Electroconvulsive therapy without seizures?

Electroconvulsive therapy (ECT), sometimes called “electroshock therapy” is considered the most effective short-term treatment available for major depression. The procedure involves passing electrical current through the brain with electrodes placed on the scalp and is done in a series of treatments over the course of weeks. It is used primarily to treat the estimated 2-3% of the US population with depression that is resistant to medication and other therapies.

Since its first use in the 1930’s, ECT was thought to be therapeutic because of the seizures it induced. Seizures, and the high dose of current needed to induce them, are also responsible for the major cognitive side effects attributed to ECT— temporary confusion and memory problems. In addition, medication is required to minimize the convulsions that accompany a seizure. Concern over these side effects is the most common reason why patients refuse the treatment, despite the fact that untreated depression can cause significant suffering, disability, suicide, and death due to self-neglect.

The electrical current needed to induce a seizure is subject to individual variability. If a person’s seizure threshold is especially high, the procedure may not be successful in inducing a seizure. After observing that some patients got better despite not having had a seizure during the procedure, the lead investigator conducted this study to determine whether ECT without a seizure (non-convulsive electrotherapy, or NET) would be as effective at treating depression as ECT with a seizure (traditional ECT). That is, can ECT with a lower amount of electrical current be just as effective in treating depression as a high, seizure-inducing amount of electrical current, without the distressing side effects that often lead people to reject traditional ECT?

Thirteen outpatients with so-called treatment-resistant depression (TRD) who had declined traditional ECT participated in this study at the University of Maryland Medical Center. All participants had standard ECT procedures except for the lower electrical current administered. Depression and cognition were measured using standard rating scales. Two subjects had seizures on their first treatments despite the lower dose of current. Of the 11 subjects who had the treatment and experienced no seizures, the antidepressant effect on average was similar to traditional ECT (Fig. 1) without the adverse cognitive effects usually seen with traditional ECT.

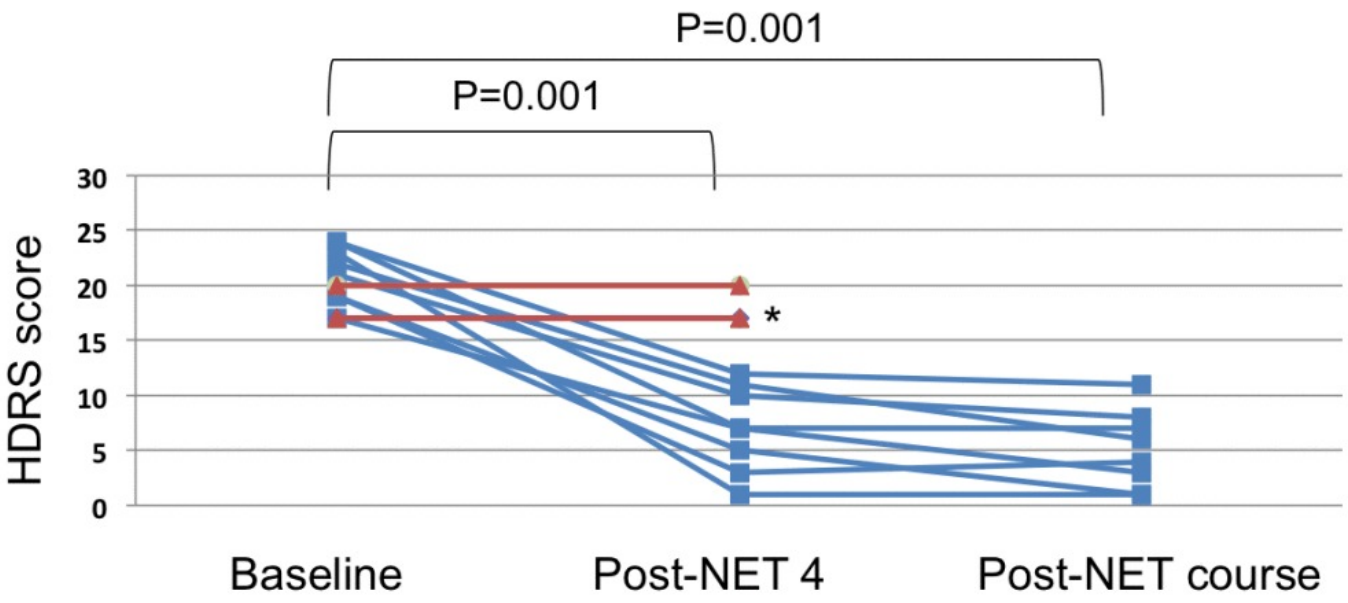

Fig. 1. Hamilton Depression Rating Scale (HDRS) score change with NET treatment in 11 participants.
* This line indicates two subjects with identical baseline and post-NET treatment 4 HDRS scores of 17.

In conclusion, the therapeutic effect of NET on treatment resistant depression was similar to that of traditional ECT. The usual problems of confusion and memory loss seen with traditional ECT were not observed. These results challenge the longstanding belief that a seizure is necessary for the antidepressant effect of ECT, and merit further investigation to determine whether NET is a viable alternative to ECT. If similarly effective, NET could be a more widely acceptable treatment for eligible individuals with depression for whom ECT is recommended, but who fear the confusion and memory loss that often accompany traditional ECT.

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