

Correlations of single nucleotide polymorphisms in GRM3 and DTNBP1 genes among Taiwanese schizophrenia / 黃清德 撰 .- 彰

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ABSTRACT

Schizophrenia is one of the most serious mental illnesses. Recent studies have shown that 64~81% of schizophrenic patients with genetic heredity, and indicated that glutamate neurotransmission is pathway associated with schizophrenia. We chose GRM3 and DTNBP1 genes to analyze the corelations of genetic polymorphisms and schizophrenia. GRM3 gene product is one of the synaptic G-protein receptors of the neurotransmitter, glutamate. DTNBP1 is responsible for encoding dysbindin protein. Dysbindin is linked to brain 's commands and is one of the key proteins in both glutamate and dopamine nerve transmissions. This study included three experimental groups: the drug control well (type I), ineffective drug control (type II) of schizophrenial patients and normal persons without any known mental illness inheritance for three generations. We analyzed six single nucleotide polymorphisms (SNPs) of GRM3 and DTNBP1 genes including rs2299225, rs1468412, rs7758659, rs760666, rs875462 and rs3213207. Primers were designed for polymerase chain reaction (PCR) amplifications of sequences around SNPs, respectively. We try to know first if there are insertions or deletions around these SNPs. Each PCR product was then sequenced and result was analyzed to understand whether there are polymorphisms. The correlations of schizophrenia and mutations were statistically analyzed. According to results of statistic analyses, there are no significant difference between type I and type II patients in the age of schizophrenial morbidity and sex. We found that the age of type I patients is between 21 to 30 years old and type II is between 21 to 30 years old. The age of onset of schizophrenia is about 15 to 45 years old. Results of individual allele frequency associations show that rs1468412 of GRM3 gene ($p=0.004$) and rs3213207 of DTNBP1 gene ($p=0.043$) is significantly associated with schizophrenia. The other four SNPs are not related with schizophrenia. Results also showed that there is a sex difference between type I and type II patients in rs1468412. Furthermore we found that there is a nucleotide difference close to rs875462 of DTNBP1 gene associated with schizophrenia. These results show that the gene polymorphisms of GRM3 and DTNBP1 are associated with schizophrenia in Taiwan. Variations of SNPs in rs1468412 and rs3213207 may be factors causing schizophrenia in Taiwan.

Keywords : Schizophrenia、GRM3 gene、DTNBP1 gene、Single nucleotide polymorphisms

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