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ASSOCIATIONS AMONG MCP-1 GENE -2518 G/A POLYMORPHISM, THE SERUM MCP-1 LEVEL AND ACUTE CORONARY SYNDROME

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Objective To investigate the associations among MCP-1-2518 G/A polymorphism, MCP-1 serum levels and ACS in Chinese Han population of Sunan region.

Methods After obtaining informed consent, 166 patients with ACS including 94 cases of AMI and 72 cases of UAP (ACS group) and 73 control subjects who were free of coronary artery stenosis confirmed by coronary angiography (control group), were enrolled in this study. ACS were diagnosed according to the criteria of the ACC/AHA guidelines (2002). All the patients with ACS and control subjects enrolled in this study were hospitalised in the cardiovascular department affiliated to Wu Jin Hospital of Jiangsu University during the period from June 2005 to June 2010. Clinical data such as gender, age, history of smoking, hypertension and diabetes mellitus, and plasma lipids level were recorded. The -2518 G/A polymorphism of the MCP-1 gene was genotyped by polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP) and serum concentration of MCP-1 was measured by enzyme-linked immunosorbent assay (ELISA) in all subjects of the study. The statistical software package SPSS 17.0 was used for statistical calculations. Data are presented as mean±SD or median/quartile range (M/IQR) for continuous variables and as percentage for categorical variables. The categorical variables between two groups were compared by Chi-square test. The serum concentration of MCP-1, which was not normally distributed, was compared between or among groups by Wilcoxon rank sum test or Kruskal-Walls rank sum test. The other continuous variables between two groups were analysed by t test. Multiple linear regression analysis was performed to obtain influencing factors of the serum MCP-1 level. Multivariate logistic regression analysis was performed to obtain predictors for ACS, AMI and UAP. A probability value of less than 0.05 was considered to be statistically significant.

Results Compared with those in control group (AA:17.81%, GA:49.31%, GG:32.88%, G allele: 57.53%), respectively, no significant differences were revealed in frequencies of any genotypes and G allele of the MCP-1 gene -2518G/A in ACS group (AA: 16.27%, GA: 51.20%, GG: 32.53%, G allele:58.13%), AMI group (AA: 11.70%, GA: 51.06%, GG: 37.24%, G allele: 62.77%) and UAP group (AA: 22.22%, GA: 51.39%, GG: 26.39%, G allele: 52.08%) (all p values>0.05). Multivariate including age, gender, plasma lipids level, history of diabetes mellitus, hypertension and smoking logistic regression analysis showed that MCP-1 gene -2518 G/A polymorphism was not associated with an increased risk of ACS, AMI and UAP (all p values>0.05). The serum MCP-1 level (M/IQR) was significantly higher in ACS group (157.44/241.82 pg/ml), AMI group (157.44/245.67 pg/ml) and UAP group (157.14/231.95 pg/ml) than that of in the control group (80.96/89.17 pg/ml) (all p values <0.01). No significant difference was found in the serum MCP-1 level between AMI group and UAP group. No significant differences were found in the serum MCP-1 levels among any of the genotypes of the MCP-1 gene-2518G/A within control group, ACS group, AMI group and UAP group, respectively; further subgroup analysis by gender or age, no associations were found among any of genotypes of the MCP-1 gene-2518G/A within control group, the same gender group and the same age group (all p values>0.05). Multiple linear regression analysis revealed that the serum MCP-1 level (M/IQR) was positively correlated with smoking, history of diabetes mellitus and hypertension, negatively correlated with male, but unrelated with old age and dislipidemia in ACS group. After adjustment for age, gender, dislipidemia, history of diabetes mellitus, hypertension

and smoking, an elevated level of MCP-1(≥75th percentile) remained associated with an increased risk of ACS, AMI and UAP (all p values<0.05).

Conclusion In Chinese Han population of Sunan region, the MCP-1 gene-2518G/A polymorphism does not affect the serum MCP-1 level nor contributes to an increased risk of ACS; the serum MCP-1 level is significantly increased and affected by CAD relevant factors such as old age, gender and history of diabetes mellitus and hypertension, etc., in patients with ACS; and an elevated serum MCP-1 level (≥75th percentile) may be an independent risk factor of ACS, including AMI and UAP.