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研究报告

汉族人群NOS3 A-922G、NOS3 T-786C 与NOS3 G894T SNP的等位基因及其组合分布与高血压的相关性

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摘要 为了分析汉族人群一氧化氮合酶基因NOS3 A-922G、NOS3 T-786C 与NOS3 G894T单核苷酸多态性（single nucleotide polymorphism，SNP）的等位基因及其组合分布与高血压病的相关性，选取无亲缘关系的高血压病人192例(男97例，女95例)以及无亲缘关系的健康个体122例（男76例，女46例）为对照组，提取静脉血白细胞基因组DNA，采用等位基因特异性引物PCR技术检测NOS3 A-922G、NOS3 T-786C 与NOS3 G894T 3个位点的基因型。其结果显示：高血压病组与对照组NOS3 G894T、NOS3A-922G及NOS3 T-786C各等位基因型及其基因单倍型频率比较无显著性差异(P>0.05)。男、女性别分层研究：无论男亚组还是女亚组均未发现NOS3 A-922G、NOS3 T-786C 与NOS3 G894T各个位点SNP与高血压病有相关性。等位基因组合分布研究发现NOS3 G894G +A-922G+T-786T组合基因型总体频率分布在高血压病组与正常对照组之间有显著性差异(P<0.05,χ2= 4.5944)。男、女性别分层研究：男亚组上述3个位点SNP的各个组合基因型分布频率在高血压病组与正常对照组之间无显著性差异(P>0.05)；女亚组中携带NOS3 G894G+A-922G+T-786C 的组合基因型分布频率在高血压病组与正常对照组之间有显著性差异(P<0.01,χ2=8.502)。研究发现，在中国汉族人群中NOS3A－922 G、NOS3 T-786C 与NOS3 G894T SNP与高血压病无明确的相关性，且无性别差异。组合分布研究发现，NOS3 G894G+A-922G+T-786C 的组合基因型分布频率在高血压病女性亚组较健康女性亚组明显减低，提示携带该组合基因型女性人群可能不易患高血压病。

关键词 内皮源性一氧化氮合酶；组合分布；单核苷酸多态性；高血压病；等位基因

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Single Nucleotide Polymorphisms in NOS3 A-922G, T-786C and G894T: A Correlation Study of the Distribution of Their Allelic Combinations with Hypertension in Chinese Han Population

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Abstract

To study single nucleotide polymorphisms (SNP) in A-922G, T-786C and G894T of endothelial nitric oxide synthase (NOS3) and to correlate the distribution of their allelic combinations with

hypertension in Chinese Han nationality population, genomic DNA was isolated from venous blood leukocytes from 192 unrelated patients with hypertension (95 females and 97 males) and 122 healthy unrelated individuals (46 females and 76 males) as controls. SNPs of NOS3 A-922G, T-786C and G894T were genotyped by allele-specific primer (ASP) PCR. The distribution of genotype combinations of three SNPs was determined by clustering analysis. There were no difference in allele genotype distribution frequency and haplotype frequency of NOS3 G894T, NOS3 A-922G and NOS3 T-786C between the essential hypertension group and the healthy population ($P>0.05$). According to sex stratification, no association between essential hypertension and SNP of NOS3 A–922G,NOS3 T-786C or NOS3 G894T has been found in either the male subgroup or the female subgroup. In respect of allele genotype combination frequency in the natural distribution of NOS3 A-922 G, NOS3 T-786C and NOS3 G894T SNP, there was significant difference only in the allele genotype combination frequency of NOS3 G894G+A-922G+T-786T between the hypertension group and the healthy group ($P<0.05,\chi2=4.5944$). According to sex stratification, there were no significant difference in all above allele genotype combination frequency in three sites of NOS3 SNP between the hypertension male subgroup and the healthy male subgroup($P>0.05$). There was significant difference in the allele combination frequency of NOS3 G894G +A-922G+T-786C between the hypertension female subgroup and the healthy female subgroup($P<001,\chi2=8.502$). There was no association of SNP in NOS3 A–922G, NOS3 T-786C or NOS3 G894T with hypertension in the Chinese Han nationality population, nor was there a sex difference. The combination frequency of allele NOS3 G894G + A-922G + T-786C in the hypertension female subgroup was much lower than that in the healthy female subgroup, suggesting that female population with this combination genotype may be less susceptible to hypertension.

Key words endothelial nitric oxide synthase single nucleotide polymorphisms combination distribution essential hypertension allele

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