
SHORT-TERM EFFECTS OF ANTIPSYCHOTIC TREATMENT ON PREFRONTAL HEMODYNAMIC RESPONSES IN FIRST-EPIISODE SCHIZOPHRENIA DURING TOWER OF LONDON: A MULTI-CHANNEL NIRS STUDY

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Background Planning ability as a critical component of executive function has been used to investigate prefrontal cortex (PFC) function in Schizophrenia patients by several neuroimaging studies. However, the changes of PFC activation after effective antipsychotic treatment are still unclear.

Objective The aim of this study is to explore whether there is any variation in the prefrontal hemodynamic response during Tower of London test after 6 weeks' antipsychotic treatment in schizophrenia patients, and the relationship between the changes in PFC activation and some demographic factors as well as the severity of the patients' psychiatric symptoms.

Method 40 patients with first-episode schizophrenia were recruited for the present study. 28-channel NIRS (near infrared spectroscopy) was used to measure changes in hemoglobin concentration in the prefrontal cortical surface area during Tower of London (TOL) test—a classic neuropsychological test for planning abilities. The patients were examined before treatment and after six weeks' treatment with second-generation antipsychotic medicines.

Results After the short-term treatment, the patients' TOL test performance and the activations in PFC during the task period did not differ from baseline ($P>0.05$), although the psychiatric symptoms of the patients were improved significantly (positive subscale score 18.25 ± 2.86 & 12.75 ± 2.60 ; general psychopathology 33.67 ± 3.65 & 27.00 ± 3.67 ; PANSS total score 72.25 ± 7.07 & 55.42 ± 7.53 ; $P<0.001$).

Conclusion It suggests that the impairment of cognitive function and the function of the PFC of schizophrenia patients would not be improved with the improvement of psychiatric symptoms, as further support the hypothesis that PFC damage is a durable impairment for schizophrenia.