease of HDL-C in IR adolescents. WHR showed the highest correlations with biochemical markers in IR cases. WHR was able to predict IR with area under the curve = 0.82 and TG-to-HDL-C ratio with area under the curve = 0.87.

Conclusions: WHR and lipid/lipoprotein fractions are significantly associated with IR in obese adolescents and might be used for the prediction of IR and for cases at high risk for early intervention.

Keywords: Obese adolescents, Insulin resistance, Clinical practice, Biochemical markers