

LIPIDOGRAM, LEPTIN-AND ADIPONECTINAEMIA IN TEENAGERS AND ADOLESCENTS WITH METABOLIC SYNDROM

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Objectives:

Introduction.

Obesity leads to the development of hypertension, cardiovascular diseases, disorders of carbohydrate metabolism, which are components of the metabolic syndrome. The nature of the changes of lipid homeostasis, leptin and adiponectin levels in relation to the severity of metabolic syndrome are not well understood.

48 people with metabolic syndrome (24, 16-18 years old and 24 young adults (19-22 years)) are recruited and classified according to body mass index and homeostasis model of assessment-insulin resistance index. The circulating concentrations of leptin, adiponectin and of several metabolic markers of obesity and insulin resistance are determined by standard methods.

Results:

Total cholesterol in the first group and the comparison group is 6.89 ± 0.17 mmol/l and 4.11 ± 0.12 mmol/l, respectively. The cholesterol in the 2nd group is significantly higher (7.21 ± 0.18 mmol/L) compared to the 1st and in control. Triglycerides are significantly increased in both groups (3.9 ± 0.09 mmol/L, 4.12 ± 0.08 mmol/L) in comparing to the control group (0.76 ± 0.04 mmol/L). The amount of HDL statistically significantly reduced in 1st (1.02 ± 0.09 mmol/l) and in 2nd group (0.9 ± 0.08 mmol/l) compared to controls (1.44 ± 0.06 mmol/l). LDL values totaled 5.1 ± 0.05 mmol/l in the group 1 and 5.6 ± 0.06 mmol/l in the 2nd. It is established the direct correlation between LDL, depending on the severity of MS symptoms. Dyslipidemia is found in 85% of teenagers and 98% of young adults. 62.5% of adolescents and 79.2% young adults have atherogenic dyslipidemia of type 2b (hypertriglyceridemia, hypercholesterolemia, increase LDL and decrease HDL). Leptin is significantly different in the 1st and in the 2nd group and in the control (48.2 ± 11.6 ng/ml, 59.1 ± 17.4 ng/ml and 11.2 ± 2.3 ng/ml, respectively). Significantly lower concentrations of adiponectin are detected in patients of 2 group compared with adolescents and the control group, respectively 6.1 ± 3.9 mg/ml, 8.9 ± 4.2 mg/ml and 17.1 ± 4.9 mg/ml ($p < 0.05$).

Methods:

In metabolic syndrome in adolescents and young people the level of leptin is significantly increased and does not depend from sex and age. The highest level of leptin in combination with the maximum circumference of the waist have patients with insulin resistance. A positive correlation relationship was established between leptin and atherogenic lipids, negative correlation between leptin and adiponectin, the level of atherogenic lipids and adiponectin. Perhaps, hyperleptinemia and hypoadiponectinemia, as well as insulin resistance, can be attributed to one of the components of metabolic syndrome.

Lipidogram in children and adolescents with metabolic syndrome

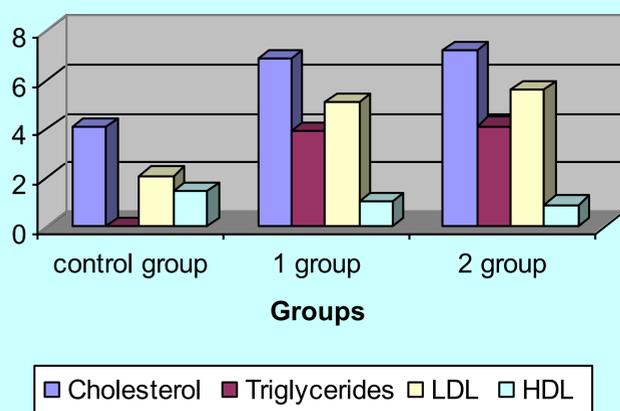
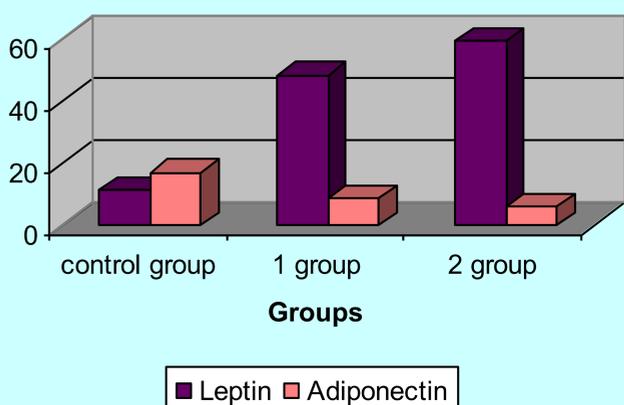


Table 1. Indexes in children and adolescents with metabolic syndrome

Characteristics of the study population	Control group (n=24)	1 group (n=24)	2 group (n=24)	p<
Cholesterol (mmol/l)	4.11±0.12	6.89±0.17	7.21±0.18	pc-1 < 0.001
Triglycerides (mmol/l)	0.76±0.04	3.90±0.09	4.12±0.08	pc -2 < 0.05
LDL (mmol/l)	2.10±0.07	5.10±0.05	5.60±0.06	pc -2 < 0.001
HDL (mmol/l)	1.44±0.06	1.02±0.09	0.90±0.08	pc -2 < 0.001
Leptin (ng/ml)	11.2±2.3	48.2±11.6	59.1±17.4	pc -2 < 0.001
Adiponectin (µg/ml)	17.1±4.9	8.9±4.2	6.1±3.9	pc -2 < 0.05

Data are presented as mean ± SD, 1 group (n=24) children 16-18 y.o., 2 group (n=24) adolescents 19-22 y.o. pc -1 values of significance of differences between 1 group and control (c) according to Student's t-criterion; pc -2 values of significance of differences between 2 group and control (c) according to Student's t-criterion

Leptin and adiponectin in children and adolescents with metabolic syndrome



Conclusions:

Type 2b atherogenic dyslipidemia (hypertriglyceridemia, hypercholesterolemia, high LDL and low HDL) is diagnosed in 62.5% of adolescents and 79.2% young people with metabolic syndrome.

References:

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Conflict of Interest: The authors declare no conflict of interest.

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