Researchers reveal new more precise method of performing electroconvulsive therapy

May 6 2013

Electroconvulsive therapy (ECT) is the most effective acute treatment for severe major depression. However, even with newer forms of ECT, there remains a significant risk of adverse cognitive effects, particularly memory problems.

Current theories hold that the regions that need to be stimulated to treat the depression (the cortex) are different and separate from the regions that result in memory problems (the hippocampus and temporal lobes). Theoretically, a more precise form of ECT could have all of the efficacy and few or none of the adverse cognitive side effects.

A new study published in *Brain Stimulation* now reports the initial clinical results of a novel form of precise ECT called FEAST (Focal Electrically Applied Seizure Therapy). This clinical trial in 17 depressed adults builds on earlier design work and animal testing done at Columbia University in NY. This new form of ECT uses pulsed direct current stimulation, with the bulk of the electrical charge being delivered directly under one electrode placed on the right orbital cortex, about 1 inch above the right eye. Traditional ECT uses alternating current, which flows in both directions and is thus harder to direct and target.

"We found, in this feasibility study, that FEAST produced clinically meaningful antidepressant improvements," said Dr. Ziad Nahas, first author of the research conducted jointly at the Medical University of South Carolina and Columbia University (NY). Dr. Nahas is now Department Chair at the America University in Beirut, Lebanon.

"Importantly, the time it took for patients to be fully reoriented after the treatment was just 5 minutes from when they first opened their eyes. This orientation time traditionally corresponds to the cognitive side effects. This is much quicker than any other form of ECT, where the orientation time is much greater, sometimes up to or exceeding an hour."

Overall, the group had their depression symptoms almost reduced by half, after an average of 10 sessions over 4 weeks. Eight individual patients had at least a 50% reduction in their symptoms, and 5 remitted, meaning they were largely symptom free.

This was the first human use of FEAST, and the group is continuing to refine the method and test how it works using advanced brain imaging and electroencephalography (EEG).

Dr. Harold Sackeim, Professor of Psychiatry and Radiology at Columbia University and the early developer of the FEAST technique, commented, "These initial encouraging results suggest that one can perfect and refine ECT with a more focal delivery system like FEAST. These are exciting confirmatory data in depressed patients building on what we found in earlier work."

"Further work is needed to see if we can improve the titration schedule, refine the dose, and make this into another, better, method of performing ECT," said Nahas.

More information: The article is "A Feasibility Study of a New Method for Electrically Producing Seizures in Man: Focal Electrically Administered Seizure Therapy [FEAST]" by Ziad Nahas, Baron Short, Carol Burns, Melanie Archer, Matthew Schmidt, Joan Prudic, Mitchell S. Nobler, D.P. Devanand, Linda Fitzsimons, Sarah H. Lisanby, Nancy Payne, Tarique Perera, Mark S. George, and Harold A. Sackeim (DOI: 10.1016/j.brs.2013.03.004). The article appears in *Brain Stimulation*,

Volume 6, Issue 3 (May-June, 2013).

Provided by Elsevier