ASSOCIATION OF TUMOR NECROSIS FACTOR GENOTYPES WITH SERUM ALBUMIN: TAICHUNG COMMUNITY HEALTH STUDY FOR ELDERS (TCHS-E)

老人 TNF 基因多型性與血清白蛋白的相關性

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Background: TNF genes are located in the 6th chromosome of humans. The polymorphisms in the promoter region of the TNF gene at positions -1031, and -308 have been known for regulation of TNF-alpha levels. TNF-alpha, a pro-inflammatory cytokine is known to enhance vascular permeability. It has been shown that high levels of TNF-alpha induce apoptosis in endothelial cells. Serum albumin level has been used as markers of nutritional status. No study has investigated the association between albumin and polymorphisms at positions -1031 and -308, which are the most frequent polymorphisms in the promoter region of TNF gene. The aim of study was to find out whether and polymorphisms in the promoter region of TNF gene at positions -1031 and -308 (rs1799964 and rs1800629) are associated with serum albumin levels. In the present study, TNF gene polymorphism (rs1799964 and rs1800629) was investigated in 33 low serum albumin level and 439 healthy controls with normal serum albumin in Taiwanese elders.

Methods: The SNPs rs1799964 and rs1800629 of TNF gene in a total of 472 unrelated elders (251 males and 221 females) were genotyped. Both SNPs rs1799964 and rs1800629 of TNF has two alleles, A and G, resulting in three genotypes, A homozygotes (AA), heterozygotes (AG), and G homozygotes (GG). Linkage disequilibrium (LD) was analyzed. Serum albumin concentration was analyzed by a biochemical autoanalyzer (Beckman Cou, Fullerton, CA, USA).

Results: The minor allele frequency of rs1799964 was G with a proportion of 0.2059 whereas the minor allele frequency of rs1800629 was A with a proportion of 0.0994. After adjusting for age and gender, our study indicates that SNP rs1799964 G/G genotype was significantly associated with decreased serum albumin level (β=-0.255 g/ml, p=0.0018). In addition, the adjusted odds ratios of low serum albumin level was 8.04 (95% CI: 2.45-26.30) among elders with SNP rs1799964 G/G genotype compared with elders with A/A genotype. On the contrary, SNP rs1800629 was not associated with serum albumin level or low serum albumin level.

Conclusion: The results suggest that polymorphism rs1799964 in the TNF gene affects serum albumin concentration, indicating rs1799964 appear to be a susceptibility biomarker of serum albumin concentration. But further study may be required.