Annals of General Psychiatry

BioMed Central

Poster presentation

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Mutations in genes regulating neuronal migration predict reduced prefrontal cognition in schizophrenia and bipolar disorder: a preliminary study

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from International Society on Brain and Behaviour: 2nd International Congress on Brain and Behaviour
Thessaloniki, Greece. 17–20 November 2005

Published: 28 February 2006

Annals of General Psychiatry 2006, **5**(Suppl 1):S157 doi:10.1186/1744-859X-5-S1-S157

Background

Both neurodevelopmental processes and prefrontal cortex function are known to be abnormal in schizophrenia and bipolar disorder. The hypothesis to be tested was that these features are related with genes that regulate neuronal migration.

Materials and methods

We analyzed the genomic region encompassing the LIS1 gene (lissencephaly critical region, LCR), involved in human lissencephaly, and the platelet-activating-factor (PAF) system genes, functionally related to LIS1 in neuronal migration, in 52 schizophrenic patients, 36 bipolar I patients and 65 normal control subjects. In addition, all patients and 25 control subjects completed a neuropsychological battery.

Results

Thirteen (14.8%) patients showed alterations in two markers related with lissencephaly, and in the PAF receptor (PAFR) gene. These patients performed significantly worse on the Wisconsin Card Sorting Test-Perseverative Errors (WCST-PE) in comparison to patients without LCR/PAFR abnormalities. The presence of LCR/PAFR abnormalities was parametrically related to perseverative errors and explained 17% of variance ($p = 0.0001$). Finally, logistic regression showed that poor WCST-PE performance was the only predictor of belonging to the positive LCR/PAFR group.

Discussion

These preliminary findings suggest that mutations in genes involved in the molecular diagnosis of lissencephaly and neuronal migration alterations, predict the severity of the prefrontal cognitive deficits in both disorders.

References

1. Egan MF, Goldberg TE, Kolachana BS, Callicott JH, Mazzanti CM, Straub RE, *et al.*: **Effect of COMT Val108/158 Met genotype on frontal lobe function and risk for schizophrenia.** *Proc Natl Acad Sci USA* 2001, **98:**6917-6922.
2. Stahl SM: **Psychopharmacology of anticonvulsants: do all anticonvulsants have the same mechanism of action?** *J Clin Psychiatry* 2004, **65:**738-739.
3. Knable MB, Barci BM, Webster MJ, Meador-Woodruff J, Torrey EF: **Molecular abnormalities of the hippocampus in severe psychiatric illness: postmortem findings from the Stanley Neuropathology Consortium.** *Mol Psychiatry* 2004, **9:**609-620.
4. Harwood AJ: **Neurodevelopment and mood stabilizers.** *Curr Mol Med* 2003, **3:**472-482.