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Stellate Ganglion Block for PTSD

In a sham-controlled trial, stellate ganglion block relieved posttraumatic stress symptoms in a group of active duty military personnel. Treatment was well tolerated with no serious adverse effects.

Background: An accepted treatment for sympathetically mediated pain, stellate ganglion block is considered a routine and safe procedure. It has been practiced for decades and can now be done using ultrasonographic guidance. Treatment involves injecting local anesthetic into the stellate ganglion, located at the base of the neck, to temporarily block its function. Case series have shown promising results for anxiety symptoms associated with PTSD. However, a pilot study in combat-associated PTSD did not have positive results, potentially due to methodological shortcomings.

Methods: Study subjects were active-duty personnel recruited from military hospitals with interdisciplinary pain management centers. Participants were required to have syndromal or subsyndromal PTSD reflected by scores above a cutoff on the PTSD Checklist-Civilian Version DSM-IV and to have been receiving stable psychotropic medication for ≥3 months before enrollment. Those with suicidal ideation, moderate to severe substance use disorders, or other psychiatric disorders were excluded. Eligible patients were randomly assigned in a 2:1 ratio to receive stellate ganglion block or a sham injection of saline. Two injections were administered 2 weeks apart. Patients and all study personnel with the exception of the clinician administering the injection were blinded to treatment assignment. The primary study outcome was change from baseline to week 8 in the Clinician-Administered PTSD Scale for DSM-5 (CAPS-5). A change of 10 points on this 80-point scale was defined as clinically meaningful.

Results: A total of 113 patients (mean age, 37 years; 100 men) were randomized: 74 to stellate ganglion block and 39 to sham injections. All but 4 completed 8 weeks of follow-up. The majority of patients (80%) met full diagnostic criteria for PTSD; the remaining patients were subsyndromal. The average duration of PTSD symptoms was 4 years.

Mean baseline CAPS-5 scores were 37.6 in the active treatment group and 39.8 in the sham group. Scores decreased by an average of 12.2 points in the group receiving stellate ganglion

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block, compared with 5.8 points in the control group (effect size,* 0.56; adjusted p=0.007). Treatment effects were larger in patients who had higher baseline symptom scores. Secondary outcomes also favored active treatment with effect sizes ranging from 0.32 to 0.60 for PTSD-associated symptoms, depression, distress, anxiety, pain, physical functioning, and mental functioning. A total of 6 adverse events were reported, 2 of which were treatment related (i.e., cough and injection site irritation).

Discussion: In this study, the magnitude of improvement in CAPS-5 score in patients treated with stellate ganglion block is similar to that reported for cognitive processing therapy and written exposure therapy in another recent study. However, the strict selection criteria limit the generalizability of the present results to the larger population with PTSD.

Study Rating*—17 (100%): This study met all criteria for a randomized controlled trial.

Olmsted K, Bartoszek M, Mulvaney S, McLean B, et al: Effect of stellate ganglion block treatment on posttraumatic stress disorder symptoms: a randomized clinical trial. *JAMA Psychiatry* 2019; doi 10.1001/jamapsychiatry.2019.3474. From RTI International, Research Triangle Park, NC; and other institutions. **Funded by the Department of Defense. Sixteen of 19 study authors disclosed potentially relevant financial relationships with the U.S. Department of Defense or U.S. Army; the remaining authors declared no competing interests.**

***See Reference Guide.**

Long-Term Outcomes of CBT for Anxiety

A comprehensive meta-analysis found cognitive behavioral therapy for anxiety-related disorders is associated with improved outcomes for up to 12 months after treatment completion. After 12 months, effects diminished for most disorders.

Methods: A literature search identified randomized clinical trials of CBT-based therapy vs a control condition in adult patients with a confirmed anxiety disorder diagnosis. For inclusion, studies were required to follow patients for ≥1 month after treatment completion. The primary outcome was the difference in anxiety symptoms between the active and control groups calculated as Hedges g effect size.*

Results: A total of 69 studies (4118 patients) met study inclusion criteria: 30 in patients with PTSD, 14 in patients with generalized anxiety disorder (GAD), 13 in patients with panic disorder (PD) with or without agoraphobia, 7 in patients with social anxiety disorder (SAD), 3 in patients with specific phobia, and 2 in patients with OCD. Active treatments included CBT, exposure therapy, cognitive therapy, cognitive reprocessing, metacognitive therapy, applied tension, and acceptance and commitment therapy. Control conditions included care as usual, relaxation, psychoeducation, pill placebo, supportive therapy, wait list, and tension only.

Overall, CBT was associated with moderate symptom reductions for up to 12 months. (See table.) Longer-term effects remained significant for GAD, SAD, and PTSD, but not for PD. Longer-term outcomes were not evaluated for specific phobia or OCD. Relapse rates after successful CBT were low (≤14%) in the few studies that examined the outcome.

Pooled Effect Sizes for CBT vs Control Conditions

Condition	End of Treatment	1–6 Months	6–12 Months	>12 Months
Panic disorder	0.22	0.27	0.35	0.14
Generalized anxiety disorder	0.39	0.07	0.40	0.22
Social anxiety disorder	0.38	0.60	0.34	0.42
Specific phobia	0.49	0.72	N/A	N/A
PTSD	0.72	0.67	0.59	0.84
OCD	0.70	0.85	N/A	N/A

Discussion: Because anxiety-related disorders are characterized by a chronic course, maintainable treatment effects are important. These results indicate that the skills and insights acquired during CBT are relatively stable for up to 12 months after treatment, but patients do not generally experience further improvement.

Study Rating*—18 (100%): This study met all criteria for a systematic review/meta-analysis.

van Dis E, van Veen S, Hagenaars M, Batelaan N, et al: Long-term outcomes of cognitive behavioral therapy for anxiety-related disorders: a systematic review and meta-analysis. *JAMA Psychiatry* 2019; doi 10.1001/jamapsychiatry.2019.3986. From Utrecht University, The Netherlands; and other institutions. **Funded by the Netherlands Organization for Scientific Research; and other sources. The authors declared no competing interests.**

***See Reference Guide.**

Cognitive Remediation in Schizophrenia

Cognition is an important target in the treatment of psychiatric disorders, as cognitive deficits are associated with poorer outcomes and less robust recovery. Cognitive remediation is a behavioral training intervention targeting deficits in attention, memory, executive function, social cognition, and metacognition, with ultimate goals of improved function and reduced disability. It is an effective, evidence-based treatment for cognitive deficits in schizophrenia. However, because a lack of clarity exists regarding the key components, an expert consensus panel was convened to provide guidance. The panel identified four integral components of cognitive remediation: a trained therapist; the practice of cognitive exercises; attention to development of cognitive strategies; and procedures to facilitate transfer of cognitive gains to everyday functioning.

Computerized training is a core feature of cognitive remediation programs. However, collaborative work with a trained therapist who has an understanding of cognitive processes, how cognitive deficits manifest in psychiatric disorders, and how cognitive abilities affect daily functioning is a necessary component. The level of therapist involvement is not dictated and can be based on patient preference and/or progress. Therapists and participants must collaboratively identify individual cognitive strengths and weaknesses and link these to specific goals. The therapist should then assist the patient with prioritizing which cognitive skills are the most relevant to their goals. Additionally, the therapist should track progress towards goals, identify barriers preventing the patient from attaining the goal, and adjust both short- and long-term goals as needed.

Cognitive exercises are the primary feature of cognitive remediation interventions. These typically comprise repeated computer-based drills that involve stimuli associated with targeted cognitive domains and produce activation of neural networks associated with the deficit. Although there is no clear directive regarding the optimal number of repetitions, multiple engagements with each exercise are required to achieve meaningful effects. Programs shown to be effective have generally provided 2–3 sessions per week for a minimum of 20 hours, although incorporating ≥40 hours of training is common. In-session training is often supplemented with homework exercises that can include additional repetitions of the drill and engaging in activities associated with the cognitive strategies developed in the session. Performance parameters such as accuracy and speed should be tracked during training sessions and feedback provided to the participant. These can be accomplished through the computerized program. Clinician feedback should lean more heavily toward supporting and encouraging the training process (e.g., staying engaged, attempting new strategies), rather than on performance.

An important goal of cognitive remediation is to facilitate use of problem-solving or cognitive strategies. In patients with schizophrenia, the range of cognitive strategies is often reduced, and the cognitive rigidity associated with the disorder can make it difficult to modify strategies as

task parameters change. Cognitive remediation programs should include opportunities for participants to identify and monitor strategies they use during training tasks. Development of these meta-cognitive skills is critical to the success of cognitive remediation. Group treatment can allow patients to share strategies they have found effective.

Psychosocial rehabilitation is a necessary component if cognitive improvements are to translate to functional improvement. As such, cognitive goals should be clearly linked to desired community functioning; for example, improving attention could improve conversational skills. Setting multiple short-term objectives that are both achievable and measurable can enhance patient success. Additionally, it may be useful in the goal setting process to consider whether the desired changes are restorative (i.e., recovery of cognitive functions that increase success on routine tasks), rehabilitative (i.e., regaining functional skills that have been lost), or habilitative (i.e., training of new functional skills that might not have previously been acquired). Specific techniques that can aid in the transfer of cognitive improvement to functional improvement include discussion, role-play, social cognition training, and supplemental activities such as vocational rehabilitation or skills training.

Bowie C, Bell M, Fiszdon J, Johannesen J, et al: Cognitive remediation for schizophrenia: an expert working group white paper on core techniques. *Schizophrenia Research* 2019; doi 10.1016//j.schres.2019.10.047. From Queen's University, Canada; and other institutions. **Source of funding not stated. Two of 12 study authors disclosed potentially relevant financial relationships; the remaining authors declared no competing interests.**

Psychiatric Disorders in Transgender Patients

A review of hospital discharge records found psychiatric disorder diagnoses were more than twice as common in transgender inpatient encounters, with >75% of transgender patients having ≥1 psychiatric diagnosis.

Background: In recent years, a small but growing body of literature has suggested increased rates of mood, personality, and psychotic disorders, as well as suicide and substance abuse in transgender adults. In an effort to characterize the health care needs of this underserved population and to address possible health care disparities, the U.S. Department of Health and Human Services and the National Institute of Medicine have called for prioritizing research on transgender and gender nonconforming patients.

Methods: Data for the study were collected from a weighted sample of discharge records from the 2007–2014 National Inpatient Sample (NIS), which includes nearly 8 million annual in-patient encounters from >1050 nonfederal acute care hospitals in 45 states. The presence of select psychiatric disorder diagnoses at discharge (i.e., mood disorder; depression; psychosis; anxiety disorder; substance abuse; suicide and self-injury; schizophrenia and other psychotic disorders; personality disorders; attention deficit, impulsive, conduct, and disruptive behavior disorders) were compared between 25,233 identified transgender patients and >250 million cisgender patients. In addition, prevalence of chronic medical comorbidities was compared within the transgender population with and without psychiatric diagnoses.

Results: Transgender patients were younger than cisgender patients (mean age, 40 years vs. 57 years; $p<0.01$). The transgender patient group also had significantly higher proportions of African American patients (19% vs. 15%; $p<0.01$) and patients covered by Medicaid (27% vs. 15%; $p<0.01$). The prevalence of psychiatric disorders was significantly higher among transgender patients than cisgender patients: 77% vs 38%. Rates of all examined diagnoses were higher in transgender than cisgender patients. Specifically, transgender patients were 3-times more likely to have a mood or psychotic disorder diagnosis, 20-times more likely to have a personality disorder diagnosis, and 13-times more likely to engage in self-harm or

suicidal behavior. After controlling for confounding factors including demographics, comorbid conditions, and hospital characteristics, odds ratios* for all psychiatric disorders were increased in the transgender population. (See table.)

Odds of Select Psychiatric Disorders in Transgender Patients			
Disorder	**Prevalence**	**Odds Ratio**	**Significance**
Any psychiatric disorder	77%	7.9	p<0.001
Anxiety	24%	3.4	p<0.001
Psychosis	15%	2.5	p<0.001
Depression	15%	1.6	p<0.001

Within the transgender population, those with a psychiatric diagnosis were younger and more likely to be Caucasian. Those with a psychiatric diagnosis also had significantly higher rates of alcohol abuse (15% vs. 2%; p<0.001) and drug abuse (26% vs. 7%; p<0.001), as well as medical comorbidities: chronic pulmonary diseases (21% vs. 13%; p<0.001), hypertension (28% vs. 25%; p<0.001), and hypothyroidism (8% vs. 5%; p<0.001). In contrast, transgender patients without a psychiatric diagnosis had significantly higher rates of renal failure, vascular disease, valvular heart disease, AIDS, and congestive heart failure (p<0.01 for all).

Discussion: The present findings highlight the importance of mental health screening and treatment for transgender patients. It should be noted that the actual prevalence of psychiatric disorders may be under-represented in the present data because they include only inpatient encounters. Previous research has suggested that transgender patients may be less likely to seek medical treatment because of fear of discrimination and uncertainty about receiving prejudice-free care.

Hanna B, Desai R, Parekh T, Guirguis E, et al: Psychiatric disorders in the U.S. transgender population. *Annals of Epidemiology* 2019; doi 10. 1016/j.annepidem.2019.09.009. From Morehouse School of Medicine, Atlanta, GA; and other institutions. **Source of funding not stated. The authors declared no competing interests.**

***See Reference Guide.**

Deep Transcranial Stimulation for OCD

In a manufacturer-sponsored, sham-controlled trial, deep transcranial magnetic stimulation (dTMS) improved symptoms of obsessive-compulsive disorder in patients experiencing incomplete response with other treatments.[1] The results confirm the findings of a previous pilot study that used the same H-shaped coil designed specifically to reach the medial prefrontal cortex and anterior cingulate cortex.[2]

Methods: Study participants had a primary diagnosis of OCD, with Yale-Brown Obsessive Compulsive Scale (Y-BOCS) scores of 20 despite ongoing maintenance medication or cognitive-behavioral therapy. Patients were also required to have undergone ≥1 failed anti- depressant trial. Following a 3-week screening phase, participants received randomized double-blind active or sham dTMS 5 days/week for 6 weeks, and were followed for an additional 4 weeks. Prior to beginning stimulation and in collaboration with a study clinician, patients designed individualized symptom provocations aimed at provoking distress rated between 4 and 7 on a 10-point scale. They were then prompted to think about the provocation during the stimulation procedure. The primary study outcome was change from baseline to week 6 in Y-BOCS score.

Results: A total of 94 patients were randomized, 87 completed the 6-week evaluation, and 84 attended the follow-up evaluation. At baseline, Y-BOCS scores averaged about 27 points in both

treatment groups. Following randomized treatment, scores decreased by 6 points in patients receiving active dTMS, compared with 3.3 points in those receiving sham treatment (p=0.01; effect size,* 0.69). The rate of full response (≥30% reduction in Y-BOCS score) at week 6 was 38% for dTMS, compared with 11% for sham treatment (p=0.003). At 4 weeks post-treatment, average Y-BOCS reductions were 6.5 points with dTMS and 4.1 points with sham treatment (p=0.03; effect size, 0.62) and full response rates were 45% and 18%, respectively (p=0.006). Additional secondary endpoints—Clinical Global Impression Improvement and Severity Scales—also favored dTMS. The 2 treatment groups had similar reductions in disability. Adverse events were typical of those reported in brain stimulation studies and occurred at similar rates with active and control treatment.

Discussion: It is likely that the mechanism of action for dTMS differs from those of pharmacotherapy and psychological treatments. The present results support the use of dTMS as an adjunct to these interventions when response is inadequate.

Study Rating*—17 (100%): This study met all criteria for a randomized controlled trial.

[1]Carmi L, Tendler A, Bystritsky A, Hollader E, et al: Efficacy and safety of deep transcranial magnetic stimulation for obsessive-compulsive disorder: a prospective multicenter randomized double-blind placebo-controlled trial. *American Journal of Psychiatry* 2019;11 (November):931–938. doi 10.1176/appi.ajp.2019.18101180. From Tel Aviv University, Israel; and other institutions including Brainsway, Ltd. **Funded by Brainsway Ltd. Twelve of 15 study authors disclosed potentially relevant financial relationships, including 11 with Brainsway; the remaining authors declared no competing interests.**

[2]Carmi L, et al: Clinical and electrophysiological outcomes of deep TMS over the medial prefrontal and anterior cingulate cortices in OCD patients. *Brain Stimulation* 2018; 11:158–165.

***See Reference Guide.**

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Effect Size: The effect size represents the amount of change in outcome that can be attributed to treatment, where 0.2 indicates a small effect, 0.5 a medium effect, and 0.8 a large effect. It is relatively independent of clinical significance, and large effect sizes do not ensure treatment efficacy.

Odds Ratio: A comparison of the probability of an event in 2 groups. An odds ratio of 1 implies that the event is equally likely in both groups. An odds ratio greater than 1 indicates that the event is more likely to occur in that group than in the comparison group.

Study Rating: A measure of how well a study conforms to quality standards. The study rating uses a checklist system based on the comprehensive Strength of Evidence Report from the Evidence-based Practice Center Program of the Agency for Healthcare Research and Quality (AHRQ). The rating checklists are posted at www.alertpubs.com.

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