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Effects of FTO RS9939906 and MC4R RS17782313 on obesity, type 2 diabetes mellitus and blood pressure in patients with hypertension.

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Abstract

BACKGROUND: Genetic variants of the FTO gene rs9939609 A/T and the MC4R gene rs17782313 C/T have been associated with obesity. Individuals with mutations in MC4R gene have lower blood pressure (BP), independently of obesity. This study aimed to investigate the association of FTO rs9939609 and MC4R rs17782313 with anthropometric indexes, BP, and type 2 diabetes mellitus among hypertensive patients.

METHODS: We genotyped 217 individuals (86 men and 131 women) with hypertension (systolic or diastolic BP \geq 140/90 mmHg or using antihypertensive drugs). Diabetes mellitus was diagnosed according to the American Diabetes Association criteria. Waist and neck circumferences (cm), Body Adiposity Index (BAI,%), Lipid Accumulation Product Index (LAP, cm.mmol.l) and body mass index (BMI, kg/m²) were analyzed using analysis of covariance or modified Poisson's regression.

RESULTS: Rare allele frequencies were 0.40 for A for FTO rs9939609 and 0.18 for C for MC4R rs17782313. A positive association of FTO rs9939609 and MC4R rs17782313 with BMI was observed in the overall sample. Among men and women, neck circumference was associated with the FTO genotype and, for women, MC4R genotype. In contrast, in men we found a negative association of MC4R rs17782313 with diastolic BP (TT 90.1 \pm 12.2, TC/CC 83.2 \pm 12.1; P = 0.03) and borderline association for systolic BP after controlling for age and BMI.

CONCLUSIONS: Common genetic variants of FTO rs9939609 have positive associations with BMI and neck circumference and MC4R rs17782313 in women, but a negative association with diastolic and mean blood pressure in men with hypertension.

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