Variants of hyperlipidemia in obese children are gender and insulin resistance dependent

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Background: Insulin resistance and dyslipidemia inobese subjectsare important for predicting future cardiovascular risk. Purpose of the study was to analyze the lipid profile of obese children depending on gender and insulin resistance status.

Subjects and methods: 247 overweight and obese children (160 boys and 87 girls) aged 2 to 18 y.o. were examined in the pediatric endocrinology department. Lipids assessment included measurement of total cholesterol (TC), triglycerides (TG), low density lipoproteins (LDL), high density lipoproteins (HDL).To evaluate lipid parameters, we used recommendations of the NCEP, 2006.For assessing carbohydrates fasting blood glucose and insulin levels were measured followed by HOMA-IR calculation. Insulin resistance was determined if HOMA-IR values exceededIDEFICS charts cut-offs. Parameters were grouped by the presence (IR +) or absence (IR-) of insulin resistance. Fasting status (at least 8 hours) was required. Standard statistics used for the data analysis.

Results: Insulin resistance was detected in 69.9% of overweight children. 72% of the examined girls and 68% of the examined boys were insulin resistant.

TC level in the IR + was at borderline levels in boys (4.43 mmol/l) and in girls (4.98 mmol/l), but in girls the level was significantly higher ($P = 0.03$). In IR- subjects TC level was within normal limits in both boys (4.38 mmol/l) and girls (4.24 mmol/l) without gender difference. TC level was higher in girls with present IR (4.98 vs 4.24 mmol/l, $P < 0.05$). In boys, there was no significant difference. Elevated TGs were found in boys (1.54 mmol/l) and girls (1.81 mmol/l) in the IR + group, as well as in girls from the IR- group (1.63 mmol/l). TGs in IR- boys were borderline and lower than in IR +group (1.30 vs 1.54 mmol/l, $P < 0.05$). Whereas in girls there were no significant differences. HDLs were slightly reduced in all study groups. However, HDL level was significantly lower in boys without insulin resistancethan in girls (1.11 mmol/l vs1.37 mmol/l, $P = 0.03$). There was no deviation of LDL from references in all groups regardless of gender and the presence of insulin resistance. Meantime, average LDL level was higher in insulin resistant boys than insulin sensitive ones (2.26 vs 1.72 mmol/l, $P <0.05$). IR girls also had higher LDLs than insulin sensitive (2.64 vs 1.63 mmol/l, $P <0.05$).

Conclusions: Most of obese and overweight children are insulin resistant with deteriorated lipids. Seems, variant and degree of dyslipidemia are gender and insulin sensitivity dependent.