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COMMON AND RARE GENETIC VARIANTS OF THE HUMAN MYOSTATIN GENE ARE ASSOCIATED WITH REDUCED RISK OF HYPERTENSION IN THE ELDERLY

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BACKGROUND/AIMS: Myostatin is a negative regulator of skeletal muscle mass. Mutations of myostatin in animals are associated with the phenotypes of increased muscle mass and reduced fat. Therefore, genetic variations of myostatin gene may be associated with the metabolic syndrome (MetS).

SUBJECTS/METHODS: A total of 1438 subjects over 65 (mean age= 71.9±5) years old were recruited. Phenotypes of the MetS were measured. Four single-nucleotide polymorphisms (SNPs) of the myostatin gene were genotyped by mass spectrometry.

RESULTS: The CC and CG genotypes of the SNP-1759 in promoter had an odds ratio of 1.86 (95% CI1.21-2.87; p=0.005) for hypertension relative to the GG genotype after the adjustment for age, gender and BMI. The CC and GG genotypes affect systolic, diastolic as well as pulse pressures by approximately 5, 2 and 3 mmHg, respectively, after adjusting age, gender and BMI. There were only four subjects carrying the Lys/Arg genotype of the SNP2246. It had an odds ratio of 0.04 (95% C.I.=0.00-0.46, p=0.009) for hypertension relative to the Lys/Lys genotype after adjustment for age, gender and BMI.

DISCUSSION/CONCLUSIONS: Two genetic variants of the human myostatin gene were both associated with the phenotypes of blood pressures. These strongly suggest that myostatin is a genetic contributor to blood pressure regulation in the elderly.

Key words: myostatin, association, genetics, metabolic syndrome, hypertension, elderly