Genetic variants of STX6 are associated with susceptibility to schizophrenia in Korean population

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Background

- The syntaxin 6, STX6 gene have a role in regulating a number of neutrophil functions in both inflammation and infection.
- Immune dysregulation and neuroinflammation seems to be involved in schizophrenia pathogenesis.
- Independent postmortem studies in schizophrenia provide evidence of increased syntaxin immunoreactivity was unchanged in schizophrenia in other brain regions including frontal, temporal, and parietal cortices.
- Recent studies showed that neutrophil/lymphocyte ratio of the schizophrenia patients during relapse period were significantly higher when compared with the controls.

Objectives

- To investigate whether genetic polymorphisms of STX6 gene are associated with schizophrenia in Korean population.

Methods

- Two SNPs (rs3747957 and rs1411478) of the STX6 gene considering their heterozygosity and minor allele frequency were genotyped in 249 schizophrenia patients and 477 control subjects. The genotypes of SNPs were performed by direct sequencing.
- All patients were evaluated by the operational criteria checklist for psychotic illness. Multiple logistic regression models were performed to evaluate odds ratios (ORs), 95% confidence intervals (CIs), and *p* values controlling for age and gender as covariates.

Results

- The genotype frequencies of rs3747957 showed a significant association between schizophrenia and controls [*p*=0.045, OR=0.61, 95%CI=0.36-1.08 in the co-dominant model (A/G vs. G/G)].
- In addition, the genotype distributions of the rs3747957 showed significant association with hallucination symptoms in the co-dominant model (A/A vs. G/G, *p*=0.021, OR=0.32, 95%CI=0.14-0.75) and the dominant model (A/G + A/A vs. G/G, *p*=0.021, OR=0.54, 95%CI=0.31-0.92).

Conclusions

- These results suggest that STX6 gene polymorphisms may be related to the susceptibility to schizophrenia in Korean population.

Table 1. Genotype frequencies of STX6 polymorphisms in schizophrenia patients and control subjects

SNP	Model/allele	Genotype	Schizophrenia		Control		OR (95% CI)	<i>p</i> value
			n	%	n	%		
rs3747957	Co-dominant	GG	96	37.4	191	39.2	0.61(0.36-1.08)	0.045
		AG	131	51.0	224	46.0		
		AA	30	11.7	72	14.8		
	Dominant	GG	96	37.4	191	39.2	1.08(0.79-1.48)	0.62
		AG/AA	161	62.6	296	60.8		
	Recessive	GG/AG	227	88.3	415	85.2	0.76(0.48-1.20)	0.24
		AA	30	11.7	72	14.8		

Table 2. Genotype frequencies of STX6 polymorphisms in schizophrenia patients with and without hallucination

SNP	Model/Allele	Genotype	Without hallucination		With hallucination		OR (95% CI)	<i>p</i> value
			n	%	n	%		
rs3747957	Co-dominant	GG	29	28.7	67	43.0	0.32(0.14-0.75)	0.021
		AG	55	54.5	76	48.7		
		AA	17	16.8	13	8.3		
	Dominant	GG	29	28.7	67	43.0	0.54(0.31-0.92)	0.021
		AG/AA	72	71.3	89	57.0		
	Recessive	GG/AG	84	83.2	143	91.7	0.43(0.20-0.94)	0.033
		AA	17	16.8	13	8.3		