

Deep Brain Stimulation for Post-traumatic Stress Disorder or Treatment-Resistant Depression: A Review

Context

Post-traumatic stress disorder (PTSD) and major depressive disorder are common debilitating psychiatric conditions. Despite advances in the understanding of psychopharmacology and the introduction of new antidepressants, 30% to 40% of patients with these conditions do not respond to antidepressant therapy. For these patients, various non-drug treatments have been suggested, such as psychotherapy, electroconvulsive therapy, transcranial magnetic stimulation, vagus nerve stimulation, and deep brain stimulation.

Technology

Deep brain stimulation involves implanting electrodes in certain regions of the brain to provide targeted electrical stimulation controlled by a “brain pacemaker” placed under the skin of the patient’s chest. This stimulation is thought to be beneficial for managing treatment-resistant movement and affective disorders such as Parkinson disease, essential tremor, dystonia, chronic pain, Tourette syndrome, obsessive-compulsive disorder, and major depression. Recently, deep brain stimulation has been proposed for use in the treatment of PTSD.

Issue

A review of the clinical effectiveness of deep brain stimulation for the treatment of PTSD and treatment-resistant depression will help to inform treatment decisions for patients with these psychiatric disorders.

Methods

A limited literature search was conducted of key resources, and titles and abstracts of the retrieved publications were reviewed. Full-text publications were evaluated for final article selection according to predetermined selection criteria (population, intervention, comparator, outcomes, and study designs).

Key Messages

- Deep brain stimulation appears to be safe and effective for treatment-resistant depression (based on limited evidence).
- More research is needed to confirm that the improvement in symptoms is due to deep brain stimulation and not other factors, such as the placebo effect or the natural course of the disease.
- Whether severely depressed patients are capable of giving consent for treatment with deep brain stimulation is of concern.
- No information was found on the effectiveness of deep brain stimulation for the treatment of PTSD.

Results

The literature search identified 481 citations, with 2 additional articles identified from other sources. Of these, 14 were deemed potentially relevant and 2 systematic reviews met the criteria for inclusion in this review.

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