

Rapid Effects of Intensive Therapy Seen in Brains of Patients with OCD

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In a study that may significantly advance the understanding of how cognitive-behavioral therapy affects the brain, researchers have shown that significant changes in activity in certain regions of the brain can be produced with as little as four weeks of daily therapy in patients with obsessive-compulsive disorder (OCD). The discovery could have important clinical implications, according to principal investigator Sanjaya Saxena, M.D., Director of the Obsessive-Compulsive Disorders Program at the University of California, San Diego (UCSD) School of Medicine, whose findings are published on line this week in the journal *Molecular Psychiatry*.

"The study is exciting because it tells us more about how cognitive-behavioral therapy works for OCD and shows that both robust clinical improvements and changes in brain activity occur after only four weeks of intensive treatment," said Saxena.

OCD is an anxiety disorder in which individuals have unreasonable fears or worries that they try to manage through ritualized compulsive behaviors to reduce the anxiety. For example, a patient may experience the urgent need to engage in certain rituals, such as hand washing or repeatedly checking that the oven is off or the front door is locked.

Past studies using functional brain imaging studies of patients with OCD have demonstrated that elevated activity along the frontal-subcortical circuits of the brain decreases in response to treatment with serotonin reuptake inhibitor (SRI) medications or cognitive-behavioral therapy. However, clinical improvement of OCD symptoms was expected to require up to 12 weeks of behavioral therapy or medication treatment, the standard treatments for OCD. Only a handful of studies have looked at how therapy affects brain function, and all previous studies had examined changes over several months of treatment.

Saxena and colleagues at the David Geffen School of Medicine at UCLA made two novel discoveries in their study of 10 OCD patients and 12 control subjects.

"First of all, we discovered significant changes in brain activity solely as the result of four weeks of intensive cognitive-behavioral therapy," said Saxena. "Secondly, these changes were different than those seen in past studies after a standard 12-week therapeutic approach using SRI medications or weekly behavioral therapy."

The researchers obtained positron emission tomography (PET) scans of the ten OCD patients both before and after they received four weeks of a therapy known as "exposure and response prevention," which gradually desensitizes patients to things that provoke obsessional fears or worries.

"This is the primary kind of therapy used for OCD. It teaches patients to pay attention to their internal experiences and tolerate scary thoughts without having to act on them," said Saxena. "They learn that nothing terrible happens if they refrain from their usual compulsive behaviors."

The normal control subjects received no treatment and were scanned twice, several weeks apart, and metabolic changes in the brain were compared between the two groups. After four weeks of therapy and without

any changes in medication, the OCD patients showed significant improvements in OCD symptoms, depression, anxiety and overall functioning.

The PET scans of OCD patients demonstrated significant decreases in glucose metabolism - a measure of brain cell activity - in the right and left thalamus after treatment. These are areas of the brain involved in OCD and where changes have been seen in numerous past studies after longer-term treatment.

However, the PET scans in this study also showed a significant increase in activity in an area of the brain called the right dorsal anterior cingulate cortex, a region involved in reappraisal and suppression of negative emotions. Increasing activity in this region corresponded to the OCD patients' improvement in clinical symptoms after the four-week course of intensive therapy. Activity in this area had previously been found to increase after cognitive-behavioral therapy for major depression. Therefore, the researchers theorize that response to cognitive-behavioral therapy across a variety of disorders may require activation of the dorsal anterior cingulate cortex, according to Saxena.

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