

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 to 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.

Resultados: 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.

Conclusión: 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.

Table 1. Prevalence of the METS and its components

Components	METS n=103 (53.7%)	No METS n=89 (46.3%)*
Normal (BMI: 18.5 - 24.99 kg/m ²)	11 (10.7%)	37 (41.6%)*
Overweight (BMI:25 - 29.99 kg/m ²)	42 (40.8%)	29 (32.6%)*
Obese (BMI:30 o more kg/m ²)	50 (49.0%)	23 (25.8%)*
Triglycerides \geq 150 mg/dL (%)	75 (72.8%)	15 (16.9%)*
Glycemia \geq 110 mg/dL (%)	38 (36.9%)	7 (7.9%)*
HDL-C < 50 mg/dL (%)	89 (86.4%)	21 (23.6%)*
Hypertension (\geq 130/85 mm/Hg)	70 (68.0%)	29 (32.6%)*
Abdominal obesity (> 88 cm)	77 (74.8%)	34 (38.2%)*
3 Criteria	64 (62.1%)	0
4 Criteria	26 (25.2%)	0
5 Criteria	9 (8.7%)	0

* $p < 0.05$; BMI, body mass index

Table 2. Prevalence of the rs9939609 polymorphism of the FTO gene according to components of the METS

PARAMETROS	rs9939609 mutated (TT), Homozygotic	rs9939609 Permutated (AT), Heterozygotic	Mutated (TT) + Permutated (AT)
Abdominal obesity			
SI= 111	4 (3.6%)	20 (18.0%)	24 (21.6%)
NO= 81	5 (6.2%)	24 (29.6%)	29 (35.6%)
	$p=0.62$	$p=0.05$	$p=0.02$
Triglycerides \geq 150 mg/dL (%)			
SI= 90	2 (2.2%)	27 (30.0%)	29 (32.2%)
NO= 102	7 (7.0%)	17 (16.7%)	24 (23.7%)
	$p=0.23$	$p=0.02$	$p=0.17$
Glycemia \geq 110 mg/dL (%)			
SI= 45	3 (6.7%)	14 (31.1%)	17 (37.8%)
NO= 147	6 (4.1%)	30 (20.4%)	36 (24.5%)
	$p=0.75$	$p=0.13$	$p=0.08$
HDL-C < 50 mg/dL (%)			
SI= 110	6 (5.5%)	26 (23.7%)	32 (29.1%)
NO= 82	3 (3.2%)	20 (22.0%)	23 (25.2%)
	$p=0.81$	$p=0.78$	$p=0.59$
Hypertension			
SI= 99	6 (6.1%)	24 (24.2%)	30 (30.3%)
NO= 93	3 (3.2%)	20 (21.5%)	23 (24.7%)
	$p=0.55$	$p=0.65$	$p=0.38$
3 Criteria			
SI= 64	4 (6.2%)	17 (26.6%)	21 (32.9%)
4 Criteria			
SI= 26	1 (3.9%)	6 (23.0%)	7 (26.9%)
5 Criteria			
SI= 9	0%	3 (33.3%)	3 (33.3%)
	$p=0.95$	$p=0.83$	$p=0.85$