

Abstract

Objective: Major depression is a common mental illness with usual onset in adolescence and young adulthood. Brain imaging studies using functional magnetic resonance imaging (fMRI) have reported altered functional connectivity in depressed patients compared to healthy controls, which normalize with effective treatment. Escitalopram is an antidepressant commonly used to treat depression, but without data specifically in early depression patients. The aim of this study was to investigate the changes in neural circuitry before and after treatment with escitalopram in young adults with first-episode depression. **Methods:** Eighteen first-episode depressed patients and 10 healthy sex- and age-matched controls (18–29 years) consented to the study. Patients underwent imaging before and after 16 weeks of open-label monotherapy with escitalopram. The control group had only 1 scan. Patients' pre- and post-treatment depressive symptoms were assessed using the 17-item Hamilton Depression Scale (HAMD-17) and the Beck Depression Inventory (BDI).

Results: There was a significant decrease in patients' scores on the HAMD-17 ($p < 0.0001$) and BDI ($p < 0.0001$) between baseline and 16 weeks. Sixteen patients completed the baseline fMRI scan and 14 completed the post-treatment scan. Compared to controls, patients demonstrated elevated activation of the posterior cingulate cortex (PCC) and negative connectivity between the PCC and thalamus and subgenual cingulate at baseline, effects which normalized at post-treatment. However, other baseline differences, such as lower connectivity between the PCC and the prefrontal lobe and posterior insula in the patient group, were still evident at post-treatment.

Conclusions: Escitalopram was an effective and well tolerated treatment for first episode depression. Altered connectivity, shown by depressed subjects compared to controls, partially normalized with treatment. It is suggested that the lack of complete normalization of neural connectivity may be a function of duration of treatment. A major limitation of the study was the small sample size.

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Gray matter abnormalities in individuals with major depressive disorder: a focus on the effects of childhood abuse

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Abstract

Objective: Patients with major depressive disorder (MDD) present heterogeneous clinical symptoms, and childhood abuse is associated with deepening of psychopathology. The aim of this study was to identify brain regions with gray matter (GM) abnormalities in MDD and to assess further differences in GM density (GMD) associated with childhood abuse in MDD.

Methods: Structural differences in regional GMD between 34 MDD patients and 26 healthy controls were assessed using magnetic resonance imaging and optimized voxel-based morphometry. Within the MDD group, further comparisons were performed focusing on the experience of maltreatment during

childhood (23 MDD with child abuse vs 11 MDD without child abuse).

Results: Compared with healthy controls, the MDD patient group showed decreased GMD in the bilateral orbitofrontal cortices, right superior frontal gyrus, right posterior cingulate gyrus, bilateral middle occipital gyri, and left cuneus. In addition, the patient group showed increased GMD in bilateral postcentral gyri, parieto-occipital cortices, putamina, thalami, and hippocampi, and left cerebellar declive and tuber of vermis. Within the MDD patient group, the subgroup with abuse showed decreased GMD in right orbitofrontal cortex, but showed increased GMD in the left postcentral gyrus compared to the subgroup without abuse.

Discussion: Our findings suggest a complicated dysfunction of networks between cortical-subcortical circuits and preliminary evidence for the compensatory gain of GMD in the subcortical circuits associated with hypofrontality in the pathophysiology of MDD. In addition, decreased GMD in the orbitofrontal cortex of individuals with MDD in the abuse subgroup may be associated with severer form of emotional dysregulation.

Keywords: major depressive disorder; physical abuse; emotional abuse; voxel-based morphometry; orbitofrontal cortex; emotional dysregulation

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The Normalization of Brain 18F-FDG Hypometabolism following Electroconvulsive therapy in a 55-Year-Old Woman with Treatment-Resistant Late onset Depression: Case report

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Abstract

Major depressive disorder, especially in later life, has heterogeneous clinical characteristics and treatment responses. For symptomatology, psychomotor retardation, lack of energy, and apathy tended to be more common in people with late-onset depression (LOD). In spite of recent advances in psychopharmacologic treatments, 20–30% of patients with mood disorders experience inadequate responses to medication, often resulting in a trial of electroconvulsive therapy (ECT). However the therapeutic mechanism of ECT is still remain unknown. By using ¹⁸F-fluorodeoxy-D-glucose positron emission tomography-computed tomography (¹⁸F-FDG PET/CT), we can obtain the status of brain metabolism which of patients with neuropsychiatric disorders and its changing during psychiatric treatment course.

In this case report, we introduce 55-year-old female patient who suffered psychotic depression which was treatment-resistant during pharmacological approach. Several antidepressants and atypical antipsychotics were applied but there was no improvement in her symptoms. The patient represent not only depressed mood and behaviors but also deficit in cognitive functions. We could find decreased diffuse cerebral metabolism in her brain FDG PET/CT image. By underwent ECT, symptoms of the patient cleared and another brain PET imaging which was taken 7 weeks later from the last ECT course the metabolism of her brain was normalized.