Review: electroconvulsive therapy reduces depressive symptoms

Efficacy and safety of electroconvulsive therapy in depressive disorders: a systematic review and meta-analysis. Lancet 2003;361:799–808.

QUESTION: What are the benefits and harms of electroconvulsive therapy (ECT) in patients with depressive disorders?

Data sources

Studies were identified by searching Biological Abstracts (1985 to September 2000), CINAHL (1982 to January 2001), EMBASE/Excerpta Medica (1980–2000), LILACS (1982 to January 2001), Medline (1966–2000), PsycINFO (1887–2000), SIGLE (1980–2000), and the Cochrane Library; and by reviewing reference lists and specialist textbooks.

Study selection

Randomised controlled trials (RCTs) were selected if they compared ECT with no ECT, ECT with pharmacotherapy, or different types of ECT in patients with depressive illness.

Data extraction

Reviewers independently extracted data on treatment comparisons, inclusion criteria, patient characteristics and co-treatment, and outcomes. Main outcome was change in symptoms on a continuous depressive symptom scale. Quality of RCTs was assessed on the basis of allocation concealment, masking, loss to follow up, and length of follow up.

Main results

73 RCTs met the selection criteria and were combined using a random effects model. ECT reduced depressive symptoms more than simulated ECT or pharmacotherapy (primary tricyclic antidepressants) (table). Bilateral electrode placement reduced depressive symptoms more than unilateral placement, and a higher dose of electrical stimulus was better than a lower dose (table). Frequency of treatment (1 v 3 times/wk and 2 v 3 times/wk) and stimulus waveform (brief pulse v sinewave) had no effect on depressive symptoms (table).

The effects of ECT on cognitive functioning were also reported. Results of the cognitive effects of ECT compared with pharmacotherapy were equivocal (2 trials). Patients treated with bilateral ECT had a longer time to recovery of orientation (6 trials), and greater impairment in retrograde (4 trials) and anterograde (7 trials) memory within 1 week than patients treated with unilateral ECT. More frequent ECT led to more cognitive impairment at the end of the treatment course (4 trials). Higher doses of ECT did not affect personal memory more than lower doses, but did result in some impairment of anterograde memory (5 trials).

Conclusions

ECT reduces depressive symptoms more than pharmacotherapy. Bilateral electrode placement is more effective than unilateral placement, and a higher dose is more effective than a lower dose.

COMMENTARY

Despite widely varying methods and quality that potentially contribute statistical noise to the meta-analyses, ECT was superior to sham ECT and to drug therapy with regard to the magnitude of symptom improvement in the review by the UK ECT group. This supports the use of ECT, a treatment for which the National Institute for Clinical Excellence guidelines take an overly conservative position.¹ Regrettably, more efficacious forms of ECT (bilateral ECT and high dose ECT) are also associated with greater cognitive impairment.

The results of the comparison between ECT and drugs may not be applicable to newer antidepressant agents. The comparison also addressed only the magnitude of antidepressant response, not the speed of response, which is likely to be greater with ECT. Most patients require 6–9 ECT sessions, delivered across 2–3 weeks, to respond, whereas most require 4–6 weeks to respond to an antidepressant drug trial.²

The comparisons of more versus less frequent ECT and high versus low dose ECT also addressed only the magnitude of antidepressant response. Evidence also suggests that more frequent ECT³ and high dose ECT⁴ are each associated with a faster response. A faster response is important because it reduces suffering, risk of suicide, duration of hospital stay, and treatment costs and may hasten return to work.

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- 1 <http://www.nice.org.uk/pdf/59ectfullguidance.pdf>
- 2 American Psychiatric Association. *The practice of electroconvulsive therapy: recommendations for practice, training, and privileging*. Second edition. Washington, DC: American Psychiatric Press, 2001.
- 3 Shapira B, Tubi N, Drexler H, et al. Cost and benefit in the choice of ECT schedule. Twice versus three times weekly ECT. *Br J Psychiatry* 1998;**172**:44–8.
- 4 Sackeim HA, Prudic J, Devanand DP, et al. Effects of stimulus intensity and electrode placement on the efficacy and cognitive effects of electroconvulsive therapy. *N Engl J Med* 1993;**328**:839–46.

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Electroconvulsive therapy (ECT) for depressive symptoms*

Comparison	Number of trials (n)	Standardised effect size (95% CI)	
ECT v simulated ECT	6 (n=256)	–0.91 (–1.27 to –0.54)	Favours ECT
ECT v pharmacotherapy	13 (n=760)	–0.80 (–1.29 to –0.29)	Favours ECT
Bilateral v unilateral electrode placement	22 (n=1137)	–0.32 (–0.46 to –0.19)	Favours bilateral
Frequency of ECT			
1 v 3 times/week	2 (n=51)	0.83 (–0.39 to 1.89)	NS
2 v 3 times/week	4 (n=159)	–0.30 (–0.76 to 0.20)	NS
Higher v lower dose of electrical stimulus	6 (n=337)	0.58 (0.33 to 0.83)	Favours higher dose
Brief pulse v sinewave ECT	5 (n=181)	0.62 (–0.31 to 1.54)	NS

*NS = not significant. CI defined in glossary. Results based on meta-analysis using a random effects model. Length of follow up ranged from post-treatment to 8 months.