

## ASSOCIATION OF RS9939609 VARIANT OF THE FAT MASS AND OBESITY-ASSOCIATED GENE WITH BMI AND PERCENT OF FAT CONTENT IN CHILDREN WITH OBESITY

B. Pyrzak<sup>1</sup>, A. Wisniewska<sup>1</sup>, A. Majcher<sup>1</sup>, A. Tysarowski<sup>2</sup>, U. Demkow<sup>3</sup>

<sup>1</sup>Department of Pediatric and Endocrinology Medical University of Warsaw;

<sup>2</sup>Molecular Biology Department. The Maria Skłodowska-Curie Memorial Cancer Center and Institute of Oncology. Warsaw;

<sup>3</sup>Department of Laboratory Diagnostics and Clinical Immunology of the Developmental Age, Medical University of Warsaw

**INTRODUCTION:** Among broad spectrum of genetic variation connected with body weight, fat mass content, fat distribution, fat-mass and obesity associated (FTO) gene has been reported. It has been suggested, that rs9939609 variant of the fat mass and obesity-associated gene is associated with changes in body mass index from infancy to late childhood, energy expenditure and energy intake, diminished satiety, and metabolic changes. **AIM:** To study the investigation whether the polymorphism T/A of the FTO gene may influence obesity and metabolic factors in children. **MATERIALS AND METHODS:** We examined group of 161 children: 136 with obesity aged 12-18 years old with SDS of BMI >2.0 and 25 non-obese children 12-18 years with SDS of BMI <1.0. The anthropometric measurements included: height, weight, waist and hip circumference, sum of the thickness of 3 skinfolds, % of fat content, % FAT-BIA, % LBM-BIA. BMI, SDS of BMI, WHR, WHtR were calculated. Fasting plasma total cholesterol (Chol-T), HDL-cholesterol (Chol-HDL), LDL-cholesterol (Chol-LDL), triglycerides (TG), Oral Glucose Tolerance Test, HOMA-IR were analyzed. The rs 9939609 SNP of the FTO gene was genotyped by allele-specific real-time polymerase chain-reaction (RT-PCR). **RESULTS:** In case group (obese children) mean values of BMI was: 29,26±4,72, in control group 18,68±2,55, SDS of BMI was 3,67±1,48 and -0,30±0,68 respectively; p<0,05. Also the statistical differences were found among of % of fat content, sum of skinfolds % FAT-BIA, % LBM-BIA, WHR, WHtR. The frequency of alleles A and T in both: case and control groups were in HW (Hardy-Weinberg) equilibrium and were following: in case group TT -26% AA- 25%, AT-48,5%, in control group TT-20,8%, AA-25%, AT-54,1%. The mean concentrations of TC, TG, Chol-LDL and HOMA-IR was significantly higher, and Chol-HDL was significantly lower in case group than in control group. We found significant associations between TT vs AA with % of fat content, BMI and z-score of BMI (p<0,05, 32,85 vs 38,98, 28,03 vs 30,38, 3,28 vs 4,09 respectively). The waist, hip circumference, sum of the thickness of 3 skin folds %FAT-BIA, %LBM-BIA, WHR, WHtR, lipids and HOMA-IR did not differ between children with gene polymorphism and wild homozygous. **CONCLUSION:** The polymorphism (rs9939609) in the fat mass and obesity associated (FTO) gene is associated with BMI and percent of fat content in children