

ABNORMALITY OF WHITE MATTER STRUCTURE AND RESTING STATE BRAIN FUNCTION IN FIRST-EPIISODE, TREATMENT-NAIVE PATIENTS WITH MAJOR DEPRESSIVE DISORDER

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Introduction: Increasing evidence indicates that major depressive disorder (MDD) is associated with cognitive as well as mood disturbances.

Objectives: To evaluate cognitive function and white matter structure, resting-state brain function in first-episode, treatment-naive patients with MDD.

Aims: To explore brain structure and function mechanisms of cognitive impairment in MDD.

Methods: 46 Han Chinese MDD patients aged 18-45 year and 46 controls were assessed by a series of validated test procedures. Then, 30 patients and 30 controls were obtained by MRI scan. White matter abnormalities evaluated using diffusion tensor imaging (DTI) were analyzed using tract based spatial statistics (TBSS) and resting-state brain function was evaluated using regional homogeneity (ReHo) analysis.

Results: Cognitive impairment in patients with MDD was demonstrated by reduced accuracy in the Wisconsin Card Sorting test (WSCT) and to a lesser extent the Continuous Performance test (CPT) and Trail Making tests (TMT). White matter abnormalities found in the left cerebellum, and resting-state abnormalities present in the left inferior parietal gyrus, left anterior cingulate nucleus and left hippocampal gyrus were associated with impaired performance in the WSCT and CPT tests. We also showed that poor WSCT performance was associated with increased interconnectivity between the left ventral anterior cingulate nucleus and the medial frontal lobe areas.

Conclusions: The present study indicates cognitive disturbances in patients with MDD are associated with white matter and resting-state changes and altered interconnections in specific brain areas.