1. Abstrakt

Background: The prevalence of obesity has over the past twenty years grown to such an extent that it is now commonly referred to as a pandemic. From the point of view of health risks and complications connected with obesity, the fact that this increasing trend is prominent even in children seems to be very serious. The studies have proved clear relations between early obesity and obesity persisting until adulthood, the amount of visceral fat, cardiovascular risks, diabetes type 2, hypertension and hyperlipidemia.

Aims: To detect weight changes and body composition changes in children during the comprehensive 5–6 week in-patient weight reducing programme. To compare the amount of body fat determined by anthropometric methods and DEXA method. To evaluate selected biochemical and hormonal parameters of lipid and glucose metabolisms in obese children. To detect the dependence of anthropometric and biochemical parameters on polymorphisms Pro1019Pro, Ser343Ser and Gln223Arg of the *LEPR* gene, and polymorphism Leu162Val of the *PPARalfa* gene.

Results: The study showed significant differences in body weight decreases expressed in percentage from the initial body weight in the group of obese girls ($p < 0.001$). Girls the lowest age category (7–9 years) had significantly greater weight losses compared to their weight at the start of their stay, opposed to girls in higher age categories (11–17 years, $p < 0.05$). At the beginning of the weight reducing programme have children impaired lipid metabolism. Elevated values of total cholesterol were decreased after this programme. IGF-I levels of obese girls most probably explains the discovered statistically significant higher values at 12 year-olds and conversely lower ones at 16 and 17 year-olds. No significant differences between the groups of healthy and obese boys were found. The anthropometric methods for stating body composition significantly correlate with values gained by DEXA method. We observed a significantly lower drop of leptin levels during the weight reducing regime at boy homozygotes AA (minority allele) of the Pro1019Pro polymorphism of the *LEPR* gene than in homozygotes GG.

Conclusion: The results have clearly proved that a significant part group of children and adolescents with obesity and overweight is with regard to the abnormalities in the lipid spectrum in threat of cardiovascular complications already in youth, not only in their adulthood. The result of the study has pointed out the importance of starting child obesity treatment as early as possible.