

Associations of the FTO Gene Polymorphism with Obesity and Metabolic Syndrome in Lithuanian Adult Population

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Abstract : The worldwide prevalence of obesity has been increasing dramatically in the last few decades, and Lithuania is no exception. In 2012, every fifth adult (19% of men and 20.5 % of women) was obese and every third was overweight. Association studies have highlighted the influence of SNPs in obesity, with particular focus on FTO rs9939609. Thus far, no data on the possible association of this SNP to obesity in the adult Lithuanian population has been reported. Here, for the first time, we demonstrate an association between the FTO rs9939609 homozygous AA genotype and increased BMI when compared to homozygous TT. Furthermore, a positive association was determined between the FTO rs9939609 variant and risk of metabolic syndrome. **Background:** This study aimed to examine the associations between the fat mass and obesity associated (FTO) gene rs9939609 variant with obesity and metabolic syndrome in Lithuanian adult population. **Materials and Methods:** A cross-sectional health survey was carried out in randomly selected municipalities of Lithuania. The random sample was obtained from lists of 25-64 year-old inhabitants. The data from 1020 subjects were analysed. The rs9939609 SNP of the FTO gene was assessed using TaqMan assays (Applied Biosystems, Foster City, CA, USA). The Applied Biosystems 7900HT Real-Time Polymerase Chain Reaction System was used for detecting the SNPs. **Results:** The carriers of the AA genotype had the highest mean values of BMI and waist circumference (WC) and the highest risk of obesity. Interactions 'genotype x age' and 'genotype x physical activity' in determining BMI and WC were shown. Neither lipid and glucose levels, nor blood pressure were associated with the rs9939609 independently of BMI. In the age group of 25-44 years, association between the FTO genotypes and metabolic syndrome was found. **Conclusion:** The FTO rs9939609 variant was significantly associated with BMI and WC, and with the risk of obesity in Lithuanian population. The FTO polymorphism might have a greater influence on weight status in younger individuals and in subjects with a low level of physical activity.

Keywords : obesity metabolic syndrome, FTO gene, polymorphism, Lithuania

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