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Prevalence of the rs9939609 polymorphism of the fat mass and obesity (FTO) gene in postmenopausal women screened for metabolic syndrome

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Background: The metabolic syndrome (METS) is a multifactorial condition of great importance worldwide since it increases the risk for cardiovascular events. Several studies have reported that gene variants including the fat mass and obesity (FTO) gene are associated with obesity and the METS.

Objective: To determine the prevalence of the rs9939609 polymorphism of the FTO gene in postmenopausal women screened for the METS.

Method: This was a cross-sectional study in which 192 natural postmenopausal women aged 40–65 years were screened for METS. Weight (kg), height (m), body mass index (BMI, kg/m²), waist circumference (cm) and blood pressure were registered. In addition fasting HDL-C, triglyceride and glucose levels were determined and genetic material was extracted using the Quiagen extraction kit. DNA was amplified by polymerase chain reaction (PCR) technique using specific primers for the rs9939609 polymorphism.

Results: A 53.7% of women had the METS according to modified ATP III criteria. The rate of abdominal obesity, hypertension, hyperglycemia and blood lipid abnormalities was higher among women with the METS as compared to those without. There was no difference regarding the prevalence of the studied polymorphism among women with or without the METS. However, there was a higher rate of the AT heterozygotic genotype among women with high triglycerides levels ($p = 0.02$). There was a non significant trend for a higher rate of combined hetero- and homozygotic genotypes (AT + TT) among women with hyperglycemia. Contrary to expected, this combination (AT + TT) was more frequent in women without abdominal obesity. There were no significant differences in other studied parameters.

Conclusion: Although the muted homozygote TT genotype was not found higher among women with the METS; there was a significant correlation between the heterozygote AT genotype and higher triglyceride levels. More research is warranted in this regard.

<http://dx.doi.org/10.1016/j.maturitas.2015.02.354>

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Searching the new markers of insulin resistance: what does the level of hormones mean? the possible role of SHBG, testosterone, vitamin D and increased active cell mass in diagnosing insulin resistance: the results of a descriptive cross-sectional study

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Introduction: Insulin resistance (IR) is the key process of aging. Correction of IR should be the first line treatment of age-related diseases. There is no “universal” marker of IR. Usually the diagnosis is based on the complex of symptoms (obesity, acanthosis nigricans, elevated C-peptide, ACE criteria, etc). In our study we propose another possible markers of IR.

Materials and methods: We analyzed data of 117 patients (89 men, 28 women) with obesity (IDF criteria, Alberti et al., 2009) and IR syndrome (ACE criteria). Total testosterone (TT), SHBG and C-peptide were assessed with a chemiluminescence immunoassay and vitamin D-with mass-spectrometry. Fat mass, skeletal muscle mass (SMM) and active cell mass (ACM) were assessed with Biop impedance Analysis. Androgen deficiency in men was diagnosed with ISSAM (Lunenfeld et al., 2013) criteria. Vitamin D deficiency level was <30 ng/ml. Statistics: to describe quantitative data Median and interquartile range [25%; 75%] were used. Correlation analysis was performed using Spearman correlation test. P -value <0.05 was considered to be statistically significant.

Results: The mean age of patients was 45 [38; 53], C-peptide level – 953 [688; 1513] pmol/l, SHBG level – 27,1 [20,4; 43,7] nmol/l, vitamin D – 24,4 [18,7; 30,5] ng/ml, TT in men 9,4 [3,43; 15,6] nmol/l. We found inverse correlations of SHBG level with: C-peptide ($r = -0.36$, $p < 0.05$), waist circumference (WC) ($r = -0.5$; $p < 0.05$), and increased ACM ($r = -0.3$; $p < 0.05$). Another correlations found: C-peptide and WC ($r = 0.44$; $p < 0.05$), C-peptide and increased ACM ($r = 0.28$; $p < 0.05$), WC and increased ACM ($r = 0.6$; $p < 0.05$), TT level in men and % fat mass ($r = -0.43$; $p < 0.05$), TT level in men and % SMM ($r = 0.53$; $p < 0.05$). In 78 (67%) patients an increase of ACM was seen, 100 (85%) were vitamin D deficient and 83 (93%) of men had low TT.

Conclusion: Low levels of SHBG, vitamin D, increased quantity of ACM in men and women and low level of TT in men could serve as additional markers of IR.

<http://dx.doi.org/10.1016/j.maturitas.2015.02.355>